Histopathological Changes of Umbilical Cord Blood Vessels in Diabetic Pregnancies

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ABSTRACT

Histopatological changes of umbilical cord (UC) functions due to diabetes mellitus (DM) are resulting in fetal hyperinsulinemia, which in turn stimulates hematopoiesis and fetal erythema. This may increase metabolic rate and oxygen requirements in the response of several factors such as hyperglycemia, ketoacidosis and vascular diseases. The study aimed to evaluate the histopatological changes of UC blood vessels in diabetic pregnant women.

A cross- sectional, analytical study was designed. A total of 75 UC samples were collected from Aljala Maternity Hospital, Tripoli-Libya, from March to December 2017. Out of them 25 were from non - complicated pregnancies, 25 were pre-gestational diabetes mellitus (PGDM group) and 25 were gestational diabetes mellitus (GDM group). Segments of UC were taken at 5 cm from fetal, central and placental attachments for each group. All tissue segments were stained by special stains and examined under light microscope.

The mean weight of UC was larger in PGDM than GDM and control groups respectively. The tissue segments of PGDM in comparison to GDM showed widely edematous spaced smooth muscle cells, more increased amount of collagen and elastic fibers, glycogen, proteoglycans (PGs) and glycosaminoglycan (GAGs) molecules, mostly in central segments. Hugely dilated and discordant umbilical arteries were observed in fetal segments of GDM. Histopatological changes revealed that diabetic pregnancy had a higher effects on PGDM than GDM.

INTRODUCTION

Perinatal morbidity and mortality remains a serious problem threat to fetuses' life of diabetic pregnancies. Despite the enhancements made in diagnosis and management of DM, diabetic pregnancies are still exposed to spontaneous abortion and stillbirth, with an increased risk of congenital malformations.[1] DM in pregnancy has shown an increasing rates of disease and its effects such as preeclampsia, primary cesarean delivery, macrosomia, birth injury and clinical hypoglycemia.[2] Recent studies showed that PGDM pregnancies are associated with higher morbidty and mortality rates than GDM.[3] The UC is a cylinder vascular system, plays a vital role in continuation of pregnancy and any disruption of its functions is considered a prime source of damage to normal growing of fetus[4], where it provides an interrupted blood flow from the placenta to the fetus during its development.[5] The cells within the UC possess plasticity and ability for differentiation, they may be use to assess the biological responses that are associated with diabetic pregnancy.[6]

The Royal College of Pathologists has reported that any sample of diagnostic value removed from the human body should be histologically examined.[7] After childbirth, the UC alongside placenta is disposable as medical waste, which may additionally for the relative lack of knowledge and interest inside UC that may improve pregnancy outcome.[8]

Histopathological changes of UC functions due to DM are resulting in fetal hyperinsulinemia, which in turn stimulates hematopoiesis and fetal erythema.   This may increase metabolic rate and oxygen requirements in response of several factors such as hyperglycemia, ketoacidosis and vascular diseases.[9] Histological examination of UC is considered an essential component for evidence of cord occlusion and hypoxia; which resulted in postnatal morbidity and mortality.[10] Therefore, this study was designed to evaluate histopathological changes of UC blood vessels in PGDM and GDM.

MATERIALS AND METHODS

Study design, setting and duration:

A cross-sectional, analytical study, was done in the Department of Obstetrics and Gynecology at Algalaa Maternity Hospital, Department of Histology and Genetics, Faculty of Medicine, University of Tripoli; Tripoli-Libya, in the period from March to December 2017.

Study population:

880 pregnancies, aged between 17 and 45 years of gestational age ranged within 36th and 41th weeks, participated in this study; 75 pregnancies were selected according to strict criteria; 25 of non- complicated pregnancies, 25 were PGDM and 25 were GDM. The pregnancies that experienced any complications before or during pregnancy such as hypertension and thyroid dysfunctions were excluded.

Study samples:

A total of 75 segments of 5 cm were taken from fetal, central and placental attachments of UC for each group. Then the specimens placed in plastic containers filled with buffered formalin 10% and kept at room temperature for further preparations and examinations.

Study tools:

The UC weight (UCW) was measured in grams by directly placing the cord on digital scale. Two centimeters of tissue segments were dehydrated in ascending levels of alcohol and xylene, followed by embedding in soft paraffin in oven at 60ºC overnight, followed by embedding in hard paraffin then 4 μm serial sections were cut by rotator microtome. The tissue sections were stained by special histological and histochemical stains by Bancroft and Gamble, (2008).[11]

Data management and analysis:

The UCW was entered and analyzed in a computer using Statistical Package for Social Science (SPSS) (Version 16.0). Analysis Of Variance (ANOVA). One Way test was used to compare the variable means. P- value ≤ 0.05 was considered as the level of significance.

Ethics consideration

All the participants were fully informed and explained about the nature of study and written consents were taken.
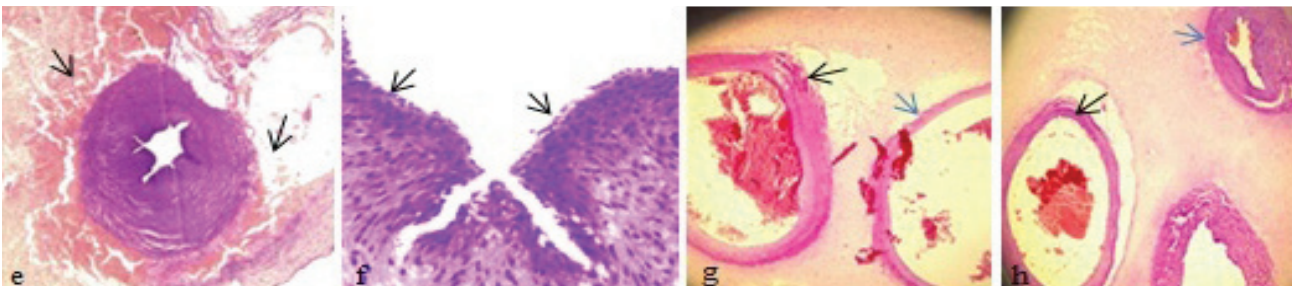
RESULTS

Macroscopic examination:

The UCW showed highly significant difference between study groups ($P < 0.001$). The mean weight of the UC was 53.52 ± 17.17g, 50.24 ± 20.56g and 34.96 ± 11.20g in PGDM, GDM and control respectively (Table 1).

Table 1: Results of macroscopic examination of the UC.

| Range	(22 – 58)	(23 – 104)	(27 – 106)	
Mean ± SD	34.96 ±11.20	53.52 ± 17.17	50.24 ± 20.56	<0.001

Figure 1A: Photomicrographs of control group showing

The general architecture of the UC consisting of two arteries (As) and one vein (V) (H&E, 25×). (b) A higher magnification of umbilical artery showing the luminal endothelium appears with flattened pale stained nuclei (arrows), (H&E, 400×). (c) A umbilical vein consisting of an inner longitudinal (IL) and outer circular (OC) smooth muscle layers (H&E, 100×). (d) The general architecture of umbilical WJ covered by amniotic membrane (arrows (H&E, 400×).
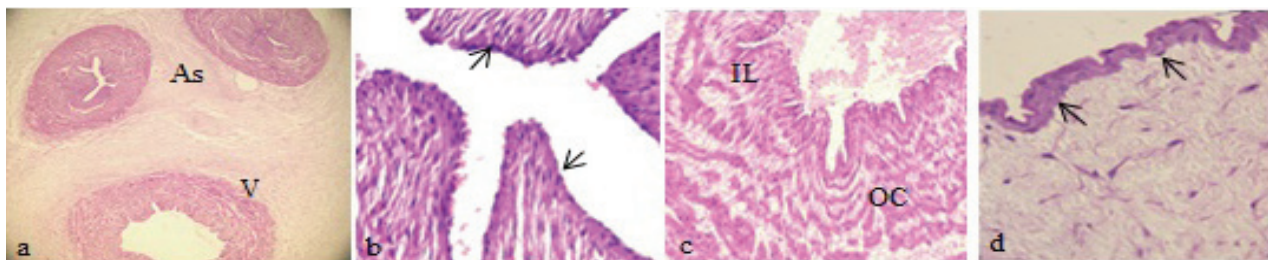
Figure 1B: Photomicrographs of PGDM group showing.

(e) Central segment of umbilical artery showing; an extensive hemorrhage of WJ (arrows) (H&E, 40×). (f A higher magnification of previous micrograph showing endothelium of the artery with flattened dark stained nuclei and acidophilic cytoplasm (arrows) (H&E, 400×). Photomicrographs of GDM group showing: (g) Fetal segment showing hugely dilated umbilical arteries (arrows) (H&E, 25×). (h) Fetal segment showing discordant umbilical arteries (arrows) (H&E, 25×).
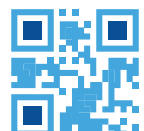
Microscopic examination:

Haematoxylin and eosin (H&E):

Control group:

The histological findings of normal UC samples showed, two arteries and one vein embedding in the Wharton›s Jelly (WJ) (Figure 1A-a). They lined by endothelial cells with pale stained nuclei resting on subendothelial connective tissue (Figure 1A-b). They also showed, a double muscle layer consisting of inner thin longitudinal smooth muscle cells and outer thick circular spiraled muscle cells (Figure 1A-c). The WJ covered by a single layer of cubical epithelium (Figure 1A-d).

PGDM group:

Central segment of umbilical artery showed, an extensive hemorrhage of degenerative WJ (Figure 1B-e), appeared with dark pyknotic stained nuclei and highly acidophilic cytoplasm (Figure 1B-f).

GDM group:

Fetal segments of umbilical arteries showed, hugely dilated thinness muscular layers of umbilical arteries (Figure1B-g), luminal discordant with normal structure of the umbilical vein (Figure1B- h).

Mallory's trichrome:

Control group: Placental segments compared to central and fetal segments showed, a higher amount of collagen fibers in subendothelial layer and between smooth muscle cells of the umbilical blood vessels.

PGDM group:

Central segment of umbilical artery showed, an increased amount of collagen fibers with an extensive hemorrhage of WJ (Figure 2A-a). Central segment showed an extensive hemorrhage of WJ adjacent to the umbilical vein with diminution its lumen and degeneration changes of external layers (Figure 2A-b).

GDM group:

Central segment of umbilical artery showed, increased amount of collagen fibers in subendothelial layer and around the artery with sever extensive hemorrhage of the WJ (Figure 2A-c).

Fetal segment of umbilical vein showed, an increased amount of collagen fibers in subintimal layer (Figure 2A-d).

Van Gieson stain:

Control group: The umbilical blood vessels showed, a few collagen fibers in Subendothelial layer, between smooth muscles and around the blood vessels.

PGDM and GDM groups:

Staining the sections of umbilical blood vessels from diabetic groups by Van Gieson stain confirms the presence of fibrin and fibrosis that obtained by Mallory's Trichrome (Figure 2B-e,f,g,h).

Orcein stain:

Control group: Elastic fibers appeared as dark brown and thin wavy lines within the media of the umbilical artery and subintimal layer of umbilical vein.
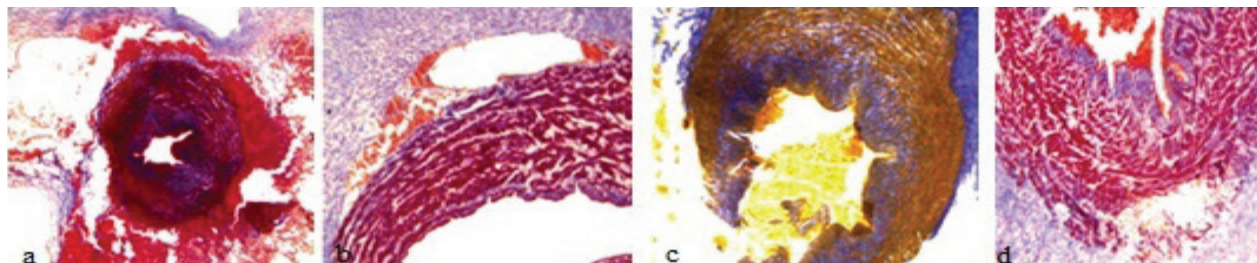
Figure 2A: Photomicrographs of PGDM group showing.
(a) Central segment of umbilical artery showing; an increase of collagen fibers (stained blue) (Mallory's trichrome, 40×). (b) Central segment of umbilical vein showing; an increase of collagen fibers between smooth muscle cells (stained blue) (Mallory's trichrome, 100×). Photomicrographs of GDM group showing: (c) Central segment of umbilical artery showing; an increase of collagen fibers in subitimal layer and around artery (stained blue) (Mallory's trichrome, 100×). (d) Fetal segment of umbilical vein showing; an increase of collagen fibers in subitimal layer (stained blue) (Mallory's trichrome, 40×).
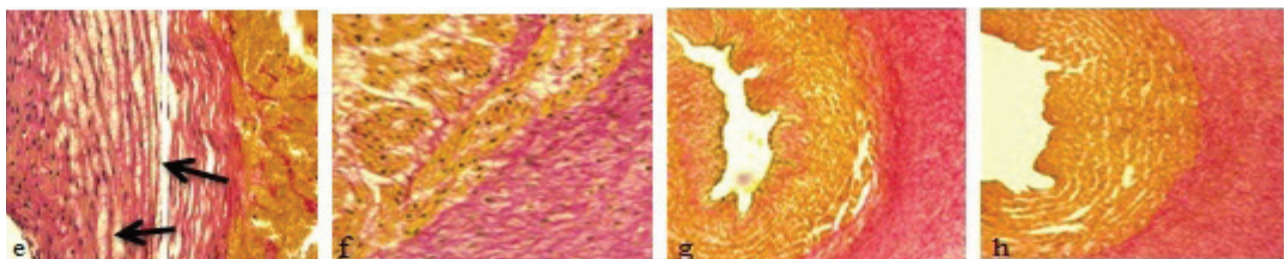
Figure 2B: Photomicrographs of PGDM group showing.

(e) Central segment of umbilical artery showing; multiple spaces separating muscle layers (arrows) (Van Gieson, 200×). (f) Central segment of umbilical vein showing; an increase of collagen fibers in between smooth muscle and around vein (red stained) (Van Gieson, 200×). Photomicrographs of GDM group showing (g) Central segment of umbilical artery showing; an increase of collagen fibers in subendothelial layer and around the artery (red stained) (Van Gieson, 100×). (h) Placental segment showing; an increase of collagen fibers around the vein (red stained) (Van Gieson, 100×).

PGDM group: More pronounced of the elastic fibers were observed within the media and subintimal layers of umbilical artery and vein (Figure 3a and 3b).

GDM group: Much more pronounced of the elastic fibers were observed within the media of umbilical artery whereas less pronounced observed in subintimal layer of umbilical vein (Figure 3c and 3d).

Periodic-acid shiff stain (PAS):

Control group:

Significant deposition of glycogen granules was observed more in subendothelial layer and cytoplasm of smooth muscle cells of placental compared to central and fetal segments respectively.

PGDM group:

Significant deposition of glycogen granules with strong PAS reactivity was observed more in central segments (Figure 4a). Marked thickening of the basement membrane of amniotic epithelium with strong PAS reactivity was seen in the tissue sections (Figure 4b).

GDM group:

Significant deposition of glycogen granules varied between moderate and strong PAS reactivity was observed more in central segments (Figure 4c). Normal thickening of the basement membrane of amniotic epithelium was seen in the tissue sections (Figure 4d).

Methyl green pyronin reaction:

Control group:

Methyl green pyronin reaction showed, variations in deposition of PGs molecules varied between weak and moderate in the extracellular matrix (ECM) of the tissue sections.

PGDM group:

Methyl green pyronin reaction showed, strong deposition of PGs molecules in the ECM of the tissue sections (Figure 5a).

GDM group:

Methyl green pyronin reaction showed, moderate to strong deposition of PGs molecules in the ECM of the tissue sections (Figure 5c).

Toluidine blue reaction:

Control group: Toluidine blue reaction showed, weak to moderate deposition of GAGs molecules in the ECM of the tissue sections.

PGDM group:

Toluidine blue reaction showed, strong deposition of GAGs molecules in the ECM of the tissue sections (Figure 5b).

GDM group:

Toludine blue reaction showed, moderate to strong deposition of GAGs molecules in the ECM of the tissue sections (Figure 5d).
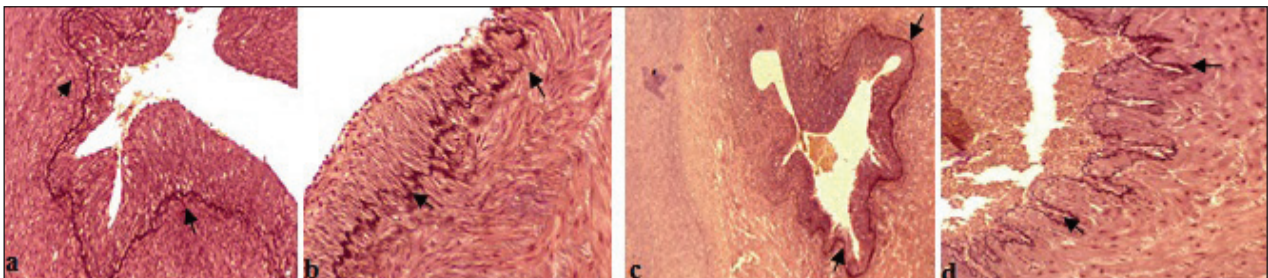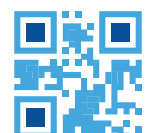

Figure 3: Photomicrographs of PGDM group showing.

(a) Central segment of umbilical artery showing; more pronounced of thick elastic fibers within the media layer (arrows) (Orcein, 40×). (b) Fetal segment of umbilical vein showing; more pronounced of thick elastic fibers in subintimal layer (arrows) (Orcein, 40×). Photomicrographs of GDM group showing : (c) Central segment of umbilical artery showing; much more pronounced of thick dense elastic fibers within the media layer (arrows) (Orcein, 40×). (d) Placental segment of umbilical vein showing; less pronounced of the elastic fibers within the media layer (arrows) (Orcein, 40×).
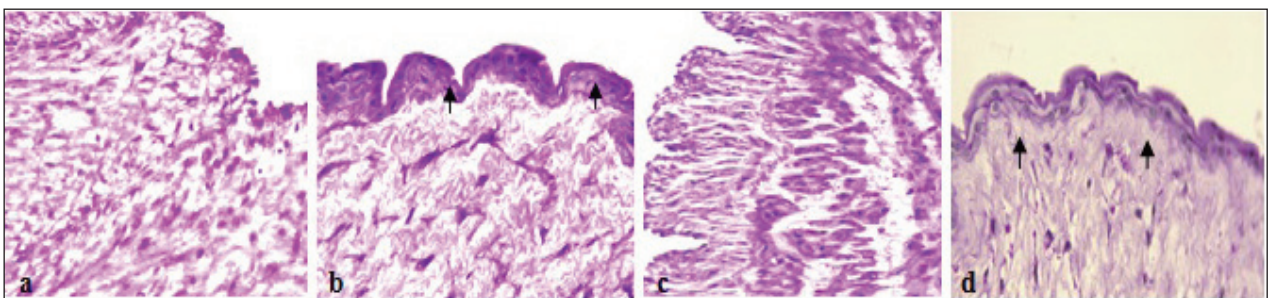
Figure 4: Photomicrographs of PGDM group showing.

Central segment of umbilical artery denoting; stronger periodic acid-schiff (PAS) reaction (200×). (b) Marked thickened basement membrane of amniotic epithelium (arrows) (PAS, 200×). Photomicrographs of GDM group showing: (c) Central segment of umbilical vein denoting; moderate periodic acid-schiff (PAS) (200×). (d) Normal thickened basement membrane of amniotic epithelium (arrows) (PAS, 200×).
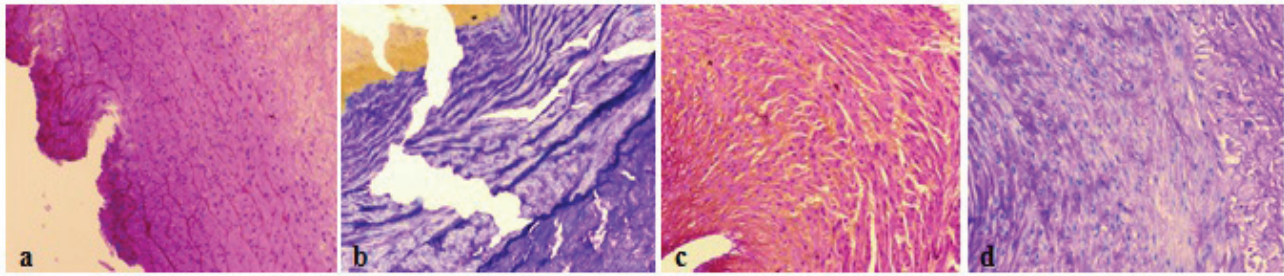
Figure 5: Photomicrographs of PGDM group showing.

(a) Central segment of umbilical vein showing; strong Methyl Green Pyronin reaction (red color) (200×). (b) Fetal segment of umbilical artery showing; strong Toluidine Blue reaction (red-purple color) (200×). Photomicrographs of GDM group showing: (c) Central segment of umbilical artery showing; moderate Methyl Green Pyronin reaction (red color) (200×). (d) Central segment of umbilical vein showing; moderate Toluidine Blue reaction (red-purple color) (200×).

DISCUSSION

Diabetic pregnancy has shown that changes of UC are still occurring even in an intensive recent management of DM. In order to explain that, it should be understood the histopathological changes of UC quantitatively in diabetic pregnancies have not been mentioned in details in previous studies. The macroscopic examination revealed that mean weight of UC from PGDM was significantly larger than GDM and control groups. The pathophysiology behind weight gain indicated the increase of both contents and density of WJ. Accordingly, this may affect the fetal growth as result of prolonged effects of DM. In this study, abnormal accumulation of blood within the WJ was observed in central segments of PGDM and GDM groups as result of degenerative effects of DM. In a Bangladeshi study, by Chakraborty and Banu (2013)[12], they found severe erosion and rupture of vascular endothelium resulting in extravasation of blood within the WJ. These findings were consistent with the study of Tahaoglu et al. (2015)[13], in Turkey. An Italian study, by Di Fulvio et al. (2014)[14], stated that degeneration of vascular endothelium in diabetic pregnancies could have originated from oxidative stress and over-expression of inflammatory cytokines such as nitric oxide synthase and nitrotyrosine. In GDM group, hugely dilated lumen with thinness muscular layers of umbilical arteries were observed in samples taken from fetal segments. A Turkish study, by Cetin et al. (2002)[15], found that thinness of muscular layer may be attributed to narrowing of conjunctive tissue separating muscular layers. Similar findings were observed by Alam et al. (2014)[16], in Bangladesh. On the other hand, an Iraqi study by Lateef (2015)[17], she found that splitting of internal elastic lamina in tunica intimal and degeneration of endothelial layer reducing the number of smooth muscle fibers and affect the total thickness of umbilical blood vessels. This indicated that umbilical blood vessels of diabetic pregnancies had a tendency for increase luminal diameter and decrease its thickness. Another important histological change observed in GDM group, was luminal discordant of umbilical arteries in sections taken from fetal segments. Predanic and Perni (2006)[18], stated that luminal discordant of umbilical arteries has direct influence on fetal blood flow. In New York, they found that larger umbilical artery produced lower resistance to blood flow, whereas smaller artery could not equally produce higher resistance to blood flow because of presences of Hyrtl's anastomosis. An increased amount of fibrinoid deposition identified between smooth muscle cells and around the umbilical blood Vessels. In PGDM and GDM groups, collagen fibers deposition found more associated with rupture muscle layers, mostly in central and fetal segments. There are many explanations for the deposition of fibrinoid in the UC. The most acceptable one explained by Rampersad and Nelson (2007)[19], in Washington; which may attributes to mechanical defect in blood flow to UC as consequence of maternal blood stasis. The elastic fibers were found more pronounced in PGDM group. On the other hand, in GDM group, highly dense and thick elastic fibers were found much more pronounced in the umbilical arteries compared to umbilical veins. Increased of collagen and elastic fibers, particularly in umbilical arteries caused decreasing in the elasticity and made the umbilical blood vessels more stiff which may have effects on luminal dilation and constriction mechanism of blood vessels during blood flow between placenta and fetus. Another histological change recognized in this study, multiple spaces were separating smooth muscle layers in the central segments of PGDM and some of GDM. These findings were inconsistent with Jain et al. (2014)[20], in India, where they found many empty spaces within the WJ which indicates degeneration process of DM. Thickening basement membrane of UC amniotic epithelium was observed in diabetic groups, particularly in PGDM. In an American study, by Brace and Wolf (1989)[21], a rapid bidirectional exchange diffusion was observed between fetus and an amniotic fluid across the UC. The main reason behind multiple spaces, may be due to increase of fluid between muscle cells as result of thickening basement membrane and might explain associated edema. An important histological change identified in this study was deposition of glycogen, PGs and GAGs molecules. In PGDM group, an accumulation of large amount of glycogen was observed in the cells of intima and media layers of the blood vessels. On the other hand, GDM group, showed significant variations of glycogen deposition varied between small and large amounts. Similar results were observed by Asmussen, in (1980)[22], in Denmark, where he found a great amount of glycogen granules distributed in cytoplasm of smooth muscle cells of intima layer. In PGDM group, significant strong reaction of PGs and GAGs was observed

in the tissue sections. Whereas in GDM group, significant variations of PGs and GAGs reaction varied between moderate and strong among tissue segments. A study achieved by Galewska *et al*. (2008)[23], in Poland, they found that an accumulation of PGs and GAGs molecules may be attributed to increase biosynthesis of those molecules which affects the biological process of UC and the solubility of collagen fibers. It suggested that an accumulation of such molecules may be enhanced by several growth factors mainly insulin-like growth factor.

CONCLUSION

Histopatological changes revealed that diabetic pregnancy had a higher significant effects on PGDM than GDM, particularly in the segments taken from central attachments, this may be attributed to UC hypoxia due to excessive UC coiling at central segment as result of increased contents and density of the WJ.

RECOMMENDATIONS

Evaluate the effects of various pharmacologic agents of DM on the maternal and UC to identify which drug can maintain normal histological structure of UC and improve fetal blood flow.

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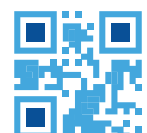
Impact of Maternal Diabetes Mellitus on Early Morbidity and Mortality of Preterm Babies at Al Jala Maternity and Gynecology Hospital, Neonatal Intensive Care Unit (Tripoli, Libya)

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ABSTRACT

Studying burden of maternal diabetes mellitus on preterm babies is an important step to improve outcomes of these babies. The study was designed to compare morbidity and mortality in preterm babies (28-36 wks) born to `mothers with and without diabetes mellitus (DM).

An analytical cross-sectional study was conducted at Al Jala Maternity Hospital, Neonatal Intensive Care Unit (NICU) department; all preterm babies with gestational age (GA) (28-36 wks) were enrolled in the study, from January 1st 2016 to December 31st 2016. The study sample was divided to two groups according to maternal health; preterm infant of diabetic mother (IDM) and preterm non-IDM. The information retrieved and analyzed were; sex, gestational age, birth weight, mode of delivery (MOD), Apgar score at 1st and 5th minute, hypoglycemia, respiratory illness, hyperbilirubinemia, sepsis, major congenital anomalies , length of stay (LOS), and neonatal death. Collected data coded and SPSS software was used for analysis.

A total of 378 preterm babies were enrolled in the study period divided into: preterm IDM group 79(20.9%) babies and preterm non-IDM group 299(79.1%) babies. The preterm IDM group had significant high frequency of large for gestational age (LGA) and unexpectedly significantly low frequency in respiratory diseases (P= 0.047), perinatal asphyxia (P=0.021) and neonatal mortality (P=0.007); and no statistical significant difference in rate of hyperbilirubinemia (P= 0.145), congenital anomalies (P= 0.187) and sepsis (P= 0.468).

Preterm babies born to diabetic mothers do not appear to be at an excess risk of mortality or early morbidity, except for birth weight for which diabetic mothers need more antenatal care.

Key words- Neonatal; Morbidity; Mortality; Prematurity; Diabetes.

INTRODUCTION

Preterm birth, defined as childbirth occurring at less than 37 completed weeks or 259 days of gestation, which is a major determinant of neonatal mortality and morbidity.[1] More than 80% of preterm births occur between 30-37 weeks of gestation, and most of these babies can survive with essential newborn care. These babies will have health problems and may need to stay in the hospital longer than term babies. The severity of complications associated with prematurity is proportional to the gestational age. Preterm birth rates have been reported to range from 5% to 11.6% of live births.[2] A number of maternal illnesses, conditions, and medical treatments are associated with indicated or spontaneous preterm birth.[3] Maternal diabetes mellitus is one of the high risk pregnancies that causes prematurity. It is one of the commonest and important metabolic disorders that affect the health of pregnant women and infants.[4] Diabetes mellitus (DM) can occur during pregnancy in 2 forms: pre-gestational and gestational diabetes. Pre-gestational diabetes is defined as Type I or Type II DM that existed before conception. Gestational diabetes (GDM) is defined as glucose intolerance that is first detected during the pregnancy and is associated with a probable resolution after the end of the pregnancy.[3]

Approximately 2-3% of pregnancies are affected by diabetes, 90% of these cases represent GDM.[5] Infants of diabetic mothers are prone to a number of immediate and short term neonatal complications when compared to the babies born to normal mothers. Many studies in different countries have emphasized the significant neonatal morbidities associated with diabetic pregnancies, hence this study aimed to compare morbidity and mortality in preterm babies (28-36 week gestational age (GA) born to women with and without diabetes mellitus (DM).

MATERIALS AND METHODS

An analytical cross-sectional study was carried out at Al jala maternity hospital NICU, conducted from January 1st 2016 to December 31st 2016. Al jala maternity hospital is a governmental specialized tertiary university hospital that provides maternity and NICU services in Tripoli, in addition to high percentage of referral of high risk pregnancies from other peripheral hospital and clinics. All born alive preterm
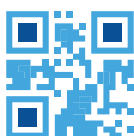
medical records with GA between 28-36 weeks were enrolled and reviewed in the study period (n=378). Best estimate of GA was based on last menstrual period, early prenatal ultrasound examination or the modified Bellard score. The study sample was divided to two groups for comparison according to maternal health; i.e. mothers with and without diabetes (either gestation or pre-gestational) preterm IDM and preterm non-IDM groups. The information retrieved and analyzed were sex, gestational age, birth weight, MOD, newborn complications: Apgar score at 1st and 5th minute, hypoglycemia, respiratory illness, hyperbilirubinemia, sepsis, major congenital anomalies, length of stay (LOS), and neonatal death. Hypoglycemia (defined as serum glucose levels <45mgldl), large for gestational age (LGA), and small for gestational age (SGA) (birth weights above the 90th percentile and below the 10th percentile, respectively). Collected data was coded and SPSS software version 25 for analysis was used. Frequencies and percentages were obtained for all variables. Chi square test was used and a P value < 0.05 considered significance. Data collection tool was anonymous, and data confidentiality was maintained throughout the study.

RESULTS

A total of 10464 alive baby was born in the study period at Al jala hospital, 2692 newborn were admitted to the NICU of whom 378 (3.6%) were preterm babies with gestational age between 28-36 weeks. This study sample was divided into two groups: preterm babies born to diabetic mothers 79 (20.9%) preterm babies born to non-diabetic mothers 299 (79.1%).

The study revealed non-significant difference between both groups regarding gender of neonate, but there were a significant difference between both groups in GA (P=0.001), birth weight (P=0.001) and MOD (P=0.001). GA distribution in the study sample showed that most preterm in the IDM group were late preterm 65(82.3%) compared to 65(55.2%) in the preterm non IDM (Table1).

Table 1: Demographic characteristics of preterm neonate in NICU at Al Jala Hospital

Characteristics	Preterm (IDM) N=79	Preterm (Non IDM) N= 992	P value
Sex			
Male	44(55.7٪)	176(58.9%)	0.612
Female	35(44.3%)	123(41.1 %)	
GA			
28-<32	7(8.9%)	73 (24.4%)	0.001
32-<34	7(8.9%)	61 (20.4%)	
34-<37	165(82.2%)	165 (55.2%)	
Birth weight			
>4 kg	13(16.5%)	3(1%)	0.001
2.5 - < 4 kg	46(58.2%)	110(36.8%)	
1.5 - <2.5kg	17(21.5%)	138(46.2%)	
1 - 1.5kg	2(2.5%)	35(11.7%)	
<1kg	1(1.3%)	13(4.3 %%)	
MOD			0.001
Vaginal	16(20.3%)	136(45.5%)	
Em C/S*	52(62.8%)	51(50.5%)	
El C/S**	11(13.9%)	12(4.%)	

*Em C/S: Emergency cesarean section, **El C/S: Elective cesarean section

Present study showed that severe perinatal asphyxia was seen more frequently in the non DM group than in preterm DM group 15% and 3.8% respectively (P<0.02). LGA was seen significantly more in the preterm IDM group while SGA was similar in both groups. Major congenital anomaly frequency was found more in the preterm non IDM but was not significantly different (P=0.19) (Table 2).

Table 2: Neonatal morbidity and outcome at NICU in Al Jala Hospital.

Character	Preterm IDM	Preterm Non-DM	P value
Apgar 1			
>7	59(74.7%)	78(59.5%)	0.001
4-7	11(13.9%)	50(16.7%)	
<3	6 (7.6%)	38(12.7%)	
Not attended*	3 (3.8%)	33(11%)	
Apgar 5			
>7	71(89.9%)	222(74.3%)	
4-7	5 (6.3%)	33 (11%)	0.021
<3	0 (0%)	11 (3.7%)	
Not attended*	3 (3.8%)	33 (11%)	
Hypoglycaemia	12(15.2%)	30(10%)	0.195
Hyperbilirubineamia	19(24.1%)	77(25.8%)	0.145
RD	29(36.7%)	155(51.8%)	0.047
Birth weight			
LGA	30(38%)	23(7.7)	0.001
SGA	12(15.2%)	49(16.4%)	
AGA	37(46.8%)	227(75.9%)	
Sepsis	8(10.1%)	34(11.4%)	0.468
Major congenital anomalies	4(5.1 %)	27(9%)	0.187
Length of stay:			
1day	27(34.2%)	85(28.4%)	0.606
2-7days	38(48.1%)	139(46.5%)	
8-28 days >28 day	12(15.2%)	63(21.1%)	
>28 day	2(2.5%)	12 (4%)	
Neonatal Death	5(6.3%)	57(19.1%)	0.007

*Delivery was not attended by pediatrician

Respiratory illness is a well-known morbidity of prematurity as well as with IDM. Studying the respiratory morbidity in the two groups showed significant difference. Unexpectedly the preterm IDM group were less affected 36.7% than the preterm non-IDM group 51.9% (P =0.047). Analyzing the respiratory disease according to GA revealed that only 5(7.5%) of the very preterm IDM had RD, while the majority of the RD in very preterm babies 62(92.5%) were among preterm non-IDM group (P=0.015) (Table 3).

Impact of Maternal Diabetes Mellitus on Early Morbidity and Mortality of Preterm Babies at ...

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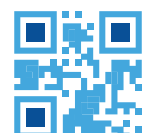
Table 3: Distribution of respiratory morbidity according to gestational age among both groups.

Gestational age	Preterm IDM	Preterm Non IDM	*P* value
Very preterm	5(7.5%)	62(92.5%)	
Moderate preterm	4 (11.4%)	31(88.6%)	0.015
Late preterm	20 (24.1%)	62 (57.9%)	

DISCUSSION

As far as the knowledge of the author, this is the first study in Libya conducted to compare the significant morbidity and mortality in preterm babies born to diabetic and non-diabetic mothers. The frequency of cesarean section in the study sample was 203(53.7%), this is lower than that in Salima *et al*, study conducted in Misurata were the rate was very high 78.9%.[6] The study reported that the frequency of spontaneous vaginal birth was lower in the preterm IDM group compared to non-IDM 20.3% to 45.5% respectively. EM C/S was seen in 62.8% of the preterm IDM and this finding was similar to Mannan *et al* and Qadir *et al* studies with C/S rate 58 %.[7,8] while Woon *et al* study reported a lower caesarean section rate 41.8 %.[9]

As expected the preterm IDM group had higher rate of LGA 30 (38%) than in preterm non-IDM group 23(7.7%) with a significance difference (*P*=0.001). This was higher than what was in the study conducted by Carlos Grandi *et al*[10], but similar to Thomas *et al* study where the overall LGA rate was (35.0%).[11] Overall low Apgar score at 5 minutes was seen in 13% of the babies in the study sample but severe birth asphyxia with low Apgar score (<3) was seen only in preterm non-IDM babies, as preterm IDM group had no severe perinatal asphyxia) (*P*<0.021). Only 5(6.3%) had low Apgar in the current study; which is lower than Salima *et al* study of 13.3% and many other studies where the rate exceeded 15%.[6,12,13] The frequency of hypoglycemia in the study sample was 42(11.1%). There was no statistical significant difference between the 2 groups (*P*>0.195). However, contradicted finding was demonstrated in Deorari *et al*, Ranade *et al* studies.[14,15]

A retrospective study by Yamamoto *et al* indicated that in women with type 1 diabetes mellitus, LGA newborns have a 2.5-fold increased risk for hypoglycemia.[16] The current study demonstrated that 75% of the LGA preterm in the IDM group were hypoglycemic compared to 10% in the non IDM group and this was statistically significant (*P*= 0.006). Studying the respiratory morbidity in the two groups showed significant difference. Unexpectedly the preterm of IDM group were less affected 36.7% than the preterm of non -IDM group 51.9% (*P* =0.047). This was different from Saudian study that was conducted by Lasheen *et al*, where the respiratory morbidity was significantly more in IDM group 70.1%.[17] Becerra *et al* and Abdelmoneim *et al* studies found frequency of congenital malformation among the IDM 7.9% and 6% respectively[18,19], this is similar to the current study results which was less in preterm IDM group 4(5.1%) group than

in preterm non-IDM. The result was markedly different than Salima *et al*, where the rate was 26.7%.[8] Prematurity complications expose the babies to prolonged hospital stay. Unexpectedly, the result showed that maternal DM did not affect the length of stay of the preterm babies and there was no statistical difference in the two groups (*P* = 0.606). Most of the babies in the 2 groups stayed between 2-7 days. It was observed that more preterm babies in the IDM group 34.18% left hospital early in the 1st day and very prolonged hospital stay was seen more in preterm non-IDM babies for up to 60 day hospitalization. Although IDM babies have high risk for neonatal mortality, the current study demonstrated that the risk of mortality was not increased in preterm infants born to diabetic mothers 5(6.3%) compared to non IDM 57(19.1%) (*P*= 0.007). This result is similar to Carlos Grandia *et al* study that showed statistical significant less mortality rate in the preterm IDM group.[10]

CONCLUSION

The study revealed that preterm IDM babies have less frequency of perinatal asphyxia, respiratory illness and death, but higher frequency of babies with hypoglycemia and LGA babies. This decrease in the overall morbidity in preterm IDM group highlights the importance of close monitor of the pregnant diabetic mother in the antenatal clinic. Better facilities and good qualified midwives should be encouraged for NICU work for better neonatal outcome.

ACKNOWLEDGMENT

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Frequency and Risk Factors of Cardiac Autonomic Neuropathy in Patients with Diabetes Mellitus Tripoli- Libya (2018)

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ABSTRACT

Cardiac autonomic neuropathy (CAN) is a frequent chronic complication of diabetes mellitus (DM) with potentially life-threatening outcomes, although there are available simple bedside tests for diagnosis, it is often overlooked.

The study aimed to determine frequency and risk factors of CAN in patients with DM attended diabetes out-patients clinic at Tripoli diabetic hospital.

A descriptive prospective study include one hundred diabetic patients attended diabetes out-patients clinic from October 2017 till April 2018, were assessed by the autonomic function tests. CAN was assessed by analyzing heart rate (HR) variations during resting and deep breathing. Sympathetic functions were assessed by checking orthostatic hypotension. ECG (in deep breathing) was done. Trans-thoracic echocardiography, stressing on left ventricular hyper trophy (LVH), and systolic functions were carried out. Data analysis was done by SPSS program version 16.

A total of 100 patients included in the study, female were 53%, mean age was 51.96±1.46, CAN was detected in 63% of studied cases, diabetics with CAN were significantly associated with longer duration of DM (P-value = 0.016), uncontrolled hypertension (P- value =0.004) , high fasting lipid profile (P -value =0.005), and presence of other diabetes microangiopathy (P-value =0.003)**.**

CAN was more common with prolonged duration of DM, uncontrolled hypertension, dyslipidemia and presence of other micro-vascular complication of DM

 Identification of CAN is crucial because it can lead to severe morbidity and mortality and increase risk of sudden cardiac death.

INTRODUCTION

Diabetes mellitus (DM) is a global health epidemic. Cardiovascular disease (CVD) is the leading cause of mortality and morbidity in patients with DM.[1,2] Cardiac autonomic neuropathy (CAN) is a common under-diagnosed complication of DM.[3] The impact of CAN on patients with DM can be distressing, with CAN revealed to be related with increased mortality, CVD, chronic kidney disease (CKD), and morbidity of DM[4] CAN has several risk factors that are common to other diabetes-related vascular complications, such as diabetes duration, poor glycemic control, and CVD risk factors, including obesity, smoking, hypertension, hyperlipidemia and presence of other micro-vascular complications, have all been associated with CAN development.[5,6]

Based on the CAN subcommittee of the Toronto Consensus Panel on Diabetic Neuropathy[7] and the American Diabetes Association (ADA)[8], CAN is defined as the impairment of cardiovascular autonomic control in patients with DM following the exclusion of other causes. Cardiovascular autonomic reflex tests (CARTs) are usually used for CAN diagnosis and staging.[7]

For Ewing test, Valsalva index, E/I and 30s/50s mainly represent the parasympathetic functions, while the difference between blood pressure responses to standing and supine position can assess the sympathetic functions.[7,8]

The aim of this study was to determine prevalence and risk factors of CAN in Libyan patients with DM attending diabetic clinic from October 2017 to April 2018.

MATERIALS AND METHODS

A descriptive prospective study included 100 patients with DM, attended diabetes out-patients clinic from October 2017 to April 2018 at Tripoli diabetic hospital. Type of DM classified into type 1, type 2 DM based on clinical assessment (Auto-antibodies not available). A special performa was completed for every patient after verbal consent taken, which included details on gender, body mass index (BMI), age, duration of diabetes, history of smoking, mode of anti-hyperglycemic treatment, history of dyslipidemia, any micro-vascular complication of DM and investigation results of HBA1C, low density of lipoprotein (LDL), high density lipoprotein(HDL), Triglycerides (TGA), were included.

Clinical examination, with stress on heart rate, systolic blood pressure (SBP), diastolic blood pressure (DBP), pulse pressure were undertaken. Testing of autonomic parasympathetic dysfunction was assessed by HRV testing of Ewing's methodology 1980[7,8] (heart rate ECG RR intervals on resting, and deep respiration). Heart rate variability was calculated from the RR interval using short continuous ECG recording. Heart rate response to the Valsalva maneuver was omitted from testing in our patients because it can induce Valsalva retinopathy.[9]

Testing for sympathetic dysfunction by postural hypotension in supine and after standing for 3 min was undertaken with the standard mercury sphygmomanometer. The measurement in the supine position was taken after at least 15 min of rest and measurement in standing position was taken at the third minute of standing. Trans-thoracic echocardiography (vivid7GE) used for assessing systolic function of the patients, detecting ischemic changes and measuring the left ventricular thickening (inter-ventricular septum, posterior wall), the echocardiography protocol based on the recommendation and guidelines of the American Society of Echocardiography.[10]

The frequency and the risk factors of CAN were assessed according to the autonomic function tests of Ewing's methodology.

Exclusion criteria:

Systemic illness that can affect the study results or the autonomic functions as congestive heart failure (CHF), coronary artery disease (CAD), arrhythmia, thyroid dysfunction, concomitant treatment with adrenergic antagonists that can affect the results of autonomic function tests, were excluded.

Statistical analysis:

Analysis was performed by using the statistical package for social science program (SPSS) version 16. The data were presented as frequency and percentages, with application of Chi square tests and significance was considered when P value was less than 0.05.

RESULTS

In present study, 100 patients with DM were included, 53% of them were female, their age ranged from 20 to 70years (mean 51.96 ± 1.46years), 79% were from Tripoli, and 54% were employers. Non -smokers were 70% (Table 1).

Type 2 DM were presented in 84% of cases, 29% were on oral hypoglycemic agents, 27% of cases were under combined insulin and OHD, and 44% were on insulin only. There was 15% newly diagnosed (< 1 year), and about 42% of them were more than 10 years. BMI were normal (18.5-24.5) in 34% of cases, 43% were overweight (BMI=25-29.5%), 17% were obese (BMI=30-39.5%), and 6% with morbid obesity (BMI≥40%). Blood pressure was measured for every patients after 15min rest, controlled (≤130/80 (either not hypertensive or controlled with treatment) in 32% of cases (Table 2).

Their HBA1c was on target only (<7%) among 10% of cases, diabetic micro-vascular complications were present in 54% of cases. Normal lipid profile was normal in 18% of cases (Table 3).

The frequency of CAN as assessed by Ewing's tests, signs of autonomic neuropathy including HRV tests E/I ratio (expiration to inspiration) standing to lying flat, was 63%. Diabetics with CAN were significantly associated with longer duration of DM (P-value =0.016), un-controlled

hypertension (P- value=0.004), high fasting lipid profile (P-value =0.005), and presence of other diabetes micro-angio-pathy (P-value =0.003) (Table 4).

Table 1: Socio- demographic characteristics of patients at Tripoli Diabetes Hospital, 2018**.**

Character	No (%)
Sex:	
Female	53 (53%)
Male	47 (47%)
Age in years	
≤30 years	9 (9%)
31-50	٣7 (37%)
51-65	40 (40%)
>65	14 (14%)
Address	
Tripoli	79(78%)
Outside Tripoli	21(22%)
Occupation	
Employer	54(54%)
Non	46(46%)
Smoking	
Non-smoker	70(70%)
Active smoker	19(19%)
Passive Smoker	4(4%)
Ex- smoker	7(7%)

Table 2: Clinical characteristics of patients at Tripoli Diabetes Hospital, 2018.

Character	No. (%)
BMI	
Normal	34 (34%)
Overweight	43 (43%)
Obese	18 (18%)
Morbid obesity	5 (5%)
Type of DM	
Type1	15 (15%)
Type2	85 (85%)
Duration of DM	
≤ 1year	15 (15%)
2-9 years	43 (43%)
≥ 10 years	42(42%)
Hypertension	
Controlled	32(32%)
Un-controlled	68 (68%)
Treatment	
Oral hypoglycemic drugs	29(29%)
Combined	27(27%)
Insulin	44(44%)
Diabetes micro-angiopathy	
Presence	58(58%)
Absent	42(42%)
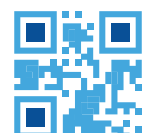
Table 3: Chemical profile of patient's character at Tripoli Diabetes Hospital, 2018.

Investigation	No. (%)
HbA1c	
7-٦,٥%	10(10%)
>7-8%	32(32%)
>8%	38(38%)
Unknown	20(20%)
Fasting lipid profile	
Normal	18(18%)
Abnormal	49(49%)
On treatment	18(18%)
Unknown	15(15%)

Table 4: Distribution of the patients character according to Ewing's tests for CAN diagnosis at Tripoli Diabetes Hospital, 2018.

Factor	Absent CAN	Present CAN	P value
Sex :			
Female	23	30	0.102
Male	14	33	
Age:			
≤30 years	2	7	
31-50	12	25	0.452
51-65	15	25	
≥65	8	6	
Smoking:			
Non	30	40	
Active	5	14	0.531
Passive	1	3	
Ex	1	6	
Duration			
≤1 year	9	6	
2-9	18	25	0.016
≥10	10	32	
BMI:			
Normal	11	23	
Overweight	15	28	0.337
Obese	8	10	
Morbid obesity	3	2	
Hypertension			
Controlled	18		0.004
Un-controlled	19	14	
		49	
HBA1c			
7-٦,٥%	5	5	
>7-8%	11	21	0.582
>8%	12	26	
Fasting Lipid Profile			
Normal	12	6	0.005
Abnormal	12	37	
On treatment	7	11	
Type of DM	2	13	
Type1Type2	35	50	0.120
Diabetes Micro-angiopathy			
Present	12	3	0.003
Absent	25	60	

DISCUSSION

It was aimed in the present study to determine the frequency and identify risk factors of CAN in patients with DM who attended diabetes out-patient clinic at Tripoli diabetes hospital.

The prevalence of CAN in the present study was (63%), in comparison with other studies, it was ranged from as low as 2.5% (DCCT)[11] to as high as 90% in long standing DM and in 69% of treatment induced neuropathy.[11] The prevalence of Cardiac autonomic Neuropathy CAN vary depended on patients anticipated, the investigative technique used and disease stage.[12,13]

In lamer et al study, cardiac autonomic neuropathy was present in (37.0%)[14], while in Mendivil et al study was 68%[15] and It was higher than that of Zeigler et al[16] 34.3% .

There was a strong association with presence of CAN and prolonged diabetes duration (*P*-value =0.016 , in newly diagnosed (< 1 year) CAN was present in (6 out of 9=40%) 6%, but after 10 years it was 32% (32 out of 42 =76%) .

The duration of DM is an independent factor for emergent CAN irrespective of diabetes type.[16] CAN is discovered in about 7% of patients with DM type 1 or 2 at presentation, and it is expected that the risk rises annually by about 6% and 2% in patients with DM type 1 and 2, respectively.[17] The prevalence of CAN increased from 9% at the close of the DCCT study to 31% 1 year afterward, Uncontrolled DM is a major risk for CAN progression. In the Diabetes Control and Complication Trial (DCCT), intensive blood sugar control resulted in 50% drop in CAN rate over the 6.5 years, other trials directing hypertension, smoking, obesity, and dys-lipidemia furthermore reduced the rate of CAN. The effect of sex on CAN is controversial.[6]

Also, the frequency of CAN increased from 19.8% in patients with pre-diabetes to 32.2% in patients newly diagnosed with T2DM,[18] with higher prevalence reported in patients with T2DM and longer diabetes duration.[16] The rate of CAN is frequently described to be greater in T2DM compared to T1DM, in spite of the longer diabetes duration in patients with T1DM; probably an indication of patients with T2DM frequently being older and more prone to have additional CVD risk factors for CAN than patients with T1DM. The EURODIAB IDDM complications study did not show differences in CAN rate between male (35%) and female (37%)[19] similar to present study. In present study the number of patients with CAN in controlled blood pressure group (either not hypertensive or controlled with treatment) were 14% (14 out of 32=43%),where as it was 49% (49 out of 68=72%) in uncontrolled blood pressure group, presence of CAN had a significant association with uncontrolled blood pressure (*P* value =0.004). A cross-sectional study of 2,230 participants with T2DM also showed that CAN patients had a higher prevalence of hypertension *vs* patients without CAN.[20]

The present study showed insignificant association between presence of CAN and Body Mass Index, but in other studies showed that CAN was independently

associated with obesity (*P*=0.034) and that specifically in T2DM there was higher prevalence of CAN in obese patients (*P*=0.033).[21] Other study suggested that central obesity was associated with CAN, along with age, postprandial glycemia, and diastolic blood pressure (DBP).[18]

Kodama et al.,[22] in a meta-analysis study described the association of pulse pressure as a cardiovascular risk in DM. Makimattila et al.[23] found that poor glycemic control was the most important independent predictor of decrease in all measures of absolute power of HRV.

In present study the number of cases with CAN is increased at higher HBA1c (7% i.e. 5 out of 63, when HBA1c was $\leq$ 7g% versus 41% 26 out of 63 at HBA1c $\geq$ 8g%. Dyslipidemia (high LDL-cholesterol± increased TGA) shown a significant association (*P* value=0.005)).

The current study showed that, there was a significant association between presence of both CAN and other micro-vascular complication (*P* value was 0.003), the number of patients with both complications was 3% (3 out of 15 =20%), whereas the number of patients with CAN and no micro-vascular complication were 60% (60 out of 85=70%). Similar results were found in the EURODIAB,[12] study that the presence of retinopathy and albuminuria was associated with CAN. Current findings are in agreement with those of Voulgari et al.[24] who mentioned that in type 2 DM patients, CAN has been independently associated with elevated BP, hyperglycemia, longer diabetes duration, dyslipidemia and the presence of microvascular complications.

CONCLUSIONS

CAN is a frequent chronic complication of DM with potentially life-threatening outcomes. Although there are available simple bedside tests for diagnosis of CAN, it is often overlooked. CAN was more common with prolonged duration of DM, uncontrolled hypertension, dyslipidemia and presence of other micro-vascular complication of DM.

RECOMMENDATIONS

Screening for CAN should be performed at the diagnosis of type 2 diabetes and 5 years after the diagnosis of type 1 diabetes, particularly in patients at greater risk of CAN due to a history of poor glycemic control, cardiovascular risk factors, DPN, and macro- and micro-angiopathic diabetic complications.Intensive diabetes therapy, intensive multi-factorial cardiovascular risk reduction and lifestyle intervention are recommended in patients with CAN.

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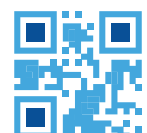
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Factors Associated with The Success of Trial of Labor after One Previous One Cesarean Delivery at Baniwalid Hospital, 2016

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ABSTRACT

As a result of improvements in obstetric care, it is now relatively safe for an attempt at vaginal birth after Cesarean section (VBAC) and recommended as a method to reduce the rate of Cesarean deliveries (CD) and subsequent maternal and neonatal morbidity.

The study was cross sectional type, conducted in Bani-Walid General Hospital, from 1st of January to 31st of December 2016; included 364 women who had one previous cesarean section and went for trial of vaginal delivery. A structured case sheet was designed to collect the following data: age, gravidity, parity, abortion, gestational age, mode of current delivery, indication of current CS and neonatal outcome. Data analyzed by SPSS program version 21.

Out of 364 women studied, 139 (38.2%) were attempted VBAC and 225 (61.8%) were underwent cesarean section. The most common indication for current cesarean section was dystocia (36%) followed by fetal distress (21.8%) then mal-presentation (8.9%). There was significant difference among the women who had VBAC and those women who underwent CS in their age, gravidity, parity, and cervical dilatation >4cm, P value were 0,047, 0.0001, 0.01, and 0.0001 respectively. The other characteristics (abortion, gestational age at delivery, and gender and birth weight of neonate) of the women did not show any significant difference.

Patients without any contraindication to vaginal delivery, trail of labor after cesarean is a safe option. In this study, successful VBAC was associated with the age of the patients, the past obstetric history, cervical dilatation, and history of previous vaginal delivery.

Keywords- *Cesareansection; Vaginal birth; Trial of labour; Baniwalid.*

INTRODUCTION

According to the World Health Organization (WHO) in 2015, the rate of caesarean section among women with previous CS ranged between 78.1 and 79.4% in high-income countries, 85.2 and 87.5% in middle-income countries and 63.2 and 72.1% in low-income countries.[1] Women undergoing cesarean section have a higher morbidity and mortality rate than those having vaginal birth, such as massive postpartum hemorrhage, need for blood transfusion, anesthesia-associated complications, surgical risks (intestinal obstruction, wound dehiscence, wound scars, infection, etc.), and obstetric complications in subsequent pregnancies.[2] Vaginal birth after Cesarean section (VBAC) is associated with decreased maternal morbidity and a decreased risk of complications in future pregnancies as well as a decrease in the overall cesarean delivery rate at the population level, it is more affordable, shorter maternal hospitalizations, and encourages earlier and better bonding between mother and infant.[3-6]
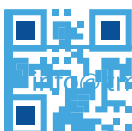
A 60 to 80% success rate of vaginal birth after previous caesarean section has been reported by many authors if the primary caesarean was done for nonrecurring indications.[5,6] However, trial of labour after cesarean (TOLAC) after Cesarean delivery is not without risk; including endometritis, blood transfusion and, uterine rupture.[7,8]

Uterine rupture is less common (0.2-0.8%), factors that potentially increase the risk of uterine rupture include short inter-delivery interval (less than 12 months since last delivery), post-date pregnancy, maternal age of 40 years or more, and obesity, but such a risk can be prevented by close observation and adhering to the standard guideline. Overall, morbidity and mortality rates secondary to TOLAC are less than those of repeated cesarean sections.[2,9,10]

According to the American College of Obstetricians and Gynecologists (ACOG), most women with one previous cesarean delivery and a low-transverse incision are candidates of TOLAC and should be counseled about TOLAC and offered a trial of labor.[2]

In an attempt to reduce the rising CS rate and its complications, this study was conducted to determine the factors associated with success of vaginal birth in women who had previous cesarean section at Bani-Walid General Hospital during the year 2016.

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MATERALS AND METHODS

A cross sectional study was conducted in Bani-walid general hospital, Bani-Walid, Libya, from 1st of January to 31st of December 2016. Three hundred and sixty four women who had previous one cesarean section and went for trial of vaginal delivery were randomly selected using simple random sample technique from the hospital files. A structured case sheet was designed and used to collect the data from the hospital files. The following data was obtained from the files and from the women: the age, gravidity, parity, abortion, gestational age, cervical dilatation, and mode of current delivery, indication of repeated C/S, and neonatal gender and birth weight. The data were analyzedusing the Statistical Program for Social Sciences (SPSS version 21). Descriptive statistics were used and all results are presented as frequencies, means standard ± deviation and percentages. Categorical data were compared using the Chi-square test and Fisher's exact test if appropriate. Quantitative data were compared using Student T test. A P-value of less than or equal to 0.05was considered statistically significant. Permission from the hospital was obtained and data was anonymous and data confidentiality was maintained throughout the study.

RESULTS

The total number of mothers with one previous caesarean section in the study was 364, out of 364 women studied, 139(38.2%) attempted VBAC and 225(61.8%) were underwent cesarean section. The most common indication for current cesarean section was dystocia (36%) followed by fetal distress (21.8%) then mal-presentation (8.9%), postdate (7.1%) and macrosomia (6.2%) (Table1).

Table 1: Indications of cesarean section in the current pregnancy (Bani-walid hospital, 2016)

Indications of C/S	Frequency %
Dystocia	81 (36%)
Fetal distress	49 (21.8%)
Malpresentation	20 (8.9%)
Post date	16 (7.1%)
Macrosomia	14 (6.2%)
Tender scar	10 (4.4%)
Multiple pregnancy	9 (4%)
Meconium	8 (3.6%)
Preeclampsia	5 (2.2%)
Chorioaminitis	4 (1.8%)
APH	2 (0.9%)
Others	7 (3.1%)
Total	225

The results showed that the mean age for patients who had successful vaginal delivery was 30.9 years while the mean age of patients who underwent cesarean delivery was 29.8 years. The highest percentage of the patients in the both groups was between 30 and 39 years (64.7% for patients who succeed and 48% for patients who failed). The result was statistically significant ($P = 0.047$) (Table 2).

Table 2: Distribution of the cases according to mode of delivery by age group.

Age by years	Vaginal delivery	C/S	Total
20 - 29	46 (33.1%)	104 (46.2%)	150 (41.2%)
30 - 39	90 (64.7%)	108 (48%)	198 (54.4%)
≥ 40	3 (2.2%)	13 (5.8%)	16 (4.4%)
Total	139 (100%)	225 (100%)	364 (100%)

In respect to gravidity and parity, there were significant differences between VBAC and CD groups ($P = 0.0001, 0.01$) respectively. No significant differences were determined between both groups regarding history of abortion and gestational age. The percentage of patients who had cervical dilatation more than 4cm was higher in the VBAC group (36.7%) than the CD group (12%) ($P = 0.0001$) (Table 3).

Table 3: Characteristics of women underwent a trial of labor or an elective cesarean section after a prior one cesarean delivery.

Characteristic	Vaginal delivery	Cesarean section	P value
Gravidity 2 – 4 5 – 7 >7	95 (68.8%) 40 (28.73%) 4 (2.9%)	189 (84.8%) 26 (11.7%) 8 (3.6%)	0.0001
Parity 1 – 3 4 – 6 >6	106 (76.2%) 30 (21.7%) 3 (2.2%)	203 (90.1%) 17 (7.6%) 5 (2.2%)	0.01
Abortion No Yes	103 (74.1%) 36 (25.9%)	159 (70.7%) 66 (29.3%)	0.478
Gestational age Preterm Term Post date	4 (2.9%) 112 (80.6%) 23 (16.5%)	11 (4.9%) 176 (78.2%) 38 (16.9%)	0.635
Cervical dilatation ≤ 4 cm >4 cm	88 (63.3%) 51 (36.7%)	198 (88%) 27 (12%)	0.0001

The relation between previous vaginal delivery and the

current mode of delivery was statistically significant in this study. The result showed that 49.6% of the patients with successful vaginal delivery had previous vaginal delivery and about 24.4% of the patients who failed to have vaginal delivery had previous history (Figure 1).
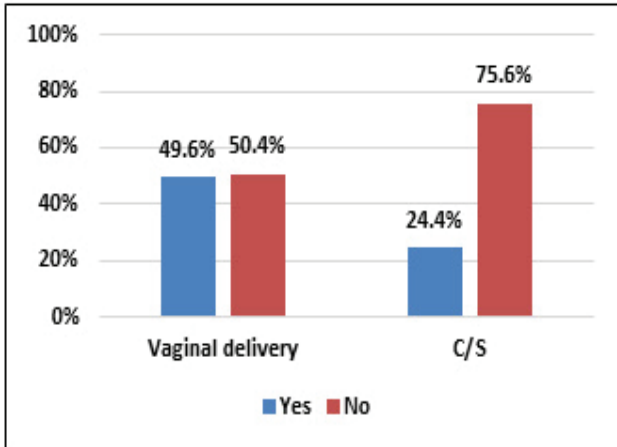
Figure 1: Distribution of cases according to previous vaginal delivery and current mode of delivery (Bani-Walid Hospital, 2016).

The relation between the last cesarean section and the current delivery was statistically insignificant (*P* = 0.44). About 43.2% of the successful group and 39.1% of the failed group had interval more than 2 years (Figure 2).
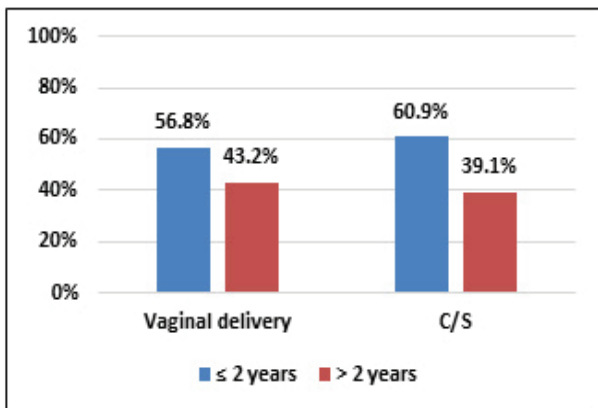
Figure 2: Inter delivery interval and current mode of delivery (Bani-Walid General Hospital, 2016).

Regarding the sex of the neonate, the percentage of males was higher in the CD group (54.6%) than in the VBAC group (46%) while the percentage of females was higher in the success group (54%) (Table 4).

With regard to the birth weight, most of the neonates in both groups had normal weight (80.6% of the VBAC group and 87.9% of the other group). The percentage of low birth weight was 9.3% of the success group and 2.3% of the CD group, on the other hand the percentage of macrosomia was 10.1% of the success group and 9.8% of the CD group (Table 4).

Table 4: Distribution of newborn by gender and birth weight according to type of delivery.

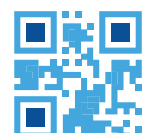| Characteristic	Vaginal delivery	C/S	*P* value
Gender			
Male	64 (46%)	123 (54.6%)	0.316
Female	75 (54%)	102 (45.4%)	
Birth weight			
Low birth weight	13 (9.3%)	5 (2.3%)	0.737
Normal weight	112 (80.6%)	197 (87.9%)	
Macrosomia	14 (10.1%)	22 (9.8%)	

DISCUSSION

The result of the current study showed that the success rate of vaginal delivery after cesarean section was 38.2%. A previous study in Libya reported that the success rate of vaginal delivery after cesarean section was 50.9% which is higher than the current study.[11] Similar result was reported by Rahman R study in which the rate of success of vaginal delivery after cesarean section was 32.1%.[12] Regarding the age the current study showed that patients who had successful vaginal delivery have mean age higher than those who have cesarean delivery and the result was statistically significant. Similar finding was reported by Devkare et al in India in which the age of the patients who had successful vaginal delivery is higher than those who failed to have vaginal delivery.[13] The present study showed no significant difference between both group regarding gestational age, while in a study conducted by Abdelazim et al, reported mean gestational age was significantly lower in the successful TOLAC group compared to the unsuccessful group (37.5±0.04 versus 38.5±0.03 weeks), and the number of women admitted in labor with gestation ≥40 weeks was significantly high in the unsuccessful group.[14]

With regards to the obstetric history in current study, the mean gravidity and the mean parity of the patients who had successful vaginal delivery were higher than patients who had cesarean delivery. A study conducted by Obiedat et al in Jordan, reported that the parity of ≥ 2 has a higher likelihood of successful VBAC.[15]

In this study, previous history of vaginal delivery was a significant factor associated with the increase rate of success of the trial, similar results were reported by other studies.[11] Women with a vaginal delivery after their prior cesarean were three to seven times more likely to have a VBAC for their current delivery, compared with women with no prior vaginal deliveries.[16]

The present study showed that the longer the inter delivery interval> 2 years, the higher the success rate of VBAC. This finding is supported by Zaitoun et al study which reported that, women in the VBAC group were more likely to have longer spacing period (≥ 18 months) between their previous CS and their present pregnancy compared to those in the in the CD group.[17] With regard to the fetal factors, the current study showed no significant factor that affect the success rate of the vaginal delivery after the cesarean

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section. Most of the studies showed the same result in which there was no significant association between fetal factors and the success of VBAC.[11,13,18,19] While other study revealed that as infant weight increases the likelihood of VBAC decreases.[16]

CONCLUSION

In patients without any contraindication to vaginal delivery, TOLAC is a safe option. In this study, successful VBAC was associated with the age of the patients, the past obstetric history, cervical dilatation, and history of previous vaginal delivery.

RECOMMENDATIONS

It is essential to counsel patients with a history of prior CD, ideally during the antenatal period, regarding the benefits and the risks (both maternal and neonatal) of a VBAC, enabling them to make an informed choice early and to reduce caesarean section rate.

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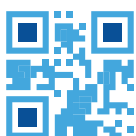
Epidemiological and Clinical Features of Patients with Rheumatic Heart Disease Tripoli Medical Centre Tripoli/Libya 2012 - 2017

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ABSTRACT

Rheumatic heart disease (RHD) remains a major public health problem in developing countries and accounts for a major proportion of all cardiovascular disease in children and young adults in African countries. **Aim:** to study the pattern of valve involvement in RHD and to know the type and prevalence of complications.

Case series study, conducted by reviewing the clinical data of patients with diagnosis of rheumatic heart disease. Information obtained from the records included the age, gender, clinical presentation echocardiographic diagnosis and complications.

A total of 384 medical records were reviewed. There were 91 males and 293 females (ratio 1: 3) and their ages ranged from 20 to 82 (mean 46.7 ± 12) years. Mitral stenosis was the commonest echocardiographic diagnosis present in 210 patients (54.7%). Seventy (18.5%) patients had mixed mitral valve disease, 42 (10.9%) had mixed aortic valve disease; isolated rheumatic mitral valve involvement was more common than isolated rheumatic aortic valve involvement (84.1 % versus 43.7%). Complications of RHD observed in this study included: atrial fibrillation (AF) (24.2%), secondary pulmonary hypertension (PHT) (20.6%), and congestive heart failure (CHF) was seen (8 %) of cases.

The RHD is still an important cause of cardiac morbidity and a large proportion of the patients already had complications at diagnosis. There is a need for multicenter study at national level to discover the real burden of the RHD in our community.

INTRODUCTION

According to WHO data, rheumatic valvular heart disease (VHD) affects about 15.6 million worldwide with 282000 new cases and 233000 deaths each year[1], and out of 500,000 patients with acute rheumatic fever, 300,000 will develop RHD and 233,000 deaths annually due to acute rheumatic fever (ARF) or RHD.[2] Nearly 2 million patients with VHD will need repeated admissions and 1 million require surgical treatments globally.[3] In developing countries, 62-78 million individuals may have RHD with potential deaths above 1.4 million per year from the disease and its complications.[4] RHD is well known to be responsible for many cardiac complication like atrial fibrillation (AF), infective endocarditis and carries a high risk during pregnancy.[5,6] Hence most of the morbidity and mortality due to RHD can be prevented by early diagnosis and management[7,8], like use of anticoagulant in rheumatic AF can reduce thromboembolic complications, and percutaneous or surgical interventions can improve symptoms and prevent congestive heart failure.[9,10] In the Middle East region the prevalence is 5.1 per 1000 in Cairo (Egypt), 2.8 per 1000 in Saudi Arabia, and 3-6 per 1000 in

Tunisia.[11] The use of Echocardiography in the clinical field facilitate the diagnosis of VHD particularly the subclinical cases 10 times more compared to that diagnosed by the cardiac examination alone[12] and result in more accurate assessment of prevalence of VHD.[13]

With the use of Echocardiography in the assessment of the patients the burden of RHD was higher than that measured in 2005 as showed by many studies in Drakensberg Declaration.[14] In 2005, during the first All Africa Workshop on the rheumatic fever and RHD near Drakensberg in South Africa[15] efforts from affected nations in Africa had attend to focus on the researches and screening by echocardiography to discover subclinical RHD and enhancing the management of the patients with RHD and to start establishment of national programs to prevent rheumatic fever and RHD in Africa.[14] Unfortunately, there is no data regarding the extent of RHD and its complication in Libya, hoping that this study will give such data needed to describe the pattern of valve involvement in RHD and to know the type and prevalence of complications and to attract more attention about this health problem.

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MATERIALS AND METHODS

Case series study was conducted by retrospective analysis of medical records of the patients with valvular heart disease who were followed-up at the Valve Clinic. This clinic which started in 2012, is a specialized clinic where a cardiologist and a cardiac surgeon received patients from Tripoli and outside Tripoli, who had either clinical suspicion of the VHD or with a definite diagnosis of VHD. The Valve Clinic is one of the main clinics in the cardiac department at Tripoli Medical Center (TMC), a tertiary health care center and one of the teaching hospitals in Tripoli and is using the 2012 World Heart Federation criteria for echocardiographic diagnosis of rheumatic disease.[17] Out of 454 patients registered in the valve clinic only 384 patients satisfied the criteria for diagnosis of rheumatic heart disease. All patients included in the analysis had complete history including past history of ARF (based on Jones Criteria).[16] All patients advised for regular fellow up at the valve clinic to early pick up of complications. The duration of follow up depend on the diagnosis and severity of the valve lesion according to the ESC and AHA guide lines of valvular heart disease.[9,18,19]

In every follow up visit all patients undergo physical examination and routine investigations (12 lead electrocardiogram ECG and chest X-ray), and assessed regarding onset of complications like: atrial fibrillation, heart failure, Stroke, recurrent ARF, and infective endocarditis. Data was collected in a predesigned case sheet from the medical records of registered patients in the TMC valve clinic between Jan 2012 to Dec 2017 in addition to the other demographic data. A full Trans-thoracic 2–dimensional echocardiography examination performed by the same operator using Vivid 7 GE machine using all available modalities (M–mode, two-dimensional{2D}, color Doppler, continuous wave CW, pulse wave PW Doppler) and observing the echocardiography protocol based on the recommendation and the guidelines of the American Society of Echocardiography.[18] In addition to transthoracic echocardiography, Trans-esophageal echocardiography (TEE) is done to assess the valve anatomy and severity of the valve lesion when the clinical indications arise and subsequently aid in the management of the cases, ECHO examination done in each visit, The severity of the valve lesions were categorized by using AHA and ESC guidelines for the management of VHD.[9,19]

The collected data coded and SPSS software version 21 was used for analysis, mean SD, frequency and percentages were used to describe the data, Chi-squared analyses were used to compare complication differences between males and females and between involved valves.

RESULTS

Medical records of 384 patients with rheumatic heart disease were reviewed; there were no reported cases of acute rheumatic fever registered in Tripoli Medical Centre valve clinic since 2003. The ages of patients in this study ranged between 20 to 82 years with mean age 46.7±12 years. Rheumatic fever is most prevalent (almost half 49%) in patients age range between 36 to 50 years, and least prevalent at the extreme ages, 17.3% and 7.3% for patients age range between 20-35 years and patients older than 65 years respectively. Rheumatic fever (RF) affected more female than male patients, 76.3% of cases were reported in female patients with female to male ratio 3:1. There was no specific pattern related to the geographic distribution of the disease where more than half of the cases reside in the capital Tripoli and 44% reside outside the capital Tripoli. More than half of cases 247 patients (64.3%) were referred from cardiac OPD, while the remaining 137 patients

(35.7%) referred from other medical departments (Table 1).

Table 1: Socio-demographic characteristics of patients with rheumatic heart disease (TMC 2012-2017).

Character	Frequency	Percentage
Age		
20-35	66	17.3
36-50	188	48.95
51-65	102	26.7
>65	28	7.3
Sex		
Female	293	76.3
Male	91	23.8
Residence		
Tripoli	215	55.9
Outside Tripoli	169	44.1
Referring from		
Cardiac OPD	247	64.3
Medical department	137	35.7
Other chronic diseases		
Non	310	80.72
HPT	35	9.1
DM	20	5.2
Thyroid dysfunction	11	2.8
Others	8	2.08

The most frequent presenting symptoms were dyspnoea (77.3%) followed by palpitation 2.1%. Cardiomyopathy seen only in (3%) of patients and (92%) of patients have normal left ventricular ejection fraction > than 50%.

Table 2: Clinical features of patient with rheumatic heart disease N=384 (TMC 2012-2017).

Character	Frequency	Percentage
Clinical presentation		
Accidental	63	**16.4**
Dyspnoea	297	**77.3**
Palpitation	8	**2.1**
Chest pain	2	**0.5**
Syncope	4	**1**
Dyspnoea& palpitation	7	**1.8**
Dizziness	3	**0.8**
No. of valve involved		
1	226	**58.8**
2	150	**39.1**
3	7	**1.8**
4	1	**0.3**
Ejection fraction		
<40	11	**3**
40-49	19	**5**
≥50	354	**92**

The most common rheumatic valvular lesion was Mitral stenosis seen in 54.7% of patients either as isolated lesion or combined with mitral regurgitation MR. Isolated rheumatic mitral valve involvement was more common than isolated

rheumatic aortic valve (84.1% versus 43.7%) (Table 3).

Table 3: Distribution of patient with rheumatic heart disease by severity of valve involved (TMC 2012-2017).

Character	Frequency	Percentage
Mitral valve		
MR mild	27	**7**
MR moderate	21	**5.5**
MR severe	65	**16.9**
MS mild	26	**6.8**
MS moderate	51	**13.3**
MS severe	63	**16.4**
MS & MR	70	**18.2**
No mitral valve involvement	61	**15.9**
Tricuspid valve		
TR mild	30	**7.8**
TR moderate	21	**5.5**
TR severe	14	**3.6**
TS severe	1	**0.3**
No tricuspid valve involvement	318	**82.8**
Aortic valve		
AS mild	10	**2.6**
AS moderate	9	**2.3**
AS severe	23	**6.0**
AR mild	46	**12.0**
AR moderate	20	**5.2**
AR severe	*18*	**4.7**
AS & AR	42	**10.9**
No aortic valve involvement	216	**56.3**
Pulmonary valve		
Severe PS	1	**0.3**
No pulmonary valve involvement	383	**99.7**

Mitral valve lesions were associated with the highest percentage of complications. Atrial fibrillation was the only type of arrhythmia detected among the patients and it was the most common complication of rheumatic heart disease seen in 93 patients (24.21%) ,76.3% of the cases were females, AF was more frequent in mitral valve lesions 95.3% mainly MS where74.2% of the cases of MS had AF, followed by pulmonary hypertension (20.57%) 73%. Four of the cases are females also most of the cases had mitral valve lesions 97.4% (Table 4,5),

Congestive heart failure seen in 8% of patients as complications with a female predominantly affected 58.1%, with mitral valve lesions as predominant valve lesions in 77.4% of the cases, and the least complications was embolic stroke seen in (4.4%). The only valvular lesion associated with stroke was mitral valve 100% of the cases and again females were affected more commonly than males 64.7%. There was no reported complication with pulmonary valve

(Table 4, 5).

Table 4: Distribution of rheumatic heart disease complications by gender (TMC 2012-2017).

Complications	Gender		P value
	Male No. (%)	Female No. (%)	
Arrhythmia	22(23.7)	71(76.3)	**0.670**
PHT	21(26.6)	58(73.4)	**0.882**
Congestive heart failure	13(41.9)	18(58.1)	**0.049**
Stroke	**6(35.3)**	**11(64.7)**	0.393

Table 5: Distribution of rheumatic heart disease complications by valve involved (TMC 2012-2017)

Complication	Valve involved			P value
	Mitral (%)	Aortic (%)	Tricuspid (%)	
Arrhythmia	89 (95.3)	32 (34.4)	25 (26.9)	0.001
PHT	77 (97.4)	23(29.1)	35 (44.3)	0.001
CHF	24 (77.4)	12(38.7)	11 (35.5)	0.302
Stroke	17 (100)	0 (0)	0 (0)	0.064

Fortunately, there were no cases of recurrent ARF or Infective Endocarditis. Only 177 patients maintain regular follow up at the valve clinic with about half dropped out, and from those maintaining follow-up only 13 patients underwent surgical intervention while 30 patients refuse recommended surgical intervention. Frequency of deaths among patients who are still contact with the clinic was 4/177 (2.25%).

DISCUSSION

Over the past 10 years, the number of studies on the burden of rheumatic heart disease in developing countries has substantially increased.[20] A large multinational African study concluded that RHD prevails as the most frequent cause of heart failure among children and young adults, and importantly that the 180-day mortality is as high as 17.8%.[21]

In Libya RHD is the commonest cause of valvular heart disease accounting for 76.7% of patients with a nearby numbers taken from neighboring countries.[22]

As expected most of these patients were female and this agreed with the fact that most females affected more than males by ARF and RHD[23], this result was similar to that obtained by REMEDY study.[24] In this study the age of majority of patient was between (36-50 years (49%), this result was close to that obtained from other developing countries, India and Nigeria, where the highest percentage was for 3rd and 4th decade[25,26] unlike that seen in REMEDY study where the mean age was 28 years.[24]

The most affected valve was mitral valve in 84.1% of cases and only 0.3% was due to pulmonic valve involvement and these results identical to fact said that RHD affect

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mostly mitral valve and pulmonic valve the least.[27] MS is the commonest rheumatic valvular lesions 210 patients (54.7%), with predominant female gender 175 patients (59.7%) and this result is expected.[28] MS was the dominant valve lesion also in REMEDY study.[24]

In current study 41% of patients had multi-valvular involvement and this finding is similar to that calculated from Nepal.[29] Unexpectedly the study demonstrate a higher percentage of patients came with complications 220 patients (57.29%%) and that was higher than that noticed in Nigerian savannah where the complication rate was 32%[26] and Uganda.[30]

Study revealed that the burden of the complication due to rheumatic heart disease is in the capital Tripoli, as 55.9% of the total number of the patients presented with complication and this may be related to the weak primary health care services and lack of echocardiography in other institutions.

The common complications were arrhythmia (AF) in 93 patients (24.2%), 76.3% were female and 95.3% mitral valve was affected 49.5% of the patients were between 36-50 years and because there is high incidence of thromboembolic complication in patients with rheumatic heart disease.[31] All patients included in this study were on oral anti-coagulant as advised by the ESC guidelines in the management of AF.[32] Pulmonary hypertension came in the second place as a complication after arrhythmia 20.57%, with 97.4% of the cases mitral valve was the affected valve and that result was higher than result observed from study in Uganda.[30] It is well known that development of PHT affects the quality of life and shorten life expectancy.[33,34] Rheumatic heart disease accounts for about a quarter of all patients with heart failure in endemic countries.[32] In this study heart failure was the third frequent complication, more in females, more frequent in mitral valve disease unlike the result obtained from Uganda[30] where the common complication was heart failure. Stroke noticed in mitral valve cases and more in female, all the patients on oral anticoagulant as it decrease the recurrent rate of stroke.[35] Fortunately, current series had low rate of stroke in spite of large numbers of patients with AF and that was due to the use of oral anticoagulant by the patients and their good adherence to the therapeutic range of international normalized ratio (INR). Fortunately again, there was no recurrent attack of acute rheumatic fever in this review, which was common complication 11% in Uganda, 40% in India[36], and like that registered in South Africa by Sliwa K.[37] That result might be due to the fact that most of these patients with documented previous rheumatic fever received long acting penicillin which reduced the recurrence of rheumatic fever to less than 20%.[38] Also, no cases of Infective Endocarditis was registered and that because the clinic was tightly followed the ESC guideline of Infective Endocarditis.[39] In spite of the large percentage of complication among the patients in present study, the deaths among patients still followed in the clinic was low 4/177 (2.25%), and this islesser than that observed in REMEDY study where it was 11%[24], and in that recorded in Ugandan cohort where it was 18%[30], the low death rate in the existing study came from the fact that heart failure complicate a relatively small percentage of the cases at presentation.

As only 177 patients maintain regular follow up (46, 09%), the others lost their follow-up most probably due to financial and security purposes because most of the patients who lose the follow up with the clinic were from outside the capital (54.1%).

CONCLUSION

More than one third of the patients with RHD have two valves or more involvement, mitral valve was predominately affected with stenosis more than regurgitation, atrial fibrillation complicate about one quarter of patients at presentation.

RECOMMENDATIONS

More efforts are needed to improve the ability of the junior physician for early detection of patients with RHD before complications appear, also the need of multicenter studies are recommended for more clear view about extent of RHD in Libya.

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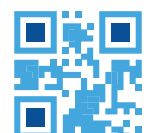
Effect of Honey and Olive Oil on Total Blood Cholesterol Level in the Healthy Individuals

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ABSTRACT

Cholesterol is probably the best known steroid because of its association with atherosclerosis. Previous studies showed association of olive oil use with reduced serum cholesterol levels. In addition, honey has been shown to have beneficial effects on lipid profiles. This study was conducted to investigate the effects of olive oil and honey on total cholesterol level in healthy Libyan individuals.

The study was conducted on 75 Libya volunteers aged 40-55 years divided into 3 groups including, 25 olive oil group, 25 honey group, and 25 olive oil and honey group. The total cholesterol level was measured before and after the experiment and expressed as (mg/dL).

The chemical and physical properties of the olive oil used in this study found to be compatible with permitted limits issued by the Libyan National Center of Standardization and Metrology. The results showed that olive oil and honey significantly reduced total serum cholesterol ($P < 0.001$) and ($P < 0.05$) respectively. Furthermore, combination of olive oil and honey significantly reduced total cholesterol ($P < 0.001$) by 21%.

The utilization of olive oil and honey can lead to a significant decrease in the levels of total serum cholesterol in blood.

INTRODUCTION

Cholesterol is probably the best known steroid because of its association with atherosclerosis. Hypercholesterolemia, which is the increased levels of serum cholesterol, plays an important role in atherosclerosis development.[1] Previous studies showed association of olive oil with reduced serum cholesterol levels.[2] In addition, honey has been shown to have beneficial effects on lipid profiles.[3]

Olive oil is a form of liquid fat obtained from the fruit of the *Oleaeuropaea* (olive tree), which is a traditional tree crop of the Mediterranean region. Olive fruit is pressed to produce this distinctive oil.[4] In addition to its use as a diet, oil is used in cosmetics, medicine, and soaps. In the diet, olives can be eaten whole or chopped and added to pizzas and other dishes.[5] The oil can be used as a dip for bread, for frying, or as a salad dressing. Some people even consume it by the small glassful for medicinal purposes.[6]

Some studies issued by the third international conference on the biological value of olive oil indicated that individuals who had 25 milliliters (5 teaspoons) of olive oil for one week had a decrease in blood cholesterol level and increase of antioxidants particularly vitamin E.[7] Some researches confirmed that olive oil containing of a very high proportion of unsaturated fatty acids especially oleic and linoleic acids have a significant role in decreasing the total blood cholesterol level as these acids convert a large part of nutritive cholesterol to bile salts giving liver the room or opportunity to make the cholesterol needed by the body.[8]

In addition to olive oil, from ancient times, honey is known to be one of the most beneficial natural drugs. Several studies showed that honey has many medicinal and surgical uses. It is established that honey improves insulin sensitivity and significant increase in the insulin secretion capacity is associated with decrease in circulating leptin and total cholesterol and improves hematological indices.[9] Honey have been shown to lower fasting blood glucose, total cholesterol, LDL, VLDL, TG's and increases HDL, thus reducing cardiovascular risks.[10,11] Honey is a substance with a high therapeutic value as it contains several compounds giving it its therapeutic value. It contains flavonoid compounds which have a key role in reducing blood fats. They also assist the body get rid of poisonous matters and deposits and protect arteries and veins.[12-14]

Therefore, this study was carried out to investigate the effects of olive oil and honey produced in Libya on total cholesterol level in healthy Libyan individuals.

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MATERIALS AND METHODS

This study was conducted in the period from July to December 2008 in the Biotechnology Research Center in Tripoli.

Composition and quality testing of olive oil used in the study

Olive oil used in this study was obtained from Yefren reigion in Nafusa Mountain. Composition and quality properties of olive oil were tested to identify how compliant it is with the Libyan specifications issued by the National Center for Standardization and Metrology prior to its use as doses. The tested olive oil chemical and physical characteristics included: Fatty acids forming the oil, humidity, acidity, acidic number, peroxide number, saponification number, Iodine number, relative density, and Kariz test. Fatty acids forming olive oil were analyzed using the gas chromatograph (GLC) Model 6890 (Agilent, Wilmington, DE, USA).

Study subjects

Seventy five healthy subjects, aged from 40 to 55 years old, were selected randomly (55 men and 45 women), from several regions of the North West Libya. The subjects were divided into three groups including: Olive oil group (OOG), honey group (HG), and olive oil-honey group (OOHG). Each group consists of 25 subjects.

Subjects' treatment and blood collection

A baseline blood samples of 5 ml were collected in plain tubes from all participants forming the three different groups involved in this study. The blood was left to clot in plain tubes, centrifuged, and the serum was transferred to 1.5 ml tubes and stored at -20^{0}C until used for cholesterol estimation, then, the OOG were given the olive oil dose (two large spoons) every morning for 6 weeks, the HG were given the honey dose (one large spoon) every morning for 6 weeks, and the OOHG were given the one spoon of honey and two spoons of olive oil doses every morning for 6 weeks. This was followed by withdrawing another blood sample of 5 ml in plain tubes. The blood samples were let to clot, centrifuged, and serum was separated and stored at -20^{0}C in 1.5 ml tubes until used for cholesterol level measurement.

Total serum cholesterol measurement

Total serum cholesterol of the samples of the three groups were measured before and after treatment in the same way using the DIALAB kit (DIALAB, Neo Zeeland) following the manufacturer's instructions.

Data was analyzed by excel, mean ± SD, frequency and percentages used to describe the data. Dependent t-test to compare means before and after treatment was used. P value < 0.05 considered significant.

RESULTS

The mean age of olive oil group was 49.47±2.15 year, honey group was 50.07±2.01, mixed olive oil and honey group was 52.07±4.31 year.

Fatty acids forming olive oil

Fatty acids forming olive oil were studied and identified using GLC technology (Gas Liquid Chromatography – GLC). It was revealed that this sample contained a high proportion of unsaturated fatty acids including oleic acid (about 66.17%), followed by palmitic acid (15.50%), and linoleic acid (12.51%),

and less proportions of stearic acid (2.04%), and palmitoleic acid (1.66%), and very little amounts of linolenic acid (0.74%), arachidonic (0.57%), gadoleic acid (0.31%), heptadecenoic acid (0.20%), and heptadecanoic*acid* (0.15%).

Physical characteristics and quality of olive oil used as a dose:

The physical characteristics and quality of olive oil sample used as doses were investigated (Table 1) shows the analysis results of olive oil sample as compared to the permitted limits or ranges according to the documents of the National Center of Standardization and Metrology.

Table 1: Physical characteristics of olive oil used as doses in the study

Tests	Results	PLALS
Humidity	16%	**20%**
Acidity	2.8 mg/alkaline/g	**3.3 mg alkaline/g**
Acidic number	5.6 mg	**6.6 mg**
Peroxide number	16.9 mg equivalent	**20.0 mg equivalent**
Saponification number	191.34 mg	**193.60 mg**
Iodine number	80.76	**75.0 - 94.0**
Relative density	0.91 %	**0.910 -0.916%**
Kariz test	**Negative**	**Negative**

PLALS= Permitted Limits According to Libyan Specifications

Effect of olive oil and honey on total cholesterol level

The result showed that there was significant decrease in total cholesterol ($P<0.001$) by 16% after having two spoons of olive oil for 6 weeks in the morning. As for honey significant decrease was observed in total cholesterol ($P<0.05$) by 15% and decrease range from 6 to 39% after having one spoon of honey region for 6 weeks in the morning. Finally, having one spoon of multi-flower spring honey and two spoons of olive oil for 6 weeks led to a significant decrease in total cholesterol ($P<0.001$) by 21% and decrease range from 6 to 35% (Table 2).

Table 2: Total cholesterol (mg/dL) levels before and after dose administration.

Parameter	OOG	HG	OOHG
Pre-treatment TC (mg/dL)	188.07±6.01	190.21±8.11	181.01±7.66
Post-treatment TC (mg/dL)	158.02±2.13	160.41±3.01	144.34±4.11
Drop ratio %	16%	15%	21%
Rate of decline %	541-%	639-%	635-%
P-value	P<0.001	P<0.05	P<0.001

DISCUSSION

Using gas chromatography analysis of the olive oil sample in this study. The olive oil contained fatty acids, especially mono-unsaturated fatty acids such as oleic acid (66.17%) that was shown to reduce fat in the blood (Zambon et al, 1999).[15] In addition, the results showed that olive oil used containing essential fatty acids, namely, linoleic and linolenic acids at relatively lower concentrations. These results are consistent with many previous studies related to this topic in Tunisia, Syria and Spain (Lewis and Hoeger, 2005)[7] but the difference was in the proportion of these fatty acids, where the difference varies depending on the olive type and types of agricultural operations and the type of soil and maturity of fruits (Carrasco et al, 2005).[16]

The results revealed that the olive oil sample used as a dose complied with the Libyan specifications issued by the National Center for Standardization and Metrology (Libyan standard specifications, 2007).[17]

Cholesterol increase in blood is one of the chronic health problems associated with heart and artery diseases. Coronary heart diseases and arteriosclerosis due to cholesterol increase are the main cause of deaths in both developed and developing countries (Al-Nozha et al, 2016).[18] The current study investigated the effect of olive oil and honey on total cholesterol in a sample of Libyan population.

Regarding the effect of olive oil and mixed (olive oil and honey) on total cholesterol (TC), our results showed that they have significantly lower TC. Our result is in agreement with the result of studies conducted in Spain (Lewis and Hoeger, 2005)[7], and Egypt. (Simopoulos, 2002; Zhang and Kim, 2014; Kris-Etherton et al, 1999; Hu et al, 2001; Visioli and Galli, 2000).[19-23]

Regarding the effect of honey on total cholesterol (TC) our results showed that honey administration led to a significant decrease in TC ($P<0.0°$). This is in agreement with the results of some previous studies conducted worldwide (Al-Waili, 2004; Kas›ianenko et al, 2011)[10,24], in disagreement with others (Münstedt et al, 2009).[25]

Despite these results, which show the importance of olive oil and honey in lowering the total cholesterol in blood, we recommend further larger research on olive oil honey to separate their components and learn more about their components' effects.

CONCLUSION

Consumption of olive oil and/or honey for a period of 6 weeks is effective in reducing total cholesterol in healthy adults. Therefore, healthy individuals should include olive oil and honey in their diet to improve their glucose and cholesterol, and to prevent acquiring diseases caused by increased levels of total cholesterol such as cardiovascular diseases, hyperlipidemias.

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Public Awareness of Colorectal Cancer: Knowledge, Attitudes and Practice

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ABSTRACT

Colorectal cancer (CRC) is one of the most common malignant tumors worldwide. Early detection of colorectal and breast cancer is critical in cancer control and prevention. There are two major components of early detection of cancer: education to promote early diagnosis and screening. Recognizing possible warning signs and symptoms of CRC, and taking prompt actions leads to early diagnosis. The study aimed to assess the awareness among Libyan people towards colon cancer including their knowledge about symptoms, warning signs, risk factors and early detection and screening, and also to explore the attitude regarding CRC prevention.

A descriptive cross- sectional study was conducted in Benghazi during December 2017- February 2018. A Convenient sample of 500 subjects was included in the survey, a verbal agreement to collect the data was asked to answer questions by direct interview using a questionnaire. A score technique was chosen as suitable method to identify the level of awareness regarding colorectal cancer.

The study subjects were 500 Libyan adult; 50% were males. The mean age was 42.49± 13.78. Mass media was a source of information among 57% of them. Also 57.6% of them knew the signs and symptoms of colorectal cancer correctly, 61.8% of participants heard about screening of cancer and 63% of them they avoid risk factors of colorectal cancer.

The level of awareness was an average. Efforts toward increasing awareness that cancer is treatable with a potential for cure if diagnosis early, are necessary. Periodic health educational programs to increase awareness of possible warning signs of colon cancer among general public can impact on the disease because early detection and diagnosis can help save lives.

INTRODUCTION

Colorectal cancer CRC is one of the most common malignant tumors worldwide.[1-4] The overall mortality from CRC is 60%, which represents the second leading cause of cancer death in western societies.[1,2] Although CRC is relatively rare in the developing world, the condition becomes increasingly common over the age of 50. CRC was found to be the leading malignancy in Libyan males and the second most prevalent among females after breast cancer.[5,6] Diets with high in red meat and fat such as beef, pork or lamb or processed meat (such as bacon, sausage, hot dogs) lead to an increased risk for colon cancer. Other risk factors including smoking, overweight or obese, people who aren't physically active, People who drink alcohol in excess, personal or family histories of colorectal cancer and personal histories of inflammatory bowel disease also increase the risk for colon cancer.[1,2,7]

Cancer control efforts and resources especially in developing countries should place more emphasis on cancer prevention, and to improve the prognosis for cancer patients in developed countries emphasis is now placed on public education and screening and on the fact that early diagnosis can save lives.[1,7] Secondary prevention aims to detect and remove lesions at an early or pre-malignant stage.

Several potential methods exist: Widespread screening by regular annual fecal occult blood (FOB) testing reduces colorectal cancer mortality and increases the proportion of early cancers detected.

These tests currently lack sensitivity and specificity and need to be improved. FOB Screening should occur in the general population after age 50.[1,2] Colonoscopy remains the gold standard, which is the most effective screening method, but is expensive and carries risks; many countries lack the resources to offer this form of screening. Flexible Sigmoidoscopy is an alternative option and has been shown to reduce overall colorectal cancer mortality by approximately 35% (70% for cases arising in the recto sigmoid).[1,2,8] It is recommended in the USA every 5 years in all persons over the age of 50.[1,2] So Proper surveillance programs need to be in place and healthcare policy should be adjusted to take into account the more prevalent and pressing cancers in society.[9]

The study conducted to assess the awareness among Libyan people towards colon cancer including their knowledge about symptoms, warning signs, risk factors and early detection by screening, and to explore the attitude regarding CRC prevention.

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MATERIALS AND METHODS

A descriptive, cross- sectional study was conducted in Benghazi during the period December 2017- February 2018. Data was collected by direct interview using a questionnaire. A survey questionnaire covered demographic data, knowledge, attitude and practice of people regarding CRC. Inclusion criteria: Age group between 18-65 years and non health personnel. A convenient sample of 500 subjects was selected from the community at different organizations, schools, companies, administrators in the universities and health centers in Benghazi city. A score technique was chosen as suitable method to identify the level of awareness regarding colon cancer, eight questions, six of these questions given 1 mark and two questions given 2 marks to be the total of ten marks. Categorized score as: deficient (poor), intermediate (average), optimum (good). 1- 4 marks as deficient (poor) < 50, 5- 7 marks as intermediate (average) 50-80% and 8-10 marks considered as optimum (good) >80 %. The subjects responded to the questionnaire without any outside interference, where a score was given to each correct answer. The highest the score represents a higher or better level of awareness regarding to CRC among responders. Data were analyzed by statistical program (SPSS) version 17, simple statistical parameters such as mean and standard deviation were calculated. Verbal agreement from participants was obtained.

RESULTS

The study subjects were 500 adult Libyans; 250 males and 250 females. The mean age was 42.49± 13.78. There were 24.3% employers, 20% house wives and 15.7% were teachers. Most of participants (83%) were had secondary level of education or higher and the entire Participants residency from Benghazi (Table 1).

Table 1: Demographic characteristics of respondents, Benghazi 2017.

Characteristics/Parameters	Details	No.	%
Age	18- 37years	193	38.6
	38-57years	237	47.4
	≤58years	70	14
Gender	*Male*	250	50
	Female	250	50
Occupation	*Businessman*	65	13
	Engineer	36	7.1
	Student	52	10.4
	Teacher	78	15.7
	House wife	100	20
	Employer	121	24.3
	Others or retired	48	9.5
Level of education	*Primary*	85	17
	Secondary	172	34.3
	College	243	48.7
Participants residency from Benghazi		500	100%

Fifty seven percent of the participants had heard about colorectal cancer, sources of information were mass media followed by relatives and friends then books and magazine and only 7.2% from health workers (Table 2).

Table 2: Source of information about colon cancer among study population.

Source of information	%	No.
Mass media	285	57
Relative and friends	190	38
Books and Magazine	70	14
Health workers	36	7.2
Previous experiences	55	11
Not remember or no answer	177	35.4

The study revealed that the majority of respondents had knowledge about two or more than two of signs and symptoms of colon cancer, and few could correctly identify one of the signs and symptoms of CRC. Most of study subjects they said the risk factors for CRC is not known, while the respondents answered correctly knew that canned food and spicy food and environmental pollution are a common risk factors for colon cancer followed by genetic factors, smoking, alcohol or drugs and inflammatory bowel disease, stress and aging (Table 3).

Table 3: Public knowledge regarding to the signs / Symptoms and risk factors of colon cancer.

| Knowledge (correct answer)		No.	%
Signs /Symptoms	Correct answer of two or more than two of S/S	288	57.6
Risk factors of cancer colon	Genetic causes	140	28
	Inflammatory bowel disease	103	21
	Food	290	58
	Stress	100	20
	Alcohol, smoking, drugs	141	2.28
	Aging	68	813
	Environment	203	40.6
	Not known	312	46.2
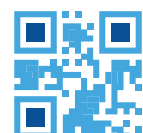
Nearly half of participates answer colon cancer can be detected early by periodic Colonoscopy/ Sigmoidoscopy (Table 4).

Table 4: Attitude of participants regarding prevention of cancer colon.

Attitude	Answer				Don't know	
	YES		NO			
	No.	%	No.	%	No.	%
Can cancer colon be prevented?	218	43.6	282	56.4	0	0
Have you ever heard of colon cancer screening?	309	61.8	101	20.2	90	18
Can colon cancer detected early by Periodic colonoscopy/ Sigmoidoscopy?	243	48.6	57	11.4	200	40

Figure (1) demonstrates the respondents practice regarding avoidance of carcinogenic factors. Most of them answered sometimes and few respondents said they usually avoid the carcinogenic risk factors.
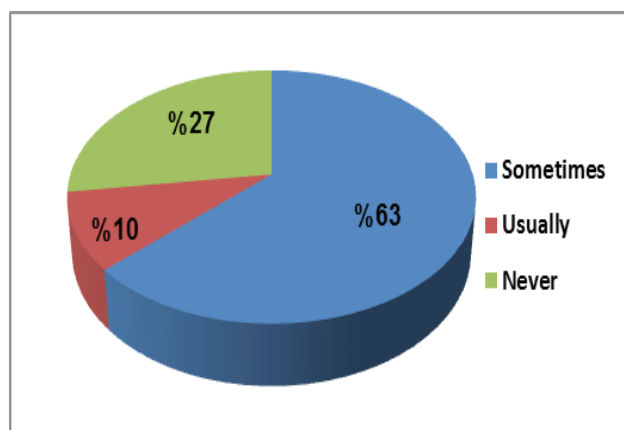
Figure 1: Distribution according of participants' practice of avoidance of carcinogenic risk factors.

Vast majority of participant's knowledge regarding colorectal cancer was an average level (Table 5).

Table 5: Participant's knowledge score regarding colorectal cancer in Benghazi.

Participant›s knowledge score	No.	%
Poor	53	10.6
Average	338	67.6
Good	109	21.8

DISCUSSION

Worldwide, the majority of colorectal cancers continue to occur in industrialized countries, although incidence rates are rapidly rising in less-developed nations as they increasingly adopt features of a Western lifestyle.[10] WHO report stated that among men and women in both industrialized and developing countries lung, colorectal and stomach cancer are among the five common cancers worldwide.[11]

Knowledge regarding sign and symptom in current study was average, compared with study conducted by Elzouki in (2010)[9] at Benghazi, concluded that a small proportion of Libyans were aware of the warning signals of cancer, widely publicized by cancer society's in western - countries.[9]
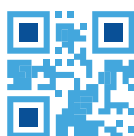
A previous study conducted in Benghazi in 2010, reported that smoking was the most common etiology identified by the general public, followed by environmental pollution industrial chemicals and preservatives in canned foods and that there is marked emotional reaction associated with diagnosis of cancer.[9] All subjects were asked whether they had heard the phrase warning signals of cancer, then they were asked to name symptoms or physical signs that should warn the person to see the physician for a check- up.[9] However, cancer awareness rates are remarkably lower than those reported from Gulf countries. Main reasons of low incidence of colorectal cancer in these countries could be due to the dietary factors, which is intake of more fruit and vegetables while, the increase in CRC rates is alarming in Saudi Arabia.[12] There is an increase in the incidence of CRC in Benghazi according to the cancer registry in Benghazi.[4,7,8]

Attia A, et al. (2010)[4] stated that according to the pattern of CRC in Eastern of Libya, the majority of operated patients in including patients operated outside Libya, staging of CRC was difficult. This could be because most of cases presented with advanced stage and the cause of could be due to lack of knowledge about CRC, this is to some extant is controversial to present results which recorded an average knowledge about CRC.[4]

However, most of the interviewed people have a positive attitude towards avoidance of carcinogenic risk factors of CRC which play a crucial role in prevention of cancer. The population survey in UK revealed low awareness of several CRC signs and risk factors and emphasizes the importance of continuing public education, particularly about the link between lifestyle behaviors and CRC. In UK around 110 people are diagnosed with bowel cancer every day. The comparison of the UK patients' outcomes in bowel cancer with those of other European countries shows that further improvements need to be made in relation to early diagnosis, access to treatment and funding of cancer services.[13]

WHO reported that millions of lives could be saved each year if countries made use of existing knowledge and the best cost-effective methods to prevent and treat cancer. In far too many cases, primary prevention early detection and palliative care are neglected in favor of treatment- oriented approaches regardless of whether they are actually cost-effective or whether they improve patients' quality of life. There is also lack of public support, cultural and religious factors, limited access to medicines like oral morphine.[11]

A telephone survey research conducted in USA described

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the association of awareness and knowledge with participation in (CRC) screening. Respondents (n =1302) had heard of CRC screening and exhibited high levels of CRC awareness and knowledge; only 74% had ever been screened.[14] A study in Spain found stated that high participation rates are of utmost importance for the success of any screening campaign. Efforts are needed to figure out modifiable and non-modifiable factors impacting adherence in each specific population. Knowledge of modifiable factors is gaining special interest in order to design specific interventions. Educational interventions (one-to-one or group interventions), reminders encouraging screening, and interventions based on reduction of structural barriers and out-of-pocket costs seem to be the most effective patient level interventions for increasing participation rates. Unfortunately, despite the efficacy of CRC screening in reducing incidence and mortality rates, screening uptake remains behind that of other screening-amenable cancers and rates continue to be low worldwide.[15] Whereas Saudi study that reported a deficiency of knowledge with regard to CRC screening that is unrelated to age or gender. The endoscopic modality was usually chosen by individuals who were aware of CRC screening. However, the fear of undergoing this investigation, for the same reason, would likely make them decide to choose less invasive testing, using barium enema or a CT of the abdomen.[16]

CONCLUSION

Overall, the study concluded that respondents (n =500) had heard of colon cancer. The score was 50-80% an intermediate (average) level of awareness regarding to colorectal cancer. Sigmoidoscopy is a very useful diagnostic tool in the colon cancer at an earlier stage which will permit adequate and prompt treatment.

RECOMMENDATIONS

Comprehensive cancer health education; primary and secondary cancer prevention programs in Libya should be commenced to increase awareness general public. Screening colonoscopy should be for all patients with of high risk of CRC. Finally we recommend further large KAP studies (knowledge, attitudes and practice) of CRC, with studies on the relationship between score knowledge and demographic characteristics.

ACKNOWLEDGMENTS

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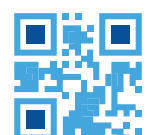
Antibiotic Prescribing Practices in Libya:
A cross-sectional Survey

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ABSTRACT

Antibiotic resistance is one of the most important risks that endanger global health, food security, and development today. It happens due to the emergence of resistant bacteria strains that are able to survive exposure to different antibiotics and continue to multiply in the body, potentially causing more harm and spreading to other animals or people. Usually this is the result of misuses and overuses of antibiotics which are associated with many adverse outcomes.

The aim of this study was to investigate the practices of doctors regarding their antibiotic prescription.

An online cross-sectional survey of Libyan doctors was conducted over a period of seven weeks. This 11-item self-administered questionnaire was built using the "Google forms" application and was distributed using social network groups of doctors.

A total of 185 doctors have completed the questionnaire, with 72.4% female and 27.6% male. Almost half (47%) of the responding doctors were dentists. About a half (49.2%) had a working experience of 5 years or less. The majority (66.7%) of the respondents stated that they do follow standard infection control and prevention precautions. 37.4% of the respondents answered that they do prescribe antibiotics based on culture and sensitivity tests and exactly same rate reported they do not. About 75% of the doctors stated that they follow antibiotic prescribing guidelines. Only 18% declared that they may prescribe antibiotics even if they know they are not really needed. Most of those prescribers justified this practice due to the demand of patients.

According to the results of this study doctors seemed to follow general guidelines for antibiotic prescription and infection control, but cultures were not routinely done.

Keywords- *Antibiotic; Prescribing; Practices; Resistance.*

INTRODUCTION

Since the beginning of antibiotics discovery the problem of antibiotic resistance has been a serious threat for humans.[1] The effects of antibiotic resistance are associated with increased mortality and morbidity, in addition to increased hospital stay and costs.[2] This problem happens due to many factors, but the main contributing factors are, antibiotic overuse, and inappropriate antibiotic prescribing.[3] The Center for Disease Control and Prevention's (CDC) definition of inappropriate antibiotic prescription includes unnecessary prescribing of antibiotics as well as wrong antibiotic selection, incorrect dose and improper duration.[4] Doctors as prescribers and patients as consumers, all contribute to the problem of antibiotic overuse and as a result, the widespread increase of antibiotic resistance.[5] Physicians sometimes prescribe antibiotics for non-pharmacological reasons.[6] For example, general practitioners overestimate symptoms of respiratory tract infections when indicating antibiotic therapy in daily practice.[7] The issue of antibiotic resistance is a global threat that requires parallel and coordinated national and international efforts to prevent its spread. Internationally, the World Health Organization (WHO) has launched a global action plan on antimicrobial resistance, including antibiotic resistance in 2015.

This global action plan aims to ensure prevention and treatment of infectious diseases with safe and effective medicines.[8] Nationally, where antibiotic resistance seems to be indisputable[9,10] and is rapidly increasing[11], too much effort is required to apply preventive measures to tackle this problem. In this regard, and as a part of a local awareness campaign combating antibiotic resistance that is to be held during 2018 World Antibiotic Awareness Week in Benghazi, Libya, this study was constructed to investigate the practices of doctors regarding antibiotic prescribing. The results of this study could be used developing strategies toward improving antibiotic prescribing practice.

MATERIALS AND METHODS

An online cross-sectional survey of Libyan doctors was conducted over a period of seven weeks during the months of June and July 2018. An eleven items self-administered questionnaire was built using the "Google forms" (Google©, 2018) application and was distributed using Facebook

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healthcare professional groups. The questionnaire consisted of a series of closed multiple choice questions. Most of these questions were adapted and modified from previous WHO antibiotic awareness campaign materials. The questionnaire included 4 questions related to the demographic information of the practicing doctors and 7 questions about their antibiotic prescribing behavior. The demographic questions included gender, specialty, position, and working experience of the participants. The rest of the questions were about, following standard infection control and prevention precautions, prescribing antibiotics based on culture and sensitivity test results, prescribing antibiotics only when needed and according to current guidelines, educating patients about proper use of antibiotics, antibiotic resistance and danger of antibiotics misuse, and whether they ask patients about their previous and present antibiotic use. The survey responses were processed and the data from all the respondents were analyzed and interpreted by "Google forms". This is an application by Google© that allows building surveys and interpret the corresponding data. Descriptive statistics including percentages and frequency distribution were computed for each of the variables.

RESULTS

One hundred and eighty-five (185) doctors (134 females and 51 males) were participated. Of the total participants, nearly half (47%) were dentists and 50.8% of them were with 5 years of experience or more (Table 1).

Table 1: Respondents Demographic Characteristics

| Category	No.	%
Gender:		
Male	51	27.6%
Female	134	72.4%
Specialty:		
Internal Medicine	25	13.5%
Dentistry	87	47%
Obstetrics and Gynecology	12	6.5%
Surgery	16	8.6%
Pediatrics	18	9.7%
Dermatology	5	2.7%
Ophthalmology	3	1.6%
Other	19	10%
Position:		
Consultant	16	8.7%
Specialist	39	21.2%
Registrar	13	7.1%
Senior House Officer	28	15.2%
General Practitioner	74	40.2%
Intern	14	7.6%
Working experience:		
0-5 years	91	49.2%
6-10 years	30	16.2%
11-15 years	35	18.9%
Over 15 years	29	15.7%

Two-third of the respondents said that they always adhere to basic infection control and prevention measures at

their workplace and three-quarter of the doctors reported that they follow guidelines in their antibiotic prescribing practices (Table 2).

Table 2: Adherence of participants to standard infection control and international guidelines for antibiotic prescription.

Response	No.	%
Adherence to standard infection control		
Yes	122	66.7
No	6	3.3
Sometimes	55	30.1
Adherence to international guidelines for antibiotic prescription		
Yes	136	75.4
No	4	2.3
Sometimes	40	22.3

The percentages of doctors who stated that they prescribe antibiotics without culture sensitivity tests and those who do after performing antimicrobial susceptibility testing were interestingly equal (37%) (Figure 1).
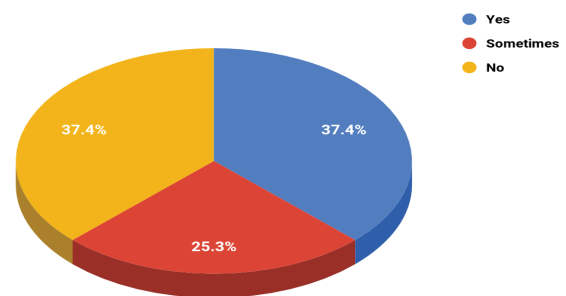

Figure 1: Response of participants about prescribing antibiotics based on culture and sensitivity test results.

About half (51%) of the participants who reported they don't "routinely" prescribe antibiotics based on culture sensitivity test results had less than 6 years' experience, whereas half (50%) the doctors with over 15 years of experience indicated they use culture and sensitivity testing to determine the most effective antibiotic against specific bacteria (Figure 2).

Figure 2: Response of doctors regarding prescription of antibiotics based on culture results, by years of experience.
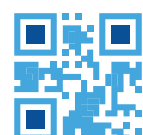
Only 18% declared that they may prescribe antibiotics though they know it is not needed (Figure 3).
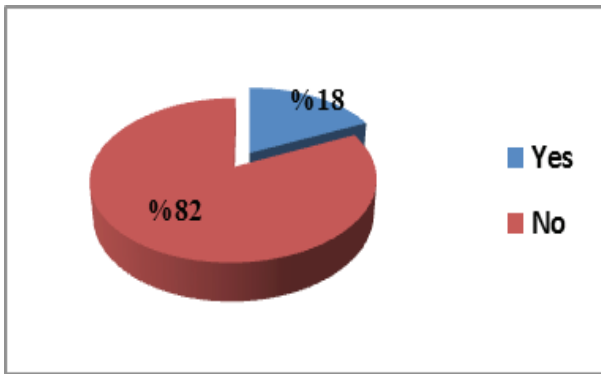
Figure 3: Response of the doctors regarding prescription of antibiotics even if they know it is not needed.

Most of those prescribers justified this practice due to the demand of patients or fear of spread of infection. Further analysis and interpretation revealed that almost two-third (61%) of doctors who acknowledged that they over-prescribed antibiotics had 0-5 years of working experience (Figure 4).
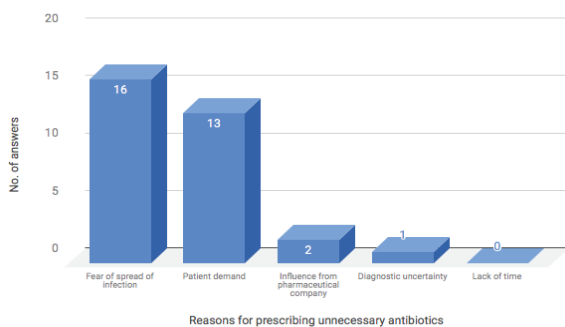
Figure 4: Response of the doctors regarding prescription of antibiotics for unapproved reasons.

DISCUSSION

The topic of antibiotic resistance is a global threat to human health. This threat is more complicated in developing countries such as Libya, because of other factors related to health care professionals practices and patients' behavior towards the use of antimicrobials (Ayukekbong et al. 2017).[12] Due to the important role of the prescribers i.e. physicians and dentists in this problem, we aimed in this study to focus on doctors contribution to the issue of improper prescription of antibiotic and subsequently the possibility of antibiotic resistance.

As seen a large number of the responding doctors mentioned that they follow the standard infection control and prevention precautions, and prescribe antibiotics according to current guidelines, though this may not be always the case in all healthcare settings. The results of Bharathiraja et al study (2005)[13] on factors affecting antibiotic prescribing pattern in Chennai India; indicated that inpatient physicians were more likely to comply with antibiotic therapeutic guidelines and protocols compared with outpatient physicians. In

2011, a WHO publication on rational use of medicines found that fewer than half of all countries of the world have applicable clinical guidelines and policies on proper use of medicines.[14] In spite of the availability of clinical practice guidelines developed by the Infectious Disease Society of America, physicians poorly adhere to these guidelines especially in the Emergency Department observation unit.[15] Before prescribing antibiotics, it is recommended to obtain a clinical specimen and use antibiotic sensitivity tests to identify the specific causative agent and determine whether antimicrobial treatment is indicated.[16] However, this step is not regularly performed worldwide. For example, general dental practitioners in the Czech Republic don't typically request a pathological culture before antibiotic administration.[17] Despite there is no evidence supporting the use of antibiotics in the management of viral infections, but physicians in the US still continue to prescribe antibiotics for diseases of viral origin such as upper respiratory tract infections, bronchitis, influenza and otitis media with effusion.[18] As seen about 37% of total participants in this study said that they prescribe antibiotics based on culture and sensitivity test results, which may be considered an acceptable rate in the current situation with the lack of qualified laboratories in our facilities. Doctors' knowledge and experience are other factors that may influence antibiotic prescribing behavior and contribute to inappropriate use of antibiotics.[13,18-20] Bharathiraja et al. (2005)[13] researched the effect of postgraduate study and continuing medical education for pediatricians working in private practices in India on their antibiotic prescribing decisions for common viral childhood illnesses; results showed that pediatricians who furthered their studies and updated their skills and knowledge, were less likely to prescribe antibiotics for children presented with classical symptoms of acute viral infection for less than a week, compared with physicians who had not pursued postgraduate training. In support of Bharathiraja et al (2005) findings, Andrajati et al (2017)[19] confirmed that physicians who received additional training on proper use of medicines had better knowledge on antibiotic use and were more reasonable in prescribing antibiotics than those who had not undergone similar training. Similarly, in dental healthcare, lack of knowledge on the effectiveness of antibiotics and insufficient understanding of pathological processes of common oral conditions were attributed to the inappropriate use of antibiotics by dental healthcare practitioners as observed by Peric et al in their comprehensive study conducted in Croatia in 2015.[21] Present study findings showed that the length of experience is a main predictor of rational antibiotic prescription and plays an important role in shaping doctors' antibiotic prescribing behavior. A systematic review on multi-aspect strategies targeting patients, public and physicians to reduce inappropriate antibiotic use had shown that education of patients about ineffectiveness of antibiotics in management of self-limiting infections was critical and successful in improving overall antibiotic prescribing.[22] In 2010, Kotwani et al reported that primary care physicians declared that due to overcrowding, time with each patient was not sufficient to educate them about their condition and discuss whether antibiotic is needed or not; and admitted prescribing unnecessary antibiotics to save time.[20] Imanpour study indicated that spending more time with a doctor may reduce unnecessary prescribing of antibiotics for viral disease.[18] But according to the findings of current study, doctors did not seem to consider " Lack of time" as a cause for their unneeded antibiotic prescribing.

Prophylactic use of antibiotics is controversial, and restricting their use in healthy individuals with no underlying diseases is recommended.[16] Antibiotic prophylaxis for dental patients

at risk of infection has been recently debatable and not beneficial.[23, 24] Consistently, US studies show that decreased use of antibiotics both for therapeutic and prophylactic reasons was correlated with decreasing rates of colonization with resistant organisms.[25] In the present study, prophylactic use of antibiotic to prevent the spread of infection was the most common reason behind unessential use of antibiotics.

Generally, this study had numerous limitations attributed to its design which may cause the problem of recall bias. Another important drawback of this study is the small number of respondents, which is due to the low response rate. This may render the results not representative, and make them inconclusive. An additional problem was the variation in the total number of responses for each question; this is due to the missing answers to some questions.

CONCLUSION

In present study doctors follow standard therapeutic guidelines in antibiotic prescribing. Nevertheless, it has been found that antibiotic prescribing decision is complex and influenced by several factors, such as patient demand, prophylaxis, diagnosis uncertainty, and doctors' experience.

RECOMMENDATIONS

Further studies exploring these factors will be helpful to establish and implement interventions to improve antibiotic prescribing and use in Libya. It is also recommended that the national health authorities should take action and enact laws and regulations to control antibiotic overuse.

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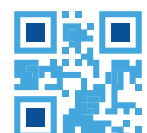
Causes of Childhood Mortality at Pediatric Hospital, Benghazi- Libya 2013-2016

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ABSTRACT

In the Eastern Mediterranean Region 12.2% of the population comprise children less than 5 years of age. An estimated 923 000 children under 5 years die every year in the region and under-five mortality has decreased by only 41% since 1990 to 2011.

The current study aimed to find out the causes of child deaths at Pediatric Hospital in Benghazi (2013-2016).

A retrospective hospital based study was conducted at pediatric hospital in Benghazi (2013-2016). The data were collected from the department of statistics, including age, sex and residency, causes of deaths. Data analyzed by SPSS version 20.

The total number of childhood deaths at pediatric Hospital in Benghazi during the three years (2013-2016) was 1475 child. The infant mortality represent 57% , 87% of them were neonatal death. The overall causes of childhood mortality were due to infection (21%), cardiac arrest (21%), congenital anomalies and syndromes (15%), non-communicable diseases (11%), and perinatal causes (8%), 72(63.2%) of perinatal cause were due to prematurity, 28(24.6%) birth asphyxia and hypoxia.

The most common causes of fewer than five deaths were infections, and congenital diseases; and the majority of perinatal deaths were due to prematurity and birth asphyxia.

INTRODUCTION

World health organization (WHO) reported that the leading causes of death among children under five in the world in 2015 were preterm birth complications, pneumonia, intra-partum-related complications, diarrhea, and congenital abnormalities. Neonatal deaths accounted for 45% of under-five deaths in 2015. The three major causes of neonatal deaths worldwide were: infections (36%, which includes sepsis/pneumonia, tetanus and diarrhea), pre-term (28%), and birth asphyxia (23%).[1-3] In 2000, world leaders agreed on the Millennium Development Goals (MDGs) and called for reducing the under-five mortality rate by two thirds between 1990 and 2015-known as the MDG 4 target.[1-4] The global under-five mortality rate dropped 53 percent, from 91 deaths per 1,000 live births in 1990 to 43 in 2015.[3] Despite these encouraging trends, challenges *still* remain, including reducing the number of deaths from childhood diseases (particularly among neonates); providing safe drinking water and other sanitation facilities; improving healthcare services in remote areas, and raising the efficiency of assistant medics; raising awareness on improving mother´s nutritional status; establishing national integrated management of childhood diseases; and reducing birth complications as a result of endogamy (caused by close inter-familial marriage).[3] The child mortality rates declined in the Middle East and North Africa (MENA) from a level of 206 per 1,000 live births in 1970 to only 27 in 2010. This was the biggest absolute reduction (179 points) among world regions as well as the biggest percentage reduction (87 points). Ten MENA countries (Oman, Saudi Arabia, Iran, Algeria, UAE, Egypt, Tunisia, Libya, Qatar and Bahrain) rank in the top twenty-five countries in the world (out of 165) All but two MENA countries (these being Iraq and Jordan) rank above the global median. Even Yemen, which has the highest child mortality rate currently.[5]

MATERIALES AND METHODS

Retrospective hospital based study conducted at pediatric Hospital in Benghazi, to identify fewer than five deaths during period (2013-2016). The study carried out in December 2016. The data were collected from the department of statistics at pediatric Hospital in Benghazi. Only personal data age, sex and residency, causes of deaths were found in the files and on the electronic copies of patient's files. The data were coded, classified and analyzed by SPSS program version 20. A descriptive statistics were used.

Limitations: Inaccessibility of data from civil registry at Benghazi therefore death rates were not calculated at that time. Data from pediatric Hospital not classified and not coded by ICD -10 also poor file information and data collection was not easy.
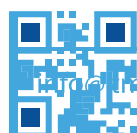
RESULTS

The total number of deaths during the three years (2013-2016) was 1475 child .The study revealed that more than half 855(58%) of deaths were males and (620,42%) were females.

The infant mortality represent 57% as compared to 1-4 childhood mortality represented 43% of childhood deaths during this period (2013-2016)

The neonatal deaths represented 87% of infant deaths, early neonatal deaths (0-7 days) represented 75% of total infant deaths, late neonatal deaths 14% and post-neonatal deaths 11% (Figure 1).
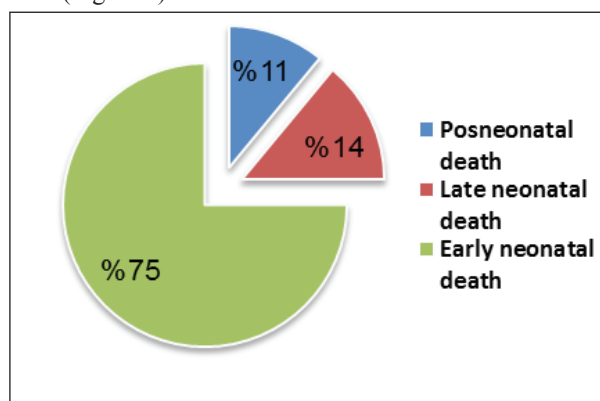
Figure 1: Infant deaths at pediatric hospital Benghazi (2013-2016).

The most common causes of childhood mortality in pediatric hospital at Benghazi were (21%) of child death due to cardiac arrest, 309 21%) due to infections, 228(15%) Congenital Anomalies and syndromes, and (11%) non-communicable diseases (Figure 2).
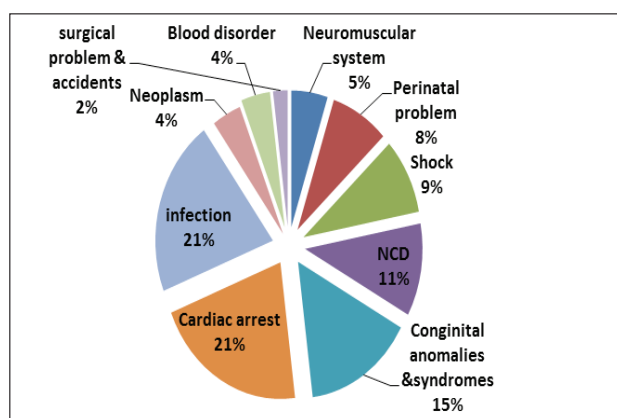
**Figure 2**: Common cause of death at pediatric hospital Benghazi (2013-2016)

The study found that from 309 childhood mortality due to infections, 156(52%) were due to sepsis and septicemia, 110 deaths (36%) were due to chest infections and pneumonia, 20(7%) of children's deaths were due to meningitis. Among 57 childhood death due to neoplasm, 39(68%) were due to leukemia, 8(14%) due to brain and CNS tumors, 7(12.2%) due to respiratory tumors (Table 1). The non-communicable diseases (NCDs) caused 161(11%) of total deaths in the childhood, 35(21.7%) of childhood mortality related to NCDs were due to renal failure, 27(16.8%) due to metabolic disorders and diabetes (DKA), 26(16.2%) due to chest diseases and pneumothorax, 24(14.9%) due to respiratory failure, and 18(11.2%) of childhood mortality due CVS (Table 1)**.**

Table1: Communicable and non-communicable causes of childhood mortality at Pediatric Hospital at Benghazi, Libya 2013-2016

Common causes of childhood deaths	No.	%	Total No(%) N =1475
1. Cardiac arrest			302 (21%)
2. Infections	309	100	309(21%)
Chest Infection and pneumonia	110	35.5	
Sepsis and Septicemia	156	50.5	
Meningitis	20	6.5	
Carditis and pericarditis	6	2	
Other Infections	10	3.2	
Gastro-enteritis	7	2.3	
3. Neoplasm			57(4%)
Leukemia	39	68.5	
Brain and CNS tumors	8	14.0	
Lung and ENT tumors	7	12.2	
Renal tumors	3	5.3	
4. Non-communicable diseases (NCDS)			161(11%)
Renal failure	35	21.7	
Respiratory failure	24	14.9	
Chest problems & Pneumothorax	26	16.2	
Metabolic disorder &DKA	27	16.8	
CVS (cardiac muscle disease, failure and hypertension)	18	11.2	
Acute dehydration	15	9.3	
Hepatic failure and jaundice	16	9.9	

The blood disorders and immunity represented 64(4%) of childhood mortality, 42(65.6%) of them due to bleeding disorders 20(31.3%) due to anemia, and 2(3.1%) of them due to immunity disorders. The current study reported that
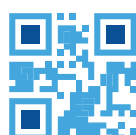
the surgical problems and accidents form 29(2%) of overall cause of childhood death, 10 (34.5%) of them due to G.I. and biliary obstruction, poisoning, foreign body inhalation and burns represented 4(13.8%) for each. Shock contributed to 137(9%) of overall under-five mortality (Table 2).

Table 2: Blood and surgical problems lead to childhood death at Pediatric Hospital at Benghazi, Libya 2013-2016.

| Common causes of childhood death	No.	%	Total No(.%) N=1475
1. Blood disorders and immunity			64(4%)
Severe anemia	20	31.3	
Bleeding disorder	42	65.6	
Low immunity	2	3.1	
2. Surgical causes and accidents			29(2%)
GI and biliary obstruction	10	34.5	
Diagrammatic hernia	2	6.9	
Poisoning and CO_2 toxicity	4	13.8	
No O2 at hospital	1	3.4	
On ventilator	3	10.3	
Car accident	1	3.4	
Foreign body inhalation	4	13.8	
Burns	4	13.8	
3. Shock			137(9%)

Congenital anomalies and syndromes lead to 228(15%) of overall childhood mortality, more than half (103, 57%) of them due to CVS anomalies, nearly one fifth (32, 18%) due to multiple-congenital anomalies, 16(9%) due to esophagus and GI anomalies, and 6(12%) of childhood mortality due to brain and neuromuscular problems. The congenital syndromes represented one fifth (47, 20.6%) of childhood mortality due to congenital problems, of which 36(77%) were due to Down syndrome, 4(9%) due to Edward syndrome, and 3(6%) other syndromes (congenital nephrotic syndrome, Noonan, and Hoffmann›s) (Table 3).

The present study revealed that 114(8%) of overall causes of childhood mortality were causes related to perinatal problems, of which 72(63.2%) due to prematurity,

28(24.6%) due to birth asphyxia and hypoxia, and 7(6.1%) of under five deaths due to pregnancy complications (bleeding, pregnancy induced hypertension and intra-uterine growth retardation) (Table 3).

Table 3: Congenital anomalies and perinatal causes leading to childhood death at pediatric hospital at Benghazi, Libya 2013-2016

Causes of death	No.	%	N=1475
1. Congenital anomalies and syndromes			**228(15)**
a) Congenital anomalies	181	79.4	
• Cardio-vascular anomalies	103	57	
• Multiple congenital anomalies	32	18	
• Hepatic and biliary system	2		
• Diaphragm	7	4	
• Esophagaus and GI	16	9	
• Brain, CNS, Skeletal syst. and Growth retardation	12	6	
• Respiratory system	5	3	
• Renal and genital system	4	2	
b) Syndromes	47	(20.6)	
• Down syndrome	36	77	
• Edward Syndrome	4	9	
• Patau's Syndrome	2	4	
• Turner Syndrome	2	4	
• Others (Congenital nephrotic syndrome, Noonan, and Hoffmann's)	3	6	
2. Brain and CNS diseases			74(5)
• Convulsion	37	50.0	
• Brain edema, and death	18	24.3	
• Paralysis	10	13.5	
• Hydrocephalous	9	12.2	
3. Perinatal causes :			114(8)
• Prematurity	72	63.2	
• Birth asphyxia and hypoxia	28	24.6	
• Pregnancy complications (bleeding, PET and IUGR)	7	6.1	
• Intracranial bleeding	5	4.4	
• Intracranial infection	2	1.7	
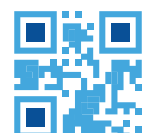
According to the age in the early neonatal period (birth -7 days) 29% of child death due to cardiac arrest, 21.8% due to congenital anomalies and syndromes, 20% of death due to infections, and 12.2% due to medical diseases. While, neuromuscular and perinatal disorders were responsible for 6.0% and 4.8% respectively of early neonatal deaths. In the late neonatal period (8-27 days), the current study reported that 26.5%, 21.3%, 20.6% of deaths were due to cardiac arrest, medical problems and infections respectively. In post neonatal period (28-<year), nearly three quarters (70.6%) of death were due to cardiac arrest, infections and congenital anomalies and syndromes with the same percentage of 23.6% for each cause (Figure 3).
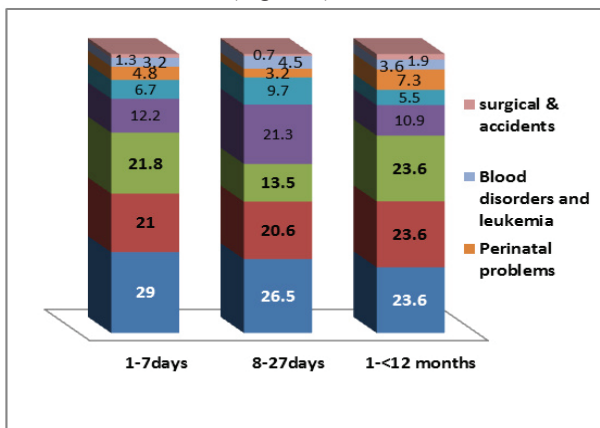
Figure 3 : Common causes of child death according to age at Benghazi pediatric hospital.

DISCUSSION

Most under-five deaths were caused by diseases that are readily preventable or treatable with proven, cost-effective interventions. Infectious diseases and neonatal complications are responsible for the vast majority of under-five deaths globally.[6]

The present study reported that the most common infections attributed to childhood mortality were sepsis and septicemia (52%), (36%) chest infections and pneumonia, (7%) meningitis. In Iraq Awqati NA *et al* (2009)[7] reported that the main killers of children under age of five were preterm birth complications (18%), pneumonia (16%), intra-partum related events (12%), diarrhea (8 %), neonatal sepsis (7%) and malaria (5%).[7] Baqui H *et al* (1998)[8] reported that, about 25% of the deaths were associated with acute lower respiratory infections (ALRI) and about 20% with diarrhea.[8] While, neonatal tetanus and measles remained important causes of death, and drowning was a major cause for 1-4-year-old children.[8]

The first 28 days of life are the most vulnerable time for a child's survival. Children face the highest risk of dying in their first month of life, at a global rate of 19 deaths per 1,000 live births.[3] Globally, 2.6 million children died in the first month of life in 2016, most of which occurred in the first week, with about 1 million dying on the first day and close to 1 million dying within the next six days. Neonatal mortality declined globally and in all regions but more slowly than mortality among children aged 1-59 months.[3]

In the current study infant mortality represent 57% as compared to 12-59 months mortality represented 43% of childhood deaths. The neonatal deaths represented 87% of infant deaths. In Nigeria as a whole, 73.9% of neonates died in the first week of life, 26.0% of under-fives died as neonates, and 61.5% of 1–59 month olds died before their second birthday.[9]

The present study revealed that most common causes of death among infants according to the age in the early neonatal period were 29% due to cardiac arrest, 21.8% due to congenital anomalies and syndromes, and 20% of death due to infections. In the late neonatal period, the current study reported that 26.5%, 21.3%, 20.6% of deaths were due to cardiac arrest, NCDs and infections respectively. In the post- neonatal period, the present study reported that nearly three quarters of death were due to cardiac arrest, infections and congenital anomalies and syndromes with the same percentage of 23.6% for each.

In Nigeria the leading causes of death among under-five children were found to be childhood illnesses in 81.2%, followed by sudden death in 8.9% and accidents in 3.3%. Among neonates the leading causes were cough/and or difficulty in breathing in 42.3%, followed by sudden death in 11.9%, congenital abnormalities in 10.3% and prematurity in 10.2%. Diarrhea was the leading cause of death among infants in 49.8%, followed by cough and/or difficulty in breathing in 26.6 %.[9] For the post- neonatal period the most common causes of death were congenital and chromosomal abnormalities, respiratory, infectious and parasitic and cardiovascular diseases. Meanwhile un-intentional accidents, CNS disorders and cancers are the most common causes in childhood period. These findings are well adapted to pediatrics texts and other studies including Singh in India and Liu L in Bangladesh.[10-12] In Qatar, the leading causes of infant mortality were congenital malformations (all types) (34.5%), low birth weight (LBW) (27%), and respiratory distress of newborns (2.8%).[13]

CONCLUSION

The most common causes of death of under-five at pediatric hospital in Benghazi include: the infections, congenital anomalies, syndromes and NCDs. At neonatal period the most common causes prematurity and birth asphyxia.

RECOMMENDATIONS

Improvement of maternal and child health care services especially premarital, antenatal, natal, and post-natal care. Improve the quality of pediatric health care facilities for children. Improvement of health information system at pediatric hospital and encourage use of ICD-10 for classification of causes of mortality is recommended.

ACKNOWLEDGMENT
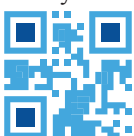
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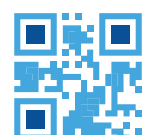
Knowledge, Attitude, and Practice among Care Providers of Children and Adolescents with Type 1 Diabetes (Endocrine Clinic-Tripoli Children Hospital, 2015)

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ABSTRACT

Type 1 diabetes mellitus (DM) is a chronic disease, Knowledge about DM, appropriate attitude and practices are vital to reduce the incidence and morbidity associated with Diabetes Mellitus. The study aimed to explore knowledge, attitude and practice (KAP) among care providers of type 1 diabetic children.

The study was cross sectional survey conducted among 150 randomly chosen home care providers attending the Endocrine clinic in Tripoli children hospital from 1 November to 1 December 2015. Data was collected through a structured questionnaire focused on knowledge, attitude and practices of home care providers concerning their children disease and management. Data was analyzed using SPSS version 16, descriptive statistics including mean, standard deviation, frequencies, and percentages were obtained for all variables as appropriate.

A total of 150 care providers of type 1 diabetic children contributed. Altogether, 25.3% of the participants had good knowledge score, 61.3% of them had average knowledge score, and 13.4% had poor knowledge score about diabetes mellitus. 84% of care providers of type 1 diabetic child had positive attitude about diabetes, only 16% of them had negative attitude. The overall score of participants' practice was strongly positive 99.3%, only 0.7% had negative practice score.

The study showed satisfactory level of knowledge about diabetes but the attitude and practice levels towards diabetes were impressive in this Endocrine Clinic at Tripoli Children Hospital.

Key words- Knowledge; Attitude; Practices; Type 1 Diabetes.

INTRODUCTION

The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014.[1] In 2015, an estimated 1.6 million deaths were directly caused by diabetes. Another 2.2 million deaths were attributable to high blood glucose in 2012.[2] In almost all high-income countries, diabetes is a leading cause of cardiovascular disease, blindness, kidney failure, and lower limb amputation.[3] Diabetes self-management education (DSME) is considered an integral component of care and is recommended at diagnosis and thereafter. DSME helps people with diabetes initiate effective self-care when first diagnosed and also help people maintain effective self-management as diabetes presents new challenges and as treatment advances became available. In children, education must take in to account that younger children will require adult supervision. As children mature, it is expected that they take on more responsibility for their own monitoring and care. An issue in this transition is adherence to insulin and diet regimens.[4] Proper knowledge regarding various aspects of health education program can improve the knowledge of patients and change their attitude.[5] Many studies conducted elsewhere in the world

have shown that the knowledge and awareness about the disease can have positive influence on attitude and practices of patients that could lead to better management of diabetes and eventually good quality of life.

A patient when involved in self-management of disease through guidance, education and awareness programs becomes more compliant toward life style changes and drug therapy which help both the practitioner and patient to achieve the treatment goals.[6] Many researches in other parts of the world-addressed this issue. A study from Pakistan has explored several aspects of diabetes related KAP of family physicians. It has identified the need for improvement in physician's practices for treating and educating diabetics. It is thus recommended that awareness and education programs are necessary to update the physicians on screening, effective treatment of diabetes and prevention of the complications.[7] A study from Malaysia show good knowledge, attitude and practices of diabetic patients in this region.[8] This study was conducted to know the level of knowledge, attitude and practices of care providers of type 1 diabetic children and adolescents attended to Endocrine unit-Tripoli Children Hospital, Tripoli- Libya to aid in future development of effective education programs.

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MATERALS AND METHODS

The study was a Cross sectional descriptive study, conducted in the period from the beginning of November to the beginning of December 2015. A random sample of 150 home care providers (mother, father, sister, brother, others) of type 1 diabetic children attending endocrine clinic was chosen. Clinics ran by physicians who are mainly specialized consultants and endocrinologists; there are 5 clinics/week, every clinic offering quality care to about 30 children. Data was collected through a structured questionnaire. Every sitting of interview took 10-20 minutes. The questionnaire was divided into 4 main sections, each section focused on different aspects. The variables in first section related to demographic characteristics of participants as: age, sex, occupation, educational status and source of information about diabetes. The second section discussed questions of knowledge like: What is diabetes, nature of disease, symptoms of diabetes, symptoms of hypoglycemia, symptoms of diabetic ketoacidosis, long term complication, the control of diabetes, treatment of hypoglycemia, diabetes monitoring, sick day management. The third section includes care giver's attitude: insulin injections, following dietary advice, replacement of insulin injections by other modality (herbal) and possibility of self-diabetic care by child. The fourth section of questionnaire was about practice: Storage of insulin, Injection of insulin in correct way, changing the site of insulin injection, regular follow, using of glucometer in blood sugar monitoring at home and doing HbA1C every three months for the child.

Data management: The questionnaire had 50 questions (knowledge (40), attitude (4) and practice (6) questions). Each correct knowledge answer was given a score of 'half to one' and each wrong or don't know answer was given a score of 'zero'. For attitude questions, each answer represent positive attitude was given a score of two and each answer represent negative attitude was given a score of one, zero score was given for each undecided answer. One score was given for each correct answer for practice questions. Considered a score of 25-35 'Good Knowledge'; a score of 20-24 'average Knowledge' and 1-19 'Poor Knowledge'. Attitudes were elicited using Likert scales with 0=undecided, 1=agree (which represent negative attitude in first three questions) and disagree for last question as it represent a negative attitude, and 2 =disagree (which represent positive attitude in first three questions) and agree for last question as it represent positive attitude. Participants' responses were summarized and a score of 6-8 was considered 'positive attitude' and a score of 1-5 a 'negative attitude'. Similar Likert scales were used to assess participants' practice where a score of < 4 was considered 'Negative Practice' while a score of 4-6 was considered 'Positive Practice'.

Statistical analysis: Collected data was coded and SPSS-version 16 was used for statistical analysis. Descriptive statistics including mean, standard deviation, frequencies, and percentages were obtained for all variables as appropriate.

Ethical approval: All authors declare that verbal informed consent was obtained from all participants during their follow up at clinic and data confidentiality was maintained throughout the study and any resulting publication anonymously.

RESULTS

One third of the participants were in age group of 41-50 years, 75.3% was female, and 75.7 % of them were had secondary educational level or more. One third of the cases were housewives and 24.7% were semiprofessional. Medical staff and mass media were the commonest source of information (Table 1).

Table 1: Socio-demographic characteristic of study population.

Characteristic	No.	(%)
Gender		
Male	37	(24.7)
Female	113	(75.3)
Age (years)		
10 years old	1	0.7
11- 20 years	37	24.7
21- 30 years	21	14
31- 40 years	36	24
41- 50 years	50	33.3
51- 60 years	5	3.3
Educational status		
Illiterate	1	0.7
Primary school	11	7.3
Preparatory school	24	16
Secondary school	61	40.70
Graduate and above	53	35.30
Occupation		
Professional	6	4
Semiprofessional	37	24.7
Worker	1	0.7
Business	15	10
House wife	50	33.3
Student	41	27.3
Source of information		
Medical staff (Doctor, Nurse, educator)	150	100
Family and friends	83	55.3
TV and Radio	104	69.3

Majority of participants (94%) knew what diabetes is. It is absence or decrease of insulin hormone secretion and 84.7% of them knew that it is increase in the blood sugar level. About the nature of disease, only one third of them knew that diabetes is not curative disease and 32.7% of them knew that some time there are no symptoms of diabetes. Most of participants knew the symptoms of hypoglycemia. About 67.3% of participants knew that vomiting is a symptom of diabetic ketoacidosis (Table 2).
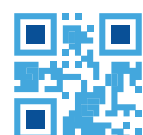
Table 2: Distribution of correct knowledge about diabetes among participants attending Endocrine Clinic, 2015.

Knowledge	No. of participants	(%)
What is diabetes		
Increase blood sugar level	127	84.7%
Increase sugar in the urine	112	74.7%
Decrease or no insulin hormone secretion	141	94%
Nature of disease		
Diabetes is curative disease	75	50%
Diabetes is temporary or permanent disease	99	66%
Symptom of diabetes		
Thirst	146	97.3%
Frequent urination	147	98%
Decrease in weight	137	91.3%
Constipation	67	44.7%
No symptom	49	32.7%
Symptom of hypoglycemia		
Sense of hunger	121	80.7%
Sweating	138	92%
Abnormal behaviors	119	79.3%
Frequent urination	114	76%
Pallor	135	90%
Symptoms of ketoacidosis		
Vomiting	101	67.3%
Abdominal pain	100	66.7%
Constipation	45	30%
Blurring vision	19	12.7%
Numbness	26	17.3%

Long term complications of diabetes as renal failure, heart attack and blindness were well known for 96.7%, 64.7% and 94.7% of participants, respectively. Importance of regular exercise in control of diabetes was well known among 96.7% of care givers. Most of participants (81.3%) know the importance of simple carbohydrate (15 grams of sugar mixed in a glass of water, juice, honey, dates) in the management of hypoglycemia. Almost all the participants know how to monitor diabetes through the measurement of HbA1C, frequent blood sugar measurement and regular diabetic clinic visit (Table 3).

Table (3): Distribution of correct knowledge of participants about complications and management of diabetes at Endocrine Clinic, 2015.

Knowledge	No.	%
Long term complication		
Heart attack	97	64.7%
Renal failure	145	96.7%
Blindness	142	94.7%
Stroke	80	53.3%
Control of diabetes		
Importance of regular exercise	145	96.7%
Importance of diet modification (healthy diet)	148	98.7%
Avoidance of insulin injection once diabetes is controlled	119	79.3%
Treatment of hypoglycemia		
Sweet substance (juice, honey, dates)	129	86%
Chocolate	71	47.3%
Frequent measure of blood sugar	142	94.7%
Usual insulin dose	126	84%
Carbohydrate (taken after sweet substance)	122	81.3%
Diabetes monitoring		
Frequent measure of blood sugar	149	99.3%
Regular diabetic clinic visit	148	98.7%
Checking injection sites	149	99.3%
Importance role of HbA1c	150	100%
Sick day management		
Skip insulin dose	125	83.3%
Testing blood sugar level	129	86%
Usual insulin dose, frequent measure of blood sugar, doctor consultation	147	98%
Insulin types are all the same	123	82%

Positive attitude of diabetes was detected among 76.7% of care providers for following dietary advice with compliance to insulin injections. About half of participants had positive attitude toward insulin injections as its impact on child's life. 85.3% of participants had strong positive attitude toward the importance of insulin as a unique medication for treatment of diabetes which cannot be replaced by any other treatment modality (herbal). Only 44% of participants had positive attitude about the ability of their children to be responsible for self-diabetic care (Table 4).

Table 4: Distribution of participant's attitude toward diabetes, Endocrine Clinic 2015.

Participants attitude toward diabetes	Agree No.%	Disagree No. %	Undecided No. %
By insulin injections, no need to follow dietary advice.	34 22.7	115 76.7	1 0.7
Insulin injections means the child has a major problem in his/ her life.	78 52	70 46.7	2 1.3
Is possible to replace insulin injections by other treatment modality.	20 13.3	128 85.3	2 1.3
Is possible for your child to take responsibility for self-diabetic care.(by age>10 years)	66 44	84 56	0 0

All the participants adhered to the use of glucometer to check blood sugar level. Almost all of them (99.3%) admitted to do HBA1C every three months and 99.3% of participants adhered to changing the sites of insulin injections periodically. The majority (98.7%) had reported regular routine follow up. About 56% of participants store insulin pens or ampoules in correct way (Table 5).

Table 5: Distribution of participants' practice toward diabetes, Endocrine Clinic 2015.

Participants practice toward diabetes	No. of participants	(%)
Insulin storage on the correct way	84	56
Inject insulin on the correct way	117	78
Change Sites of injection	149	99.3
Regular fallow up	148	98.7
Glucometer usage	150	100
Periodic HBA1C measurement	149	99.3

Evaluation of knowledge, attitude and practice outcomes of care givers revealed that 25.3% had good knowledge, and 61.3% had average knowledge. The majority of participants (84%) had a positive attitude towards diabetes. Impressively 99.3% had positive practice. The knowledge score had a of 22.9± 2.9, attitude 6.5± 1.1 and Practice 5.3± 0.7 (Table 6).

Table 6: Distribution of participants' knowledge, attitude and practice score, Endocrine Clinic, 2015.

Score	NO.	%	Mean ± SD
Knowledge:			
Good	38	(25.3%)	22.9± 2.9
Average	92	(61.3%)	
Poor	20	(13.4%)	
Attitude:			
Positive	126	(84%)	6.5± 1.1
Negative	24	(16%)	
Practice :			
Positive	149	(99.3%)	5.3± 0.7
Negative	1	(0.7%)	

DISCUSSION

The diabetes mellitus is one of the most challenging public health problems in this century. Patient education is always considered an essential element of DM management; evidences suggest that patients, who are knowledgeable about DM self-care, have better long term glycemic control, low risk for complications associated with diabetes. Thus it is indispensable to ensure that patient's knowledge, attitudes and practices are adequate.[9] In present study, a high proportion of participants showed good basic knowledge on diabetes, for example majority of participants (94%) had correct answer about what diabetes is, most of them knew the classical symptoms of disease and 80% knew the symptoms of hypoglycemia and how to treat it. While the Upadhyay et al, In Nepal[10] study reported only 37.9% of the participants were aware of it and 36.26% are aware of the management of hypoglycemia.

About 67% of care providers were knowledgeable about symptoms of DKA and 95% had correct answers about renal failure and blindness as a long term complications of diabetes, this result was similar to Roaeid et al study.[11] An important finding of this study was that, knowledge of almost all participants about diabetes monitoring, through frequent blood sugar monitoring, periodic HbA1c measurement and regular diabetic clinical visit were very good, comparing to a study conducted at JIPMER diabetic clinic where the patients found it difficult to regularly attend the clinic, monitor their blood glucose and take their daily dose of insulin.[12] Current study showed that 77% of home care providers had positive attitude about the conjoint role of healthy diet with insulin injection in treatment plan of diabetes, almost the same result was obtained in a study done in south India hospital where 66% of patients were positively thinking about the importance of food control in addition to drug use.[13] Vast majority (85.3%) of participants believed that insulin is the basic treatment of diabetes, and there are no other treatment modalities compared to Omani study where approximately half of patients never used herbs to control their diabetes.[14] Half of participants

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had negative attitude about insulin injection, 56% were disagreed about allowing their children to be responsible on their disease management, comparing to Schmidt C study which showed that children demonstrated higher levels of self-care ability to manage disease as they aged 6-18 years.[15] Majority of participants had good practice, all of them using glucometer, almost all checking HbA1c every 3 months, rotatory changing the sites of insulin injection, majority of them (98.7%) had reported regular routine follow up, and comparing this to an Indian study where 70% of participants had never used glucometer, most of female subjects were less aware of HbA1c as a monitoring tool, 32% failed to rotate sites of insulin injection.[16] The responses to the practice questions regarding diabetes indicated that the study participants were aware of the importance of glucose monitoring and regular follow up which may lead to decrease risk of complications. Over all, the present KAP study showed that the care providers had an average knowledge and very good attitude and practice to ward diabetes which in accordance with a study from Malaysia identified a good KAP score[17] and contradicted to Bolly et al study which found that the attitudes and practices scores were low.[18] The difference in the findings among different studies may be due to differences in the Literacy of study patients, the training received by them and availability of information on diabetes.

CONCLUSIONS

The study showed satisfactory of knowledge about diabetes but the attitude and practice levels toward diabetes were impressive. The current study emphasizes the need for improvement in knowledge and awareness on diabetes mellitus among patients and health care providers in order to have healthy people with less complication.

RECOMMENDATIONS

Other studies recommended in Libya to compare the current study results with other centers and to find the correlation between these results with the outcome of diabetes mellitus management in terms of number of hospital admissions with acute complications, HbA1c level and presence of long term complications.

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Hepatitis B and C Viral Infections among Individuals Attending Tobruk Medical Center, Tobruk (2003 – 2016)

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ABSTRACT

Hepatitis B and C viral infections are major public health problem in the world including Libya. Concerns regarding transmission of these pathogens in healthcare settings have grown, especially since the uprising of 2011. These concerns are related to lack of financial resources, preventive policies and increased number of illegal immigrants from endemic areas. To determine seroprevalence of HBV and HCV infections among individuals who attended Tobruk main hospital in Libya, from January 2003 to December 2016; and to raise awareness about the transmission of these viral infections in order to promote better preventive measures.

A cross sectional study of serological assays including HBs Ag and anti-HCV were performed on 343,833 individuals from different nationalities and regions, who attended Tobruk Medical Center for different medical or surgical conditions from January 2003 to December 2016.

Over 14 years, out 343,833 blood sample records, about 909 (0.3%) samples were positive with either HCV or HBV. Among 909 samples infected with HBV or HCV, there were 409 males, (45%) and 500 females (55%), and most (91.1%) of them were Libyan. The frequency of Hepatitis B surface Antigen (HBs Ag) was 35.2% and anti-HCV was 64.8%.

About 0.3% of individuals who attended Tobruk Medical Center from 2003 to 2016 were having either HBV or HCV seromarkers. A significant decrease of these infections has been observed since 2011. A further study for monitoring the spread of hepatitis infection in healthcare settings is recommended. Strict precautionary measures should be applied for the care of all patients in order to prevent transmission of these viral infections in healthcare settings.

Keywords- Hepatitis B; Hepatitis C; Illegal immigrants; Viral transmission; Serological assays.

INTRODUCTION

Hepatitis B and C viral infections are considered to be among the most important blood-transmitted viral infections and can lead to liver damage that may lead to death.[1] In Libya, the incidence of hepatitis B (HBV) and hepatitis C virus (HCV) infection remains the main health concerns for both health workers and patients.[1,2] These concerns have increased in recent years, particularly in health screening services because preventive policies and financial resources have been inadequate. These concerns also are related to weak border control and infiltration of waves of illegal immigrants to the country especially from countries where these blood-transmitted viral infections are endemic.[3] Many of these migrants may be a potential source of infection during their stay in Libya, especially in healthcare settings.[4,5]

Libyan health authorities have implemented substantial preventive measures in recent decades to prevent of these infections both in healthcare settings and in the community. These preventive measures include implementing standard precautions in health service centers and obligate all patients to undergo pre-operative screening for HBV, HCV; in addition, to HIV as a routine investigation.

This is to help protecting both healthcare workers (HCWs) and patients from transmission of these viral infections. Moreover, implementing HBV national vaccination programs for all new-born babies and high risk groups, such as healthcare workers (HCWs).[6]

Many studies advised that in order to enhance blood donation safety, antibodies of the total hepatitis B core antigen (anti-HBc) should be implemented along with HBs Ag blood essay to help in detecting HBV infected donors.[7-11] Moreover, the health authorities implemented many preventive measures such as screening of all immigrants and individuals for these pathogens as part of their premarital medical check-up.[12,13]

Also, some studies have reported a significant infection of these pathogens in healthcare centers, and have been linked these pathogen to hospital admission, blood transfusion and various dental and surgical procedures.[14-16]

No studies have previously been performed in Tobruk region to estimate the seroprevalence of hepatitis B and C viral infections among individuals attending healthcare facilities. This study was conducted to determine the seroprevalence

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of HBV and HCV infections among individuals attending Tobruk Medical Centre from 2003 to 2016. The goals were to explore the extent of the problem, to raise awareness and to develop strict preventive measures to avoid transmission of these pathogens in healthcare settings.

MATERIALS AND METHODS

This study was a cross sectional type, included a retrospective analysis of consecutive blood analysis records of individuals, who were attending to Tobruk Medical Center for various medical and surgical conditions from January 2003 to December 2016. Tobruk Medical Centre is the only tertiary hospital in the city, and serves many neighboring cities. Blood analysis for HBV and HCV was performed as a routine laboratory test prior to medical intervention, invasive investigations, minor and major surgical procedures, as well as natural labors. All screening tests for blood-transmitted infections including HBsAg and anti-HCV were performed in the medical laboratory at Tobruk Medical Centre using commercially available enzyme-linked immunosorbent assays (ELISA) as part of hospital standard procedure.

Descriptive statistics were performed using SPSS Statistics Software (version20, Inc., Chicago, Illinois, USA). Pearson *Chi*-square test was used to estimate if there was any statistical significance differences between variables. In all tests, $P < 0.05$ was regarded statistically significant. Data were tabulated; different ratios were calculated using Microsoft Office Excel 2016. The study protocol was approved by the ethics committee of the Scientific Research in Tobruk University, and was performed under the supervision of Faculty of Medical Technology, Tobruk. The demographic and epidemiological data of patients were retrieved anonymously. All patients were informed about the research and gave their verbal consent.

RESULTS

Among 343,833 blood sample record, about 909(0.3%) samples were positive with either HCV or HBV over the study period (14 years), and no co-infections were found. The frequency of HBs Ag was 320(35.2%), and anti-HCV was 589(64.8%). Out of total 909 cases, 409(45 %) were males and 500(55 %) were females .

The ages of participants ranged from a few days to 96 years, with a mean of 37.75 ± 7.58 years. Most of the infections were in the older age groups (Figure 1).
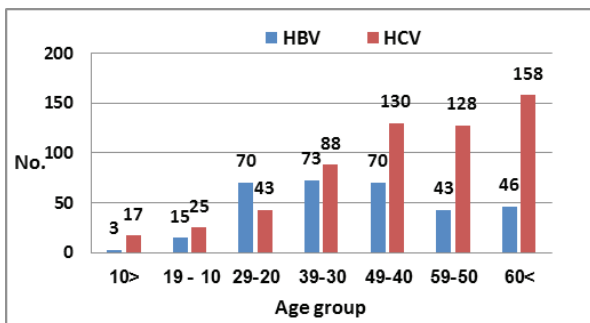

Figure 1: HBV and HCV Infections among Different Age Groups

The overall rates during period of the study were HCV 589(35.2%) and HBV 320(64.8%) respectively. The frequency of the viral infections varied among different nationalities. The highest frequency were found among Libyans with 828(91.1%) cases, of which 536 were HCV and 292 were HBV cases. This was followed by 56 Egyptian cases, of which 46 were HCV and 10 were HBV (Table 1).

Table1: HBV and HCV Infections among Different Nationalities

Nationality	HBV	HCV	Total N0. (%)
American	1	0	1(0.1%)
Chadian	1	0	1(0.1%)
Egyptian	10	46	56(6.1%)
Ghanaian	0	1	1(0.1%)
Iraqi	1	0	1(0.1%)
Libyan	292	536	828(91.1%)
Mauritanian	1	0	1(0.1%)
Palestinian	3	3	6(0.7)
Sudanese	9	2	11(1.2%)
Syrian	2	1	3(0.3%)
Total	**320**	**589**	909

Steadily declining trend of seroprevalence of these viral infections was observed over the last six years from 2011 to 2016 (Figure 2). The average annual rate of these viral infections declined significantly from an average of ~93 people infected per year during 2003 to an average incidence of~28 individuals per year during 2011 to 2016.
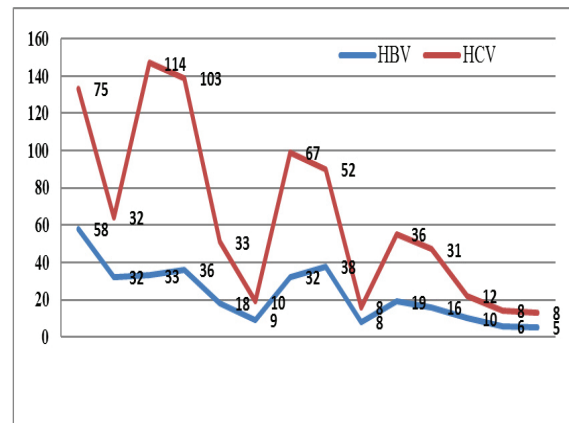
Figure 2: Trends of HBV and HCV Seroprevalence over the Study Period.

DISCUSSION

The prevalence of HBV and HCV infection among the general population in Libya is well documented. Several studies have reported the incidence of these viral infections amongst healthcare workers in the country.[5,14-16] However, no study has documented the incidence of these infections in individuals and patients attending healthcare-providing

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centers in Libya. However, this percentage (0.3 %) was very low compared with selected international studies that were conducted to assess seroprevalence of HBV and HCV among individuals and patients attending healthcare-providing centers. A study was performed in a tertiary hospital in southeast Turkey, among 43,131 individuals, about 4.472 cases (10.4%) were positive for HBsAg. Of 43,131 individual, only 28,276 were tested for anti-HCV, and approximately 323 cases (1.2%) were positive for anti-HCV.[17] Seroprevalence of HBV and HCV were 3.9% and 1.76%, respectively in hospital based study conducted in Uttar Pradesh.[18] Another study carried out at a tertiary care teaching hospital, Trichy, revealed that about 315 cases (1.61%) were positive for HBsAg.[19]

The spread of HBV and HCV infections from healthcare workers (HCWs) to patients and vice versa is well documented.[20-25] Most of these reports state that the transmission occurred because of failing to apply protective barriers. However, this issue in Libya has become particularly important in recent years, as a result of weak control of borders, lack in health screening services and weak preventive policies due to inadequate financial resources.[26] Many illegal immigrants especially from countries, which have high epidemic rate for these pathogens, entered illegally to the country on their way to Europe may be a source of transmission of these pathogens in healthcare centers during their stay.[14, 27] Moreover, the steadily declining incidence from 2011 to 2016 ($P < 0.001$) may be due to the deterioration of health screening services (*i.e*. lack of financial resources required for providing laboratory screening tests to all individuals who will have invasive medical intervention) and preventive policies.

CONCLUSION

The study demonstrated that 0.3% of individuals who attended Tobruk Medical Center from 2003 to 2016 were having either HBV or HCV seromarkers. A significant decrease of this infection has been observed since 2011.

RECOMMENDATIONS

Surveillance of occupationally acquired HBV and HCV infections and review of the efficiency of preventive measures in healthcare-providing centers should be performed regularly. In addition, conducting regular studies to estimate the spread of these infections in healthcare settings is important, to assess the extent of the problem and to encourage authorities to implement more effective programs to prevent the risk of transmission.

ACKNOWLEDGEMENT

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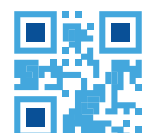
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Impact of Diabetic Ketoacidosis on Pregnancy Outcome at Al jala Hospital

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ABSTRACT

Diabetic ketoacidosis (DKA) in pregnancy is a serious complication that poses several challenges with respect to diagnosis, management and prevention.
Aim: To identify maternal and neonatal outcomes in patients with history of diabetic ketoacidosis during the pregnancy.
This study was a case series study. It was carried out in diabetic pregnancy unit, Al jala maternity hospital from 1st of January 2010 to 31st of January 2017. Twenty-six diabetic pregnant women with history of DKA during period of study were included. Data was collected in a preformed work sheet including patient`s age, parity, abortion, type of diabetes, duration of diabetes, gestational age at booking and at DKA time, laboratory results, precipitating factors of DKA, mode of delivery and neonatal outcome.
The mean age for DKA patients was 35±6.2 years. Most of affected patients were para 1-3, the majority of patients had type I diabetes and they were on insulin therapy with mean duration of 9 years, the mean blood glucose level was 356 mg/dl, the mean PH was 7.21, the mean HbA1c was 8.3%, and the mean bicarbonate level was 6.1 meq/L. Emesis was the main precipitating factor followed by urinary tract infection(UTI) and steroid administration, 42.3% of affected patients delivered by cesarean section (C/S) and no maternal mortality was recorded. Regarding fetal outcomes, 34.6% had abortion, 42.3% were low birth weight, and only 7.7% were large babies, intra uterine fetal death (IUFD) recorded in about 30.8% of the cases.
While the outcomes of diabetic ketoacidosis in pregnancy have improved over years, DKA remains an important cause of maternal morbidity and fetal loss in diabetic pregnancy. Prevention, early recognition and hospitalization, and aggressive intensive care unit management remain the cornerstones to minimize the adverse outcomes of this dreaded complication.

INTRODUCTION

Diabetic ketoacidosis is a serious complication of diabetes often resulting in a medical emergency. Fortunately, the occurrence of DKA in women with diabetes who become pregnant is rare (0.5–3%).[1,2] It was usually occurs in patients with type 1 diabetes mellitus especially with new-onset type 1 diabetes, but it may also affect women with type 2 diabetes or, more rarely, women with gestational diabetes(GDM).[1–6] DKA is rarely life threatening to the pregnant woman if it is recognized and treated promptly. The risk of maternal mortality secondary to complications from DKA is not well established. However, fetal loss rates remain in the order of 10-25% for a single episode of DKA despite substantial improvements in perinatal and neonatal care.[7] Pregnant women are at a greater risk for DKA than are non- pregnant diabetic women.[8] Factors that predispose the pregnant patient to DKA include accelerated starvation, dehydration, decreased caloric intake, stress, and increased production of insulin antagonists.[9] The most common precipitating risk factors for development of DKA are infection-related acute illness in 30%, and failure

to take insulin as prescribed in 30%.[10] Other, less common reasons include insulin pump failure or concurrent use of medications as steroids, β-adrenergic medications.[2]

The exact mechanisms by which maternal DKA threatens fetal well-being are not fully understood and the published literature in this area is sparse.

It is known that the ketoacids as well as glucose readily cross the placental barrier. Several pathophysiologic aspects of DKA probably contribute to fetal loss. Whether it is the maternal acidosis, hyperglycemia, severe dehydration (resulting in decreased utero-placental perfusion), or electrolyte imbalances that has the most harmful effect on the fetus is unclear. Information regarding fetal status during correction of DKA is based on several case reports demonstrating fetal heart rate tracings that are concerning for fetal distress and on animal models of DKA.[11, 12]

The current study was conducted to investigate the maternal and fetal outcomes among diabetic pregnant women who have an episode of diabetic ketoacidosis, who were admitted to Al jala Maternity Hospital.

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MATERIALS AND METHODS

This study was retrospective case series study. It was onducted in diabetic pregnancy unit (DPU), Al jala Maternity Hospital, Tripoli- Libya, from first day January 2010 to 31, January 2017. Twenty-six diabetic pregnant women with history of DKA were included. Data was collected in a preformed work sheet including: age, parity, history of abortion, type of diabetes, duration of diabetes, gestational age at booking and at DKA time, laboratory results, precipitating factors, mode of delivery and neonatal outcome.

Statistical analysis was computerized using the Statistical Program for Social Sciences (SPSS version 21). Descriptive statistics were used and all results are presented as frequencies, and percentages.

RESULTS

Out of 3261diabetic pregnant women who had delivered at Al jala Maternity Hospital over the study period, 26 of them (0.8%) had DKA. The mean age for the patients was (35 ± 6.2 years). The maximum age was 44 years and the minimum was 22 years. Furthermore, majority of them had type 1 diabetes (84.6%), and 38.5% of participants had diabetes for more than 10 years. 57.7% of the patients had the booking visit in the 1st trimester, however, only 15.4% had DKA in the 1st trimester, and the remainders were in both the 2nd trimester and the 3rd trimester, most of them were between para 1 and para 3 (61.6%) (Table 1).

**Table 1:** Socio-demographic and clinical characteristics of participants in Aljala maternity hospital

	No.	%
Age:		
21-30	5	(19.2%)
31-40	15	(57.7%)
>40	6	(23.1%)
Type of DM:		
GDM	3	(11.5%)
T1DM	22	(84.6%)
T2DM	1	(3.8%)
Duration of DM:		
1-5	8	(30.8%)
5-10	8	(30.8%)
>10	10	(38.5%)
Gestational age at DKA:		
1st trimester	4	(15.4%)
2nd trimester	10	(38.5%)
3rd trimester	12	(46.1%)
Parity:		
Nulli para	8	(30.8%)
1-3	16	(61.6%)
4-6	1	(3.8%)
>6	1	(3.8%)

The glucose level was between184–582 mg/dl (the mean 356 ± 102 mg/dl), PH level was ranged between 6.9-7.34 (the mean7.21 ± 0.13) and HbA1c mean was 8.3 ± 1.9 (Table 2).

**Table 2:** Laboratory investigations of the study participants at Aljala maternity hospital

Lab result	Mean ± SD	Range
Glucose	356 ± 102	184 – 582
PH	7.21 ± 0.13	6.9 – 7.34
Bicarbonate	6.11 ± 3.7	2 – 18
HbA1c	8.3 ± 1.9	5.6 – 13.8

The major precipitating factors of DKA were emesis (34.6%), emesis and UTI (26.9%), infection corticosteroid administration contributed by 11.5% for each (Figure 1).
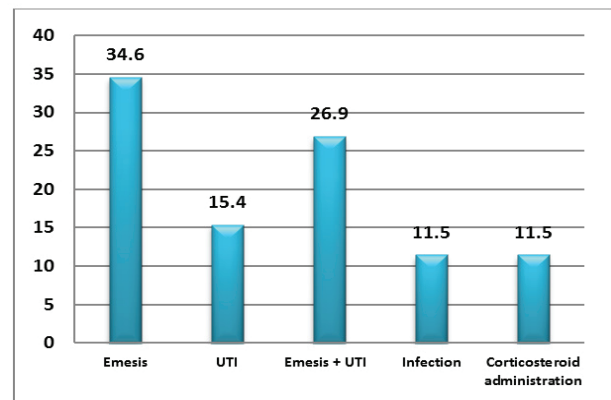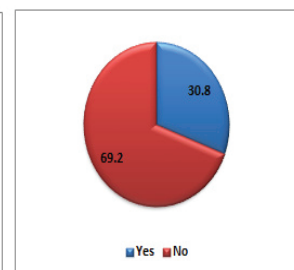

Figure 1: Precipitating factors of DKA among study participants , Aljala maternity hospital

Majority of patients 42.3% delivered by C/S, 34.6% had abortion and 23.1% had normal vaginal delivery, (Figure 2). About 30.8% of the patients had IUFD and 69.2% had alive fetus (Figure 3).
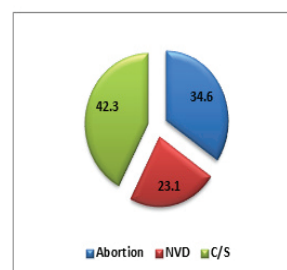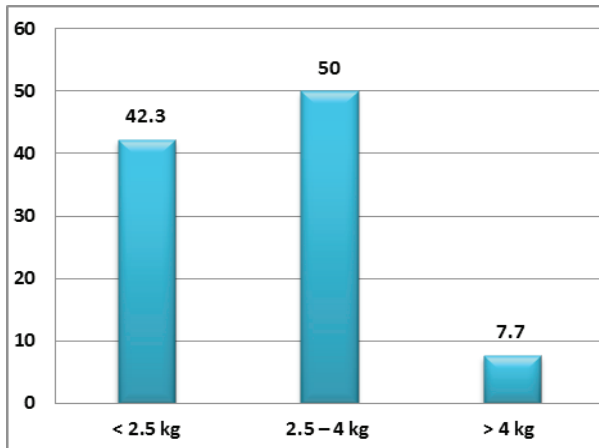

Figure 2: Mode of delivery participants

Figure 3: IUFD among participants

The study showed that, 42.3% were low-birth weight (< 2.5kg), 50% had normal weight (2.5- 4kg) and only 7.7% were large babies (>4kg) (Figure 4).

Figure 4: Birth weight of babies of diabetic ketoacidosis patients

DISCUSSION

The occurrence of diabetic ketoacidosis in pregnancy compromises both fetus and mother. It is usually occurs in the later stages of pregnancy and seen in newly presenting type1 diabetes patients. Despite improvement in its incidence rates and outcomes over the years, it remains a major clinical problem since it tends to occur at lower blood glucose levels and more rapidly than in non-pregnant patients often causing delay in the diagnosis.[13] The management of pregnant patient with DKA is particularly challenging since the health care team is caring for two patients (mother and fetus). While it is recognized that maternal well-being and fetal well-being are both of critical importance, it is important to remember that until maternal status has been stabilized, her well-being should take precedence over her child's. The clinician charged with the management of this potentially life-threatening complication in pregnancy should avoid temptation to intervene with a cesarean delivery for fetal indications until maternal status has been stabilized. The ultimate goal is to ensure a healthy pregnancy outcome for both the mother and fetus.[14] Because it is not common to see DKA pregnant women, there were few studies on the DKA in pregnancy. The current study showed that the mean age for the DKA patients was 35±6.2 years. The age ranged between 22 and 44 years with most of the women between 31 and 40 years. The result of Montoro MN et al[7] showed that the mean age of DKA patients was 25±4.8 years which were lower than the current study result. The result of Schneider MB et al showed that the mean age of DKA patients was 27±1 years.[15] Kilvert JA et al also reported that the mean age of the patients was 27.4 years.[16] With regard to the type of diabetes, the study showed that the majority of the patients had type 1 diabetes and they were on insulin therapy with mean duration of 9 years. Most of the studies showed that type 1 diabetes was the predominant type in DKA patients.[13-15]

Regarding the investigation results, this study reported the following; the mean blood glucose level was 356 mg/dl, the mean of PH was 7.21 and the mean of bicarbonate was 6meq/l. Nearly similar result was reported by Schneider MB et al in which that the mean blood glucose: 377 ± 27

mg/dl, pH: 7.22 ± 0.01, bicarbonate 7.9 ± 3 meq/l, and positive serum ketones.[15]

The result of Montoro MN et al study showed the following; the mean blood glucose 374 ± 100, PH 7.23 ± 0.08 and bicarbonate 7 ± 2.3[13], Kilvert JA et al reported the following; the mean PH was 7.16 and bicarbonate was 8.3[16], both of these studies' findings are not different from this study finding.

Regarding the precipitating factors, the result showed that emesis was the main precipitating factor followed by UTI. Schneider MB et al reported that infection (27%) and a history of the omission of insulin therapy (18%) were the most common precipitating causes for DKA.[15]

Schneider MB et al reported that only 27% of the DKA patients ended with abortion or fetal death[15], also, Kilvert JA et al reported that the overall fetal loss including spontaneous abortion was 22%[16], these two study finding are opposite to current study finding in which the fetal loss was reported in more than 30% of the cases.

CONCLUSION

DKA remains an important cause of fetal loss in diabetic pregnancies. While the outcomes of diabetic ketoacidosis in pregnancy have improved over the years, significant maternal morbidity and fetal mortality remains.

RECOMMENDATIONS

Prevention, early recognition and hospitalization, and aggressive management remain the cornerstones to minimize the outcomes of this dreaded complication.

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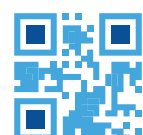
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Effect of Vitamin D Level on Glycemic Control in Diabetic Pregnant Women at Endocrine Clinic, Department of Gynecology and Obstetrics, Tripoli Medical Center, Libya (2016)

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ABSTRACT

Vitamin D deficiency in pregnancy was related to the incidence of gestational diabetes (GDM) and serum 25(OH)D was significantly lower in women with GDM than in those with normal glucose tolerance.
The study aimed to study the effect of vitamin D level on glycemic control in diabetic pregnant women.
This study was a longitudinal study. It was conducted at Obstetrics and Gynecology Department at Tripoli Medical Center (TMC) during the year 2016 from March to August. Sixty diabetic pregnant women were included. Blood level for vitamin D and HbA1c were measured before and after vitamin D supplementation. SPSS software version 16, used to analyze the data; mean, standard deviation, percentages and paired T test were used. *P* value < 0.05 considered significant. The mean age of the cases was 33.7 ± 6.3 years. Most of the patients 57 (95%) suffered from Vitamin D deficiency and 3 (5%) patients have insufficient level. HbA1c level among 96.6% of patients was > 7%. Mean of vitamin D prior supplementation was 9.3±6.45 ng/ml, increasing to 27.7±9.12 post treatment and the mean of Hb A1C pre supplementation was 7.8±1.27 decreasing after treatment to 5.8±0.68.
There was a significant increase in vitamin D level after treatment (27.7±9.2) and significant decrease in HbA1c after supplementation (5.83±0.68).
Identification of CAN is crucial because it can lead to severe morbidity and mortality and increase risk of sudden cardiac death.

Key words- Gestational diabetes; Vitamin D; Deficiency; Glycated hemoglobin.

INTRODUCTION

The diagnosis of gestational diabetes mellitus at any time during pregnancy should be considered if one or more of the following criteria are met: Fasting plasma glucose = 5.1-6.9 mmol/l (92 -125 mg/dl) or 1-h post 75g oral glucose load >=10.0 mmol/l (180 mg/dl) or 2-h post 75g oral glucose load 8.5 –11.0 mmol/l (153-199 mg/dl)[1], and glycated hemoglobin (HbA1C) ($\geq$ 6.5 DCCT %).[2]

There is no consensus on optimal serum levels of 25-hydroxyvitamin D (25(OH)D), vitamin D deficiency is defined by a serum 25(OH)D level less than 25 nmol/l (10 ng/ml). Serum 25(OH) D levels between 25 and 50 nmol/l (10-20 ng/ml) are considered as vitamin D insufficiency.[3] Vitamin D deficiency in pregnancy was related to the incidence of GDM and serum 25(OH)D was significantly lower in women with GDM than in those with normal glucose tolerance,[4] also associated with pre-eclampsia, and small infants[5], bacterial vaginosis, and an increased risk for caesarean section delivery.[6,7]

Vitamin D deficiency and insufficiency have been associated with impaired glucose metabolism and the metabolic syndrome.[3,8] Furthermore, several studies found inverse correlation between 25(OH)D and fasting plasma glucose (FPG), 1 hr. after load plasma glucose in oral glucose tolerance test (OGTT) and glycated hemoglobin.[4,9,10]

The influence of vitamin D status on glycated hemoglobin (HbA1c), a marker of longer-term glucose control, has not been established in women with GDM, hence the study conducted to the effect of vitamin D level on glycemic control in diabetic pregnant women.

MATERIALS AND METHODS

This study was longitudinal type. It was conducted at diabetic clinic; in Obstetric Department in Tripoli Medical Center (TMC) during the year 2016 from March to August. Sixty diabetic pregnant women who came for follow up at Obstetrics and Gynecology Department in TMC during period of study were included. Blood samples for vitamin D level and HbA1c were taken from them in first visit to the clinic then those diabetic pregnant women who have vitamin D deficiency received vitamin D treatment in form of vitamin D IM injection 200.000 IU monthly for 3 months then blood samples were taken from

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Effect of Vitamin D Level on Glycemic Control in Diabetic Pregnant Women at Endocrine Clinic...

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them to see the changes in vitamin D and HbA1c levels. The levels of vitamin D were defined as: Deficient if <10ng /ml, insufficient between 11-20 ng / ml and normal >20ng / ml.[3] HbA1c levels were defined: Ideal control if between 6-7%, Accepted control if between 7-8 %, 8-9% needs improving and re-evaluation of treatment and Poor control if ≥ 9%.[11]

Data was analyzed using SPSS program version 16. Descriptive statistics including means, standard deviation, frequencies, and percentages were obtained for all variables as appropriate. Paired *t* test was conducted to compare difference in means of vitamin D and HbA1c level pre and post vitamin D supplementation. *P* value < 0.05 considered significant.

Verbal informed consent was obtained from all participants during their follow up at clinic and data confidentiality was maintained throughout the study and any resulting publication anonymously.

RESULTS

The study revealed that, the age of the cases was ranged between 20 and 44 years with mean age 33.7 ± 6.3 years, one third of the patients were in age group 35-39 years (Table1).

Table 1: Distribution of cases according to the age, TMC, 2016.

Age	No.	%
20-24	5	8.3
25-29	9	15
30-34	14	23.3
35-39	20	33.3
40-44	12	20
Total	60	100

All the cases in present study suffered from vitamin D deficiency, most of them(95%) were had vitamin level below 10 ng/ ml, and 5% were had insufficient level of vitamin. The study showed that only 3.3% of the participants were had HbA1c level less than 7% (Table 2).

Table 2: Distribution of cases according to the levels of vitamin D and HbA1c pre vitamin D supplementation.

|	No.	%
Vitamin D levels		
Deficiency	57	95
Insufficiency	3	5
HbA1c level		
Controlled	2	3.3
Accepted	44	73.3
Uncontrolled	14	23.3

There was a significant difference in vitamin D level pre (9.3±6.45) and post supplementation (27.7±9.13), t (59) = -13.74, *P* <0.001. Also the results revealed that, a significant difference in HbA1c level pre-treatment (7.8±1.28) and post supplementation (5.8±0.68), t (59) = 13.88, *P*<0.001 (Table 3).

Table 3: Mean of vitamin and HbA1c levels pre and post treatment in TMC, 2016.

	Mean ± SD before supplementation	Mean ± SD post supplementation	Mean difference	*P* value
Vitamin D	9.3 ± 6.45	27.7 ± 9.13	-1.84	**<0.001**
HbA1c	7.8 ± 1.28	5.8 ± 0.68	1.96	**<0.001**

DISCUSSION

Studies reported a prevalence of inadequate vitamin D levels in 41% of the women with GDM, and they consequently proposed routine vitamin D testing of all pregnant women when screening for GDM or earlier, and treatment of women who are found to be deficient[12], compared with current study all diabetic pregnant women who were included have vitamin D deficiency. The highest percentage of women between 30 and 39 years with mean age 33.7 ± 6.3 years year supported by study in India which revealed that GDM patients with vitamin D deficiency were in the age group of greater than 30 years (44.7%).[13] The majority of the patients in the current study suffered from Vitamin D deficiency rather than insufficiency. Same study in India reported similar result, Vitamin D deficiency present in 31 (96.9%) GDM patients on the other hand insufficiency in 1(3.1%) patient.[13] The study of Lithy A et al showed different result in which the majority of the women with GDM suffered from Vitamin D insufficiency rather than deficiency where the mean 25 OHD levels was (18.9 ng/ml) 47.25 nmol/L ± 10.18.[12] In current study there is a significant difference in vitamin D level pre (9.3±6.45) and post supplementation (27.7±9.13), *P*<0.001, which is similar with Asemi Z et al study which showed vitamin D supplementation resulted in increased serum vitamin D concentrations compared with placebo (+18.5 ± 20.4 compared with +0.5 ± 6.1 ng/mL; *P* < 0.001). Furthermore, intake of vitamin D supplements led to a significant decrease in concentrations of fasting plasma glucose (-17.1 ± 14.8 compared with -0.9 ± 16.6 mg/dL; *P* < 0.001).[14] The study of Lithy A et al showed a negative linear correlation between fasting blood glucose levels and vitamin D3. The same study reported that there was inverse association between vitamin D and HbA1c in women with GDM, showing a potential interaction between vitamin D and blood glucose control in pregnancy.[12] Heather H Burris et al study reported that there was a significant inverse relation of serum vitamin D and the incidence of GDM, in which Vitamin D insufficiency is associated with an increased risk of GDM.[15] Some studies reported that only severely deficient maternal serum vitamin D levels are significantly associated with an elevated relative risk of gestational diabetes mellitus as Maghbooli et al found in a study of 741 women in Iran that among the 29% of participants with vitamin D level < 15 nmol/L (6 ng/ml), the prevalence of GDM was significantly higher compared to women with 25(OH)D levels ≥ 35 nmol/L(14 ng/ml).[16]
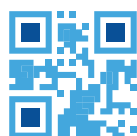
CONCLUSION

There was a significant increase in vitamin D level after treatment and significant decrease in HbA1c after vitamin D supplementation. Further study recommended to ascertain the appropriate dose of vitamin D among gestational diabetic women.

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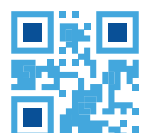
Ocular Trauma Admitted at Tripoli Eye Hospital (Magnitude, Pattern, and Outcome)

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ABSTRACT

Eye injuries can lead to many health consequences. The effect of eye injuries is not mainly cause of vision loss, but it can burden our community and lead to many economical conflicts.

Objective: is to demonstrate the trend of ocular trauma admitted at Tripoli Eye Hospital in the form of magnitude, pattern and outcome.

This study was a longitudinal, descriptive study. It was conducted at Tripoli Eye Hospital during the year 2015-2016. Two hundred and twenty seven patients with history of trauma to the eye were included in the study. The data were obtained from the patient's records including age, gender, affected eye, etiology and location of trauma and the management. Data was analyzed by SPSS version 16.

The magnitude of ocular trauma in this study was around the third of cases admitted to Tripoli Eye Hospital during Jun 2015 till January 2016. High percentage of eye injuries was found in male. Out of 227 trauma eye cases, 53.3% patients suffered left eye injuries, 48% presented within the first 24 hours. Street (27.8%) and home (26.4%) were contributed to the most common places for eye trauma. The most common cause was Mechanical (93%), mainly by blunt (28.2%) and sharp (26.4%) objects. Open eye injuries are more common (39%) than close eye injuries (34%). The ocular Trauma system Score (OTS) 2 level is the most common end result for eye trauma (23%).

The study showed that around a third of admitted patients to the hospital are due to trauma. The majority of ocular trauma in study population was due to mechanical cause, more in males, younger than 10 years of age. Open globe injuries were more common and the OTS 2 level is the most common end result for eye trauma.

Keywords-Ocular Trauma; Glob injuries; Complications; Prevention.

INTRODUCTION

Ocular trauma is an important worldwide cause of preventable morbidity and accounts for half a million cases of monocular blindness worldwide.[1-3] Approximately half of all patients who present to an ophthalmic casualty department do so because of ocular trauma. Majority of injuries are minor affecting peri-orbital structures, ocular surfaces such as corneal abrasions and superficial foreign bodies. Only 2-3% of all eye injuries require hospital admission.[4] The demographic pattern (age/gender) of ocular injuries varies with the environment and cause of injury.
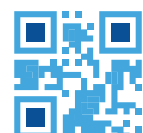
The general pattern is that of a curve with two peaks: one in the age group 5-25 years and another in people aged 70 years and over. Compared to women, the risk of eye injuries in men is four times higher.[5] Every year, approximately 2 million eye injuries occur in the United States, of which, more than 40 thousand results in permanent visual impairment.[6] When considering eye injuries requiring hospital admission, rates have ranged from 8 to 57 per 100.000.[6] With all of these numbers still there are scant epidemiological data on moderate to severe injuries with potentially sight threatening sequela that are available to inform not only planners and providers of eye health care, but also health and safety strategies for the prevention of ocular injuries.[7] Injury to the eye or its surrounding tissues is the most common cause for patients to get medical attention at emergency department.[8] The surgical management of injuries is directed toward restoration of normal ocular anatomy and the goal is to prevent secondary complications.[8]

Despite its public health importance, there is relatively less data on magnitude and risk factors for ocular trauma, especially from developing countries, hence the current study was conducted to describe ocular trauma that admitted to Tripoli Eye Hospital. It examined the magnitude, pattern and the outcome of ocular trauma.

MATERIALS AND METHODS

A longitudinal descriptive study was conducted in Tripoli Eye Hospital, which is an eye health care center specialized only for treating eye diseases. The hospital has an emergency

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department, outpatient clinic, diagnostic area, operation rooms and admission floor. It provides an eye care for people from different cities of Libya. The study was conducted in June 2015 till January 2016. The study included all patients admitted to TEH due to ocular trauma. Data was collected by interview and from medical records of patients. All patients were interviewed and underwent detailed ocular examination. Injuries were classified according to BETT (Birmingham Eye Trauma Terminology) and other ocular trauma classification In order to predict the 6 months visual acuity, it used the Ocular Trauma Score system to estimate the result. This system is based on immediate visual acuity and the type of eye injury that occurred. The raw score are estimated then transferred to table score to get the result. OTS scores range from 1 (most severe injury and worst prognosis at 6 months follow-up) to 5 (least severe injury and least poor prognosis at 6 months).[5] Data related to complications were collected by special form; follow up visit, and on phone. A questionnaire was includes the patient's age, gender, affected eye, etiology and location of trauma, classification of eye injury, complications and management option. Data analyzed statistically by using SPSS statistical package version 16. Percentage and mean ± SD were used.

RESULTS

A total 745 patients were admitted in Tripoli Eye hospital during study period and nearly a third (30.5%) of total admission is due ocular trauma, with mean age of 21±18.2 years and 42% of the cases were from Tripoli. Trauma occurrence was more among males (82%) compared to females, male to female ratio was 4.6:1 (Table 1).

Table 1: Demographic characteristics of patients with ocular trauma

Characteristic	No.	%
Sex:		
Male	187	82.4
Female	40	17.6
Age:		
<10years	82	36.1
11-20	44	19.4
21-30	49	21.6
31-40	23	10.1
41-50	11	4.8
>50	18	7.9
Residence:		
Tripoli	95	42
Outside Tripoli	132	58

Left eye injury was reported in 53.3% of the cases, 48% of cases were presented within 24 hours after injury. The most common place of trauma was at street and home with percentage around 27.8% and 26.4% respectively and the lowest was at work. The most common cause was Mechanical (93%), mainly by blunt (28.2%) and sharp (26.4%) objects (Table 2).

Table 2: Pattern of ocular trauma among admitted patients at Tripoli Eye hospital.

Character	No.	%
Site of trauma		
Right eye	97	42.7
Left eye	121	53.3
Both	9	4
Duration of trauma		
Within 24 hours	109	48
2-3 days	39	17.2
4-5	10	4.4
6-7	2	0.9
>week	5	2.2
Unknown	62	27.3
Place of trauma		
Street	63	27.8
Home	60	26.4
Work	23	10.1
Unknown	81	35.7
Cause trauma		
Mechanical	212	93.4
Non mechanical	2	0.9
Mixed	11	4.8
Others	2	0.9
Object of trauma		
Sharp	60	26.4
Blunt	64	28.2
Other	94	41.4
Unknown	9	4

Further analysis for object of trauma, gunshot and road traffic accidents were 21% and 20% respectively (Figure1).
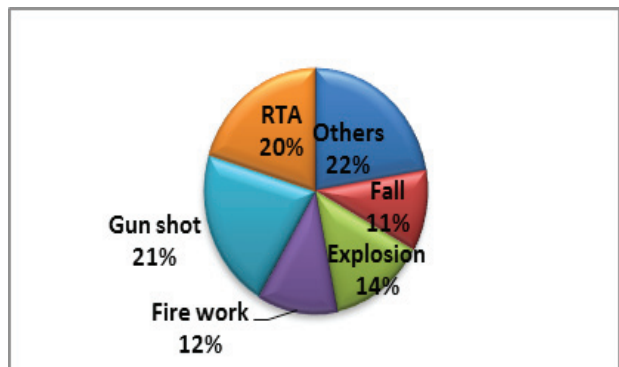
Figure 1: Distribution of other objects (N=94) among patients admitted to Tripoli Eye Hospital

Open eye injuries are more common (39%) than close eye injuries (34%). Mixed same were includes the subcategory of open or close injury. While mixed different were includes both subcategory of open and close injury (Figure 2).
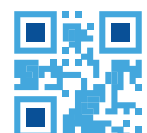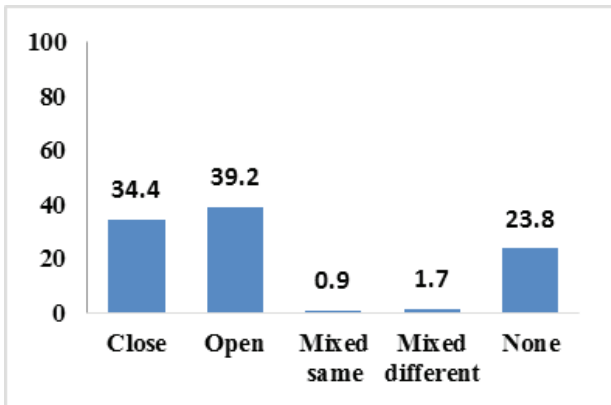
Figure 2: Types of Globe Injuries.

Concerning ocular trauma management, 43.2% of cases were treated medically and 42.7% were underwent surgical intervention (Table 3).

Table3: Management type for ocular trauma patients.

Management	No.	%
Medically	98	43.2
Surgically	97	42.7
Referral	14	6.2
Discharge against medical advice	10	4.4
Unknown	8	3.5
Total	227	100

The OTS 2 (23%) level is the most common end result for eye trauma (Figure 3).
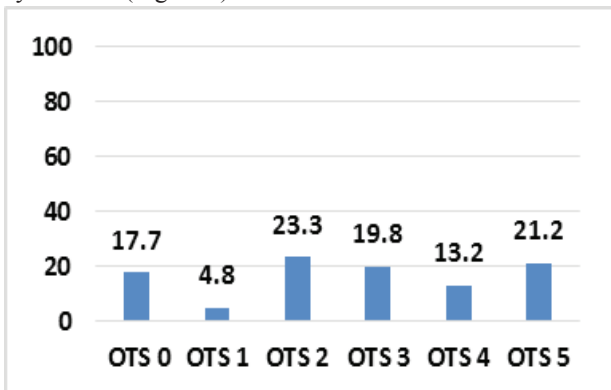
Figure 3: Outcome of ocular trauma by using Ocular Trauma Score.

DISCUSSION

Ocular trauma is an important cause of visual loss and is frequently preventable. The magnitude of ocular trauma in this study was around the half of cases admitted to Tripoli Eye Hospital during June 2015 till January 2016. Eye injuries become the major risk factor for vision loss in one or both eyes.

Mean age of patients during study period was 21±18.2 years, most affected age groups were less than 10 years old

and 21-30 years, in comparison with Pandita et al study. The maximum number of injuries was seen in the age group 16-20 years and 26-30 years (11.5% and 11.3% respectively [9] Eye injuries were predominant among male in current study group and at all ages. This will support the high trend of trauma in male as compared to female, which is similar to results of Pandita et al that men had higher rate of ocular trauma than women (74% vs 26%).[9]

The study revealed that the most injuries occounted at street and home, which was in agreement with previous Indian study [1] as well as with Rafindadi study[4] and Malika etal study.[10] However, contradictory finding was demonstrated in Pandita et al study, which showed that outdoor activity and work were the most common places for eye Injuries.[9] A mechanical injury was the most common cause of injury with 93.4% mainly blunt and sharp trauma type. For further analysis results demonstrate gunshot was responsible for 21% of trauma. This gave an idea that violence is a risk factor for eye injuries.

In this study, medical treatment accounting for 43.2% of cases, while Cao et al study revealed (22.2%) patients were managed conservatively on medications, and the remaining 2835 (77.8%) required additional procedures.[11] Open globe injuries were reported in 89 (39.2%) patients, which is more frequent than closed injury in present study, However, contradicted finding was demonstrated in Asaminew et al[12] and Mir study[13] Ocular Trauma Score give a good idea about the prognosis of eye injuries and can be used to give patients realistic expectation about their condition.

The OTS evaluation of the patient showed that 11(4.8) had a score of 1(most severe injury and worst prognosis at 6 months follow-up) and 48 (21,1%) were had a score 5 (least severe injury and least poor prognosis at 6 months), while study conducted by Mishra et al reported 23 (13%) had a score of 1 (extremely bad visual prognosis) and 109 (61%) had a score of 5 (relatively good visual prognosis).[14]

CONCLUSIONS

Eye injury trauma contributed to one third of the hospital admission, the study showed that around the third of admitted patients to the hospital are due to trauma. The majority of ocular trauma in study population was due to mechanical cause, occurring mainly in males, younger than 10 years old. Open globe injuries were more common and the OTS 2 level is the most common end result for eye trauma.

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Neonatal Admission at Neonatal Intensive Care Unit in National Heart Center, 2011

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ABSTRACT

The neonatal period is the first 28 days of life, it represented the most dangerous duration of life due to fragility and suitability to many hazards in the world. The study aimed to identify the causes of admission, and to estimate the admission duration of different causes in neonatal intensive care unit (NICU) at National Heart Center during 2011. The study was descriptive cross sectional type, conducted at National Heart Centre, from 1-1-2011 till 31-12-2011, was involved 195 babies, all were admitted at NICU. Data collected by reviewing the medical records of admitted patients and analyzed by SPSS version 21.

Out of total 195 patients, 61% of admitted babies were males, mean age was 1.87 SD ± 3.15 days, 76% were in first 24hrs of age, 88.7% of cases were full term babies and 66.2% of babies were delivered by normal vaginal. Septicemia was responsible for 24.6% of admission followed by respiratory distress syndrome 16.9%. Mean birth weight was 3238 ± 770 grams. Birth asphyxia patients had the highest duration of stay at hospital, with mean of 5.5 ±3.6 days. Other causes of admission have almost same duration of hospital stay.

The most common causes of admission in neonatal ICU in National Heart Center during 2011 were septicemia and Respiratory distress syndrome and most of them were male, term with normal birth weight. Normal vaginal was the most common mode of delivery and majority of them admitted within 1st 24hrs of life. The mean length of hospital stay was 4.47 ± 2.6 days.

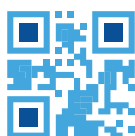*Key words- Neonate; Risk factors; Causes; Admission.*

INTRODUCTION

The neonatal period is a highly vulnerable time for an infant completing many of the physiologic adjustments required for life outside the uterus. As a result, there were high rates of morbidity and mortality. The three major causes of mortality in developing countries include prematurity, infection, and perinatal asphyxia [1] Neonatal mortality contributes between 40-70% of infant mortality. [2] In most developing countries, nearly half of perinatal deaths occur during the antepartum or intrapartum period, and the rest during the first week of life. The causes of neonatal deaths that were observed vary across countries and geographical locations. [1] Babies born very preterm (i.e. gestational age < 32 weeks) and with very low birth weight (VLBW) (< 1500 g) have mortality rates of over 50% in many low-resource settings and are at a higher risk of disabilities and impairments. [3,4]

More than 80% of all newborn deaths result from three preventable and treatable conditions – complications due to prematurity, intrapartum-related deaths (including birth asphyxia) and neonatal infections. Improving quality of care around the time of birth will save the most lives, but this requires educated and equipped health workers, including those with midwifery skills, and availability of essential commodities. [5] Approximately 9% of all births require special or neonatal intensive care usually needed for only a few days, such observation may last from a few hours to several weeks. Since neonatal mortality largely depends on birth weight and gestational age, because most neonatal mortality occurs within the first hours and days after birth, the outlook improves dramatically with increasing postnatal survival. [6] Neonatal morbidity and mortality rates reflect a nations socioeconomic status, as well as the efficiency and effectiveness of their healthcare services. [7] Neonatal intensive care continues to develop as medical specialty but concern has grown regarding the quality of life of high risk people. [8]

The present study aimed to identify the causes of admission and to estimate the admission duration of different causes in neonatal intensive care unit at National Heart Center during 2011.

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MATERIALS AND METHODS

The study was a descriptive cross sectional type, conducted at NICU at National Heart Centre, from 1-1-2011 till 31-12-2011. It included all babies, who were admitted at NICU. Data were collected from patients' files and records and then plotted these date in master sheet which contain items including: age, sex, Gestational age, mode of delivery (normal vaginal delivery (NVD), forceps, elective cesarean section (ELCS), emergency cesarean section (ECS)); birth weight, cause of admission, duration of stay at the hospital.

The data analyses were done by software programs "SPSS" (statistical package for the social sciences) version 21. Descriptive statistics as mean ± SD and percentages were used. T test and Chi square test were used to study association; P value < 0.05 was considered statistical significance.

Permission was obtained from hospital manager and the data were treated anonymously.

RESULTS

There were 196 babies admitted to NICU during study period, but one case was deleted because of incomplete recording. The age of newborns who were admitted to NICU ranged between 1 day to 27 days, with mean age of 1.87 ± 3.15 days. However the most predominant age was 1st 24hrs and it represented 76%; 61% of the cases were male, male to female ratio was 1.6:1.

The majority (88.7%) of neonates were full term and 66.2% of babies were delivered by normal vaginal delivery(NVD), mean birth weight was 3238 ±770 grams, and 75.4% of cases were between 2500 to 3999 grams (Table 1).

Table 1: Characteristics of admitted babies to NICU, 2011(N=195)

Characteristic	No.	%
Sex:		
Male	119	61.0
Female	76	39.0
Gestational age:		
Pre term	15	7.7
Term	173	88.7
Post term	7	3.6
Mode of delivery:		
NVD	129	66.2
Forceps	2	1.0
Vacuum	11	5.6
ELCS	12	6.2
ECS	41	21.0
Birth weight:		
VLBW*	4	2.1
LBW**	20	10.3
Normal	147	75.4
Macrosomia	24	12.3

* VLBW: very low birth weight, **LBW: low birth weight

Results demonstrated that the septicemia was the primary cause of neonatal admission (24.6%), followed by respiratory distress (16.9%), neonatal jaundice (12.8%), then meconium aspiration (8.7%); Miscellaneous causes like poor feeding, neonatal convulsion , and vomiting were 21% of the cases. There were no significant difference between causes of admission with sex of baby, mode of delivery and gestational age (P=0.47, 0.51, 0.66 respectively), but there was significant difference between birth weight and the causes of admission P= 0.001 (Table 2).

Table 2: Causes of admission to NICU in National heart center, 2011

Cause	Frequency	Percent
Septicemia	48	24.6
Respiratory distress	33	16.9
Jaundice	25	12.8
Meconium aspiration	17	8.7
PROM	15	7.7
Birth asphyxia	9	4.6
Birth trauma	3	1.5
Congenital anomalies	4	2.05
Others	41	21.0
Total	195	100.0

Birth asphyxia patients had the longest duration of stay at the hospital, with mean of 5.5± 3.6 days, followed by congenital abnormality, neonatal jaundice, meconium aspiration, respiratory distress, septicemia. There was no significant difference between the cause of admission and the duration of staying at hospital (P >0.05) (Table 3).

Table 3: Distribution of causes of admission by duration of admission in NICU in national heart center, 2011

Cause of admission	No.	Duration of admission Mean ±SD
Septicemia	48	4.28±2.2
Respiratory distress	33	4.66±2.23
Neonatal jaundice	25	4.84±2.13
Meconium	17	4.76±2.70
PROM	15	3.1±1.25
Congenital anomaly	9	5.55±3.6
Birth asphyxia	3	4.8±4.9
Birth trauma	4	3 ±1.7
Miscellaneous	41	4.49±3.24
Total	195	4.47±2.59

DISCUSSION

Among many neonatal conditions, the three major contributors to the global burden of neonatal disease are premature birth, birth asphyxia, and neonatal infections.[1]

In this study there was a male predominance, it represented 61% of admitted babies. Similar finding was reported with other study[9-12] and this could be due to cultural and social factors whereby male babies are more likely to receive medical care compared to female.

In present study the normal vaginal delivery had the highest frequency among babies who were admitted in NICU of national heart center during 2011. The reason could be that doctors restricted admission policy and admitted mothers with low risk delivery, which going with results of Zietoun et al[9], Uogue et al[11] and Maryam et al[12] studies. In this study prematurity was the 2nd reason for admission and represented 7.6% of total neonatal admission, which was higher than the study done in Karachi[7] which reported that 6.8% of neonates were admitted for prematurity. While in Zitoun et al study reported that preterm represented 15% of total admissions[9], and in Hoque et al study it was 23.5 %.[11] In present study showed that the septicemia was the most common cause of neonatal admission (24.6%), followed by respiratory distress (16.9%), and neonatal jaundice (12.8%). This is different from a study done Iran were jaundice was the main cause of admission.[12]

Results of studies done by Rahim et al[10] and Syed et al[7] showed that the main causes of admission were birth asphyxia, neonatal septicemia, and prematurity. Study done by Blandina et al in Tanzania, described that the leading causes of admission were birth asphyxia, prematurity, neonatal infection.[13]

Birth weight less than 2500 gram were accounted 12.4% of cases; compared to 39% in Lahore, 36% in Larkana, 55.4% in Karachi and 41.2% in Peshawar, 13.25% in a Bangladesh and 11.02% in an Ethiopian.[7] LBW is low, this could be due admission policy followed in maternity and neonatal intensive care unit that they don't accept high risk mothers.

There were no significant difference between causes of admission with sex of baby, mode of delivery and gestational age but there was significance difference between birth weight, similar with Maryam et al study, where infants' gender and mode of delivery had no significant relationship with the cause hospitalization and birth weight and gestational age were significantly related to the causes of admission in hospitals ($P>0.0001$).[12]

In this study the average period of stay at the hospital was 5 days with mean of 5.5 ± 3.6 days, and there were no significant variation between different causes of admission in NICU and length of stay at the hospital. This may be due to lack of standard approach to reach diagnosis especially when it found that septicemia, birth asphyxia and neonatal jaundice nearly have the same duration of stay in NICU and it apparently should not be. Compared with other studies the mean hospital staying was 6.9-7.9 days in Zitoun study[9] and 9.2 days in Houqe et al study.[11]

In this study the majority of admitted babies were admitted during the 1st 24 hours of life, similar results were reported by other studies.[10, 7]

CONCLUSIONS

The most common causes of admission in neonatal ICU at the National Heart Center during 2011 were septicemia and respiratory distress syndrome, most of them were male and term with normal birth weight. Majority of them admitted within 1st 24hrs of life. All causes of admission have almost same duration of admission.

RECOMMENDATIONS

Use the international classification of disease (ICD10) as standard approach for diagnosis in NICU and further studies are needed to support this study.

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Some Epidemiological Features of Bronchial Asthma in Benghazi Children Hospital, 2010/2011

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ABSTRACT

Asthma is one of the most common chronic diseases in childhood. It negatively affects children during critical periods of growth and development, which leads to increased annual cost of treating childhood asthma.

This study aimed to determine some epidemiological features of bronchial asthma in Benghazi Children Hospital.

A descriptive cross sectional study was approached. All bronchial asthma cases admitted to Benghazi Children Hospital between January 2010 and December 2011 were included. From these cases a statistically representative sample was withdrawn. For this sample all demographic and clinical data were collected. These data were processed and statistically analyzed by SPSS version 18.

The mean age for this sample group was 4.8 years. Males had a slightly higher percentage of asthma than female. About 60% of the cases had a family history of asthma. It has also been found that there is no similarity in the peak of asthma cases admission between the years 2010 and 2011. Most of the cases were not prescribed any antibiotics showing that asthma is not misdiagnosed in this setting.

The epidemiological features of bronchial asthma in this hospital, does not differ much from that in the international literature.
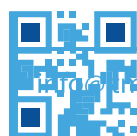
INTRODUCTION

Bronchial asthma is one of the most common chronic diseases in childhood.[1] It may be defined as a chronic inflammatory disease of airways associated with widespread but variable outflow obstruction. It is manifested clinically with wheezing, recurrent cough, difficulty breathing, and chest tightness.[2] It is more prevalent in the high-income countries (HICs), but some low-and middle-income countries (LMICs) also have high levels of asthma symptoms.[3] It negatively affectes children during critical periods of growth and development, leading to increased annual cost of treating childhood asthma.[4] Despite the fact that pediatric asthma has become an important public health problem, the major determinants of childhood asthma are still unknown. Familial/genetic role for etiology is the most important factor. Those who persist to have wheezing at 6 years, who have history or tests suggestive of asthma-related allergies or atopy or have a positive family history of asthma, are more likely to have persistent symptoms until late childhood or even adult life. Environmental factors are also important and the most preventable predisposing factors. The common environmental triggers are cigarette smoke, animal proteins, pet-related biological matter and dust mite. Environmental agents work in synergy with viral infections to alter reactivity of the airways.[5]

The probability of children having asthma-like symptoms is estimated to be between 5% and 12% with a higher occurrence in boys than girls and in children whose parents have an allergic disorder. Between 30% and 70% of children will become symptom free by adulthood. However, individuals who develop asthma at an early age do have a poorer prognosis.[6]

According to Word Health Organization (WHO) statistics, bronchial asthma affects 300 million people.[7] About 80% of asthma deaths occurred in low and lower-income countries, worldwide, the burden of asthma on the economy exceeds that of tuberculosis and Human Immunodeficiency Virus (HIV) combined.[8]

These costs are directly related to the severity of disease. Even though patients with severe asthma constitute only 20% of the total asthma population, they are responsible for 50% of the cost of disease.[3] Asthma is considered to be one of the consequences of western civilization, and appears to be related to a number of environmental factors. Air pollution resulting from industrial sources and transport may interact with smoking, dietary and other factors to increase the incidence of this debilitating problem.[9] The study was conducted to determine some epidemiological features of bronchial asthma in children in Benghazi.

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MATERIALS AND METHODS

The study was cross-sectional type, conducted at Benghazi Children Hospital during period from January 2010 and December 2011. Out of 33285 pediatric admissions in the two years only 315 cases had asthma. The cases were extracted from hospital electronic files, where all asthma cases were coded with International Coding of diseases (ICD-10) system as (J45-9 Status Asthmaticus). A representative sample (142 cases) was selected randomly out of total asthma cases. Demographic data such as, age, gender, residence and date of admission; the medical history of these cases including symptoms of asthma, family history, history of smoking in the family, treatment were collected from file records. The collected data was processed using Microsoft excel win 2007, and statistically analyzed using SPSS version 18.

RESULTS

Out of total 33285 pediatric admissions in the two years (2010/2011) only 315 had asthma. Proportional bronchial asthma admission rate during the year 2011 was higher than 2010 (Table1)**.**

Table 1: Total and proportional admissions of pediatric cases in Benghazi Children Hospital (2010/2011)

Admissions	2010	2011
Total pediatric admissions	17043	16242
Total admitted respiratory cases	367	217
Total admitted bronchial asthma cases	123	192
Proportional respiratory cases admission	2.1%	1.3%
Proportional Bronchial Asthma admission	33.5%	88.4%
Proportional of Br. Asthma cases from total admission	0.72%	1.2%

Mean age of asthmatic cases was 4.8±3.65 year, 80.3% of the cases were 7 years or younger, female to male ratio was 1:1.2 and most of the admitted cases were from Benghazi (Table 2).

Table 2: Demographic characteristics of bronchial asthma cases in Benghazi Children Hospital (2010-2011).

Character	No.	%
Age (yrs.)		
0 - 3	68	47.9
4 - 7	46	32.4
8 -11	19	13.4
12 - 15	8	5.6
16 -18	1	0.7
Gender		
Male	77	54.2
Female	65	45.8
Residence		
Benghazi	122	85.9
Outside Benghazi	20	14.1

Results demonstrated that, the most of the cases had a family history of asthma, while about 30% of the cases did not. However, interestingly about 10% of cases had no registered history (neither positive nor negative) (Figure 1).
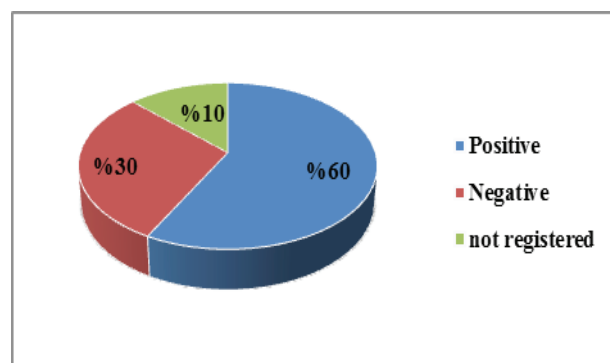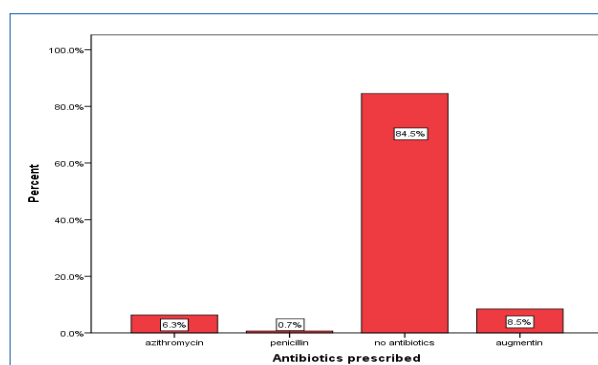

Figure 1: Distribution of cases according to family history of asthma.

Regarding the distribution of cases according to month of admission in both years, the highest peak is seen in February and January 2010, while in 2011 it is noticed that most of the cases were admitted in May, September, and November (Figure 2).
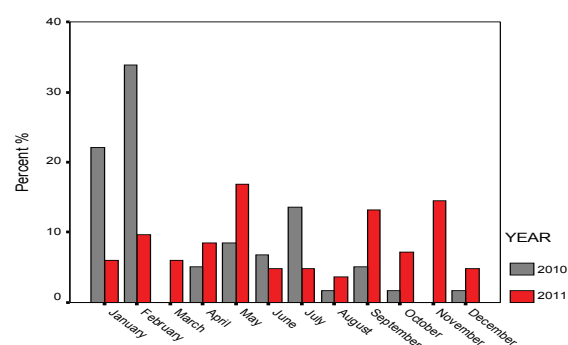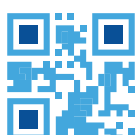

Figure 2: Distribution of cases according to month of admission in both years.

More than 80% of cases were prescribed no antibiotics during treatment, showing that they were not miss-diagnosed as bacterial infections (Figure 3).

Figure 3: The distribution of the cases according to antibiotics prescribed

DISCUSSION

Asthma is a disease that negatively affects children during critical periods of growth and development, leading to increased annual cost of treating childhood asthma.[7] In the present study, it has been found that most of the asthmatic cases were of the younger age groups, which was not widely different from other international studies achieved by Masoli M, et al (2004).[10]

From the collected data it was found that the frequency of asthma in males was slightly more than that in females. Similar results, confirming this study, were illustrated by WHO (2018)[8] and de Marco R, et al (2000).[11]

The percentage of patients from outside Benghazi was around 14.1%, which is not a small proportion, showing the wide range that this hospital covers. A very small proportion of the cases received antibiotics, which indicates that antibiotics are not over-prescribed and bronchial asthma is not misdiagnosed, which may be the case elsewhere as reported by Annemiek E, et al (2005).[12]

It has also been found that there is no similarity in the peak of asthma cases admission between the years 2010 and 2011, but it was noticed that the ratio in 2011 was less than 2010. Knowing that it was a period of war, this can be ascribed to that children did not go school in the year 2011.

The main limitation in this study was the incomplete information in the patient files about many aspects e.g., (history of smoking in the family, family history, personal history of atopy). This lead to difficulties in collecting enough samples where only 40% of data were available from the files in the Benghazi Children Hospital.

CONCLUSION

The epidemiological features of bronchial asthma in this hospital, did not differ much from that in the international literature, most vulnerable age group was less than 7 years, more among male, with positive family history positive. Another significant finding of this study is that antibiotics were not over-prescribed for asthmatics, which is a good indicator of not misdiagnosing asthma in this Hospital.

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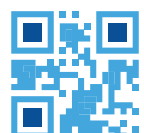
Importance of Clinical Skills Center in Promoting Clinical Teaching and Improving Performance of Libyan Medical Students

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ABSTRACT

The establishment of a clinical skill center (CSC) is important, because it help in improving and maintaining clinical and communication skills, and to ensure that all students have the necessary learning opportunities and appropriate assessment before approaching real patients.

To evaluate the clinical skill center at Faculty of Medicine from student' perspective.

A descriptive cross sectional study was conducted at CSC in faculty of medicine during period of 3 months from April to June 2017, included 400 medical students who were finished all skills, and asked to complete an evaluation sheet and rate their agreement with a series of 10 questions, and one open ended question. Data analysis was done by SPSS program version 19.

There were 318 (79.5%) of students who felt that CSC helped them to learn theoretical knowledge and apply it in a clinical setting. A total of 320 (80%) of students thought the skills sessions were mostly valuable, and excellent additional; 337 (84%) of student preferred to spend time learning in the lab and 259 students (64.5%) felt there were enough doctors. Half of class felt that there were too many students in the session, and 271 (67.5%) felt that time of the session was enough. The majority of students 341 (85.5%) felt there were CSC helped them to gain skills and feel as a doctor and 363 (91%) students agree with early introduction of CSC and highly recommended it.

Introduce clinical skills center as a new innovative method to provide comprehensive clinical skills training to assist medical students and not to replace traditional bedside teaching in hospital was well-perceived by students.

Key words- Clinical skills center; Clinical teaching; Healthcare system; Teaching methods.

INTRODUCTION

Clinical skills performance is considered to be core proficiency and is crucial to professionalism in medical practice, contributing to successful outcomes in patient care.[1] Actual teaching at the bedside during attending rounds, with emphasis on history taking and physical diagnosis, has been declined significantly from an incidence of 75% in the 1960s to an incidence of less than 16% today.[2] Thus students' and doctors' deficits in their clinical skills experiences, made a trend toward training in clinical skills centers a necessity.[3] Globally, previous studies indicated several reasons behind this decline, such as the bulk of patients' care has shifted away from hospitals to primary care units, private clinics, insurance institutes and tertiary or specialized hospitals, where medical students' teaching programs are not available.[4] Additionally, due to the increasing clinical, and research duties of senior doctors and teachers, the frequency of bedside round is significantly decreasing, and the time spent at rounds has gotten much shorter than before.[5] As a result of all of these factors the traditional bedside teaching has become deficient in providing comprehensive training in clinical skills.[6] Many medical schools have developed a set of basic clinical skills to train medical student before they use such skills on patients.[7-10]

Basically, previous studies reported the majority of graduated medical students have significant deficits in their clinical skills experiences.[7-8] Thus, the curriculum integration and the early introduction of clinical skills teaching are educational goals recommended by the world Conference on Medical Education and the General Medical Council in the UK.[9,10] Additionally, some studies reported that the examination performance of medical students who are received training at skills lab was significantly better and learning effect lasted longer than students who are trained by classic traditional bedside teaching.[11-12]

A clinical skills center can contribute significantly to enhance undergraduate medical education teaching, by using this center as alternative route for training medical students the basic of clinical examination, communication skills, and practical procedures thus avoid endangering patient to the risk of traditional clinical settings.[13-14] The safe protected environment of (CSC), with no concerns of patient distress, where mistakes are permissible, and students can feel at ease to learn at their own pace, without affecting the quality of patients and with no limitation and frequent rehearsal and review of particular skills, especially the more difficult, painful, and embarrassing ones, help the students to reach proficiency.[15-17]

As (CSC) has been established recently at faculty of medicine in University of Tripoli, hence the study was conducted to evaluate the clinical skill center from student' perspective.

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MATERIALS AND METHODS

The clinical skills center was established in 2016 at Faculty of Medicine in University of Tripoli; according to international standards with a variety of teaching methods, for skills training in demonstration rooms of different clinical subjects. It provides a variety of medical education programs with simulate encounters to supplement traditional medical education and equipped with variety of latest simulation with all resources needed for teaching students clinical skills, from simple SimMan training models to the 3G SimMan.

The study was a descriptive cross sectional type, conducted at clinical skill center in Faculty of Medicine at University of Tripoli; during the period of 3 months from April to June 2017, including 400 medical students who were completed the skill I, II, and III. They were required to complete the questionnaire during one sitting, which was designed to obtain information on the importance and usefulness of CSC and whether it had helped them to improve their clinical skills and enhance their confidence during their clinical years. Students were asked to complete an evaluation sheet and rate their agreement with a series of 10 close-ended questions with a five-point scale questions, and the students were required to choose one of the five levels of agreement: Agree, Strongly agree, Neither agree nor disagree, Disagree, Strongly disagree. At the end of the questionnaire, there

was an open-ended question asking the students' opinion about the benefits of clinical skills and for suggestions to improve the center. Statistical analyses were performed using SPSS version 19.0 (IBM corporation). Data presented as frequency and percentage. Verbal consent was obtained from each student, data collection tool was anonymous, and data confidentiality was maintained throughout the study.

RESULTS

The majority of students 318 (79.5%) agreed or strongly agreed that clinical skills center helped them to learn more about the theoretical knowledge and apply it in a clinical setting better. There were 320 (80%) of the students who thought that the clinical skills sessions were mostly valuable, and excellent additional to their medical curriculum. A total of 328(82%) of students felt the time spent in the clinical skills center is exciting time and well spent. Majority of students 341(85.5%) felt that CSC helped them to gain clinical skills and feel as a doctor (Table 1).
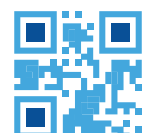
Majority of the class 337(84%) preferred to spend time learning in the clinical center rather than studying in the library. There were 259(64.5%) students who felt that there were enough doctors to help them during the practical session. Approximately half the class 201 (50.5%) felt that there were too many students in the session at any one time, and more than half of students 271 (67.5%) felt that time of the session

Table 1: Student perception of importance of skill lab in learning clinical skills

Questions	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
1- CSC helped me to learn more about the theoretical knowledge, and apply it in clinical setting during the session	162 (40.5%)	156 (39%)	47 (12%)	24 (6%)	11 (3%)
2-Clinical skills sessions are mostly valuable, and excellent additional to our curriculum	142 (35.5%)	178 (44.5%)	61 (15%)	12 (3%)	7 (2%)
3- Time spent in CSC is exciting time and well spent	133 (33%)	195 (49%)	39 (10%)	17 (4%)	16 (4%)
4- CSC helps me to gain clinical Skills and feel as a doctor.	175 (44%)	166 (41.5%)	44 (11%)	10 (2.5%)	5 (1%)

Table 2: Student opinions regarding evaluation of clinical skill center.

Opinion	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
1. I prefer to study in the library Rather than work in CSC	8 (2%)	10 (2.5%)	45 (11%)	157 (39%)	180 (45%)
2. During the sessions, I feel there are enough doctors to help me	130 (32.5%)	129 (32%)	38 (9.5%)	50 (12.5%)	53 (13%)
3. There are too many students at one Time and make the practical session difficult to understand	95 (24%)	106 (26.5%)	40 (10%)	99 (25%)	60 (15%)
4. The time of the session not enough to do all the practical material, and I would like more time available during the session	38 (9.5%)	62 (15.5%)	29 (7%)	174 (43.5%)	97 (24%)
5. I find the clinical skills practical boring, and the depth of topics covered too complex	3 (0.75%)	4 (1%)	32 (8%)	177 (44%)	184 (46%)
6. The early introduction of Clinical skills teaching is an excellent idea and I highly recommended it	195 (49%)	168 (42%)	28 (7%)	6 (1.5%)	3 (0.75%)

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was enough to do all the practical material. There were 361 (90%) who disagreed that clinical skills practical boring, and the depth of topics covered too complex. A vast majority of students 363 (91%) agreed with early introduction of clinical skills teaching program, and highly recommended it (Table 2).

For open-ended question, there were 66(16.5%) out of the 400 students who completed and gave their comments, suggestions on the skills center and how to improve it. There were 15(23%) students who suggested to make separate sessions between the male and female and not mix them at one session, 12(18%) of students suggested to visit the hospital from time to time and explore to the real life in the hospital setting, 11(16.5%) of students suggested to increase the duration spent doing practical on the modules rather than listening in the lectures. There were 12(18%) students who commented on how they suffer from large number of students in each lab to allow more time to do practices. There were 5(7.5%) students who suggested in making a short explanatory video before each lab, and 2(3%) of students suggested to increase the number of available modules and teaching staff, to enhance their chance of training. There were 7 (10.5%) students who suggested in making a review of all labs before the date of exam, and 2(3%) of students wrote that there should be opportunities to do practice on the real patients (Table 3).

Table 3: Suggestions of student for improving skill lab at Faculty of Medicine, 2017 (N=66)

Suggestions	Number	%
Make Separate session between male and female	15	23%
Early visit to the hospital	12	18%
Increase duration of training session	11	16.5%
Decrease number of attending students per session	12	18%
Establish video session before each lab	5	7.5%
Increase number of staff per session	2	3%
Revision of sessions before date of exam	7	10.5%
Practice on real patient	2	3%

DISCUSSION

Previous study have been done at Oxford University, UK by Reeset al. (1998)[18] reported that clinical skills center is a multidisciplinary educational facility with teaching methods and learning resources that provides structured clinical skills training in varied formats and circumstances in setting outside the hospital wards in order to train students with enough confidence, and competence prior to direct patient contact in hospital setting. In Sudanese study by Malik GM (1991)[18], it reported that the introduction of clinical skills and

practical medical procedures as early as the second year has given the student ample time to practice those skills before graduation, with early demonstration of wide varieties of clinical skills has also facilitated the ability and enhanced the confidence of the students to perform those skills during the internship.

At the University of Tripoli, the third year medical students (semester 6th) who had recently completed all clinical skills classes (I, II, and III), were chosen as the target group as they just completed all the required clinical skills modules and would be the best respondents to give their opinions.

In present study, the majority of medical students (91%) agreed or strongly agreed to introduce clinical skills in the early years of the medical school curriculum, and they highly recommended it. They reflected that the skill learning course enhanced their learning interest, and was well-perceived by students, and made them feel like doctors.

Consequently, the essential role of clinical skills training is to offers an innovative, exciting ways of learning method that efficiently fills the gap between learned theoretical knowledge and clinical skills practice. On other hand, University of Tripoli suffers from the large numbers of students annually admitted, and center workshop space is not enough to cover this huge number of students, hence the learning process will be inadequate, and overcrowding. In present study, more than half of students complain from too many students in the session, and difficult to do practice perfectly. This can be solved, to some extent, by subdividing the group into many subgroups and then to repeat each session several times. Consequently, that required more staff and is time consuming. The teaching staff can be a mixture of full time tutors to ensure continuity of the teaching programs, and part time facilitators.[20] Skills center should include people with expertise in Medicine, Gynecology, Clinical skills, Communication skills, Information technology, Nursing and Midwifery.[20] Demonstration of skills is necessarily a teacher's skill, and then it needs practice and good preparation prior to sessions. A Sudanese study by Ahmed AM. (2008)[4], found the some teachers spend most of the time in theoretically describing skills leaving a little time for students to do practice; thus a skills session becomes a lengthy lecture. As in present study, some students suggested to increase the duration spent doing practical on the modules rather than listening in the lectures. Even more, England study by Stark et al. (2003)[21] indicate that some schools do not devote enough time in the development of curriculum for skills teaching.

Furthermore, as a result of delay between the time of ending the session and the time of starting the clinical exam, some students subsequently found difficulty in remembering what they have learned in the lab and what should be done. This can be solved by opening the (CSC) before the date of exam for reviewing and practical on the simulators models as some students suggested. A study conducted at United Arab Emirates by Das M, Townsend A, (1998)[22] reported that some medical schools of Arabic countries, where male and female students are taught in separate sessions, because of religion issue and the use of manikins at the labs offers a suitable opportunity to teach physical examination and other clinical skills. Similar results, confirming this study, were achieved by Ahmed AM. (2008)[4], in Sudan, where they

found that in these Arabic countries some female students and even some strictly faithful male students may refrain from dealing with patients of the other sex, that is make the (CSC) a suitable place to gain skills without touching the real patient. In present study, on the basis of the open-ended question feedback, some of students suggested to make separate sessions between the male and female and not mix them at one session. Some of students also suggested to visit the hospital from time to time and explore to the real life in the hospital setting, as aim of the hospital visits is to prepare them on how to approach patients during their clinical years. A medical educators by Farrell et al[23] and Fromme et al[24] agreed that clinical skills are best taught in hospitals with the clinical supervisors directly observing clinical encounters between the students and patients.

The result of present study was also confirmed by recently published study in Malaysia by Shuid et al. (2015)[25], which reported that the early introduction of clinical skills was well-perceived by majority of students in preparing them for their clinical years, and it was a vital part of the pre-clinical curriculum and should be further enriched with frequent hospital visits to enhance students' confidence level and performance when interacting with real patients during their clinical years in the hospital. Furthermore, in previous study conducted by Lam et al. and his colleagues[26], indicated the majority of first year medical students agreed or strongly agreed with introduction of clinical skills in the early years of the medical school curriculum, and skill training as a good preparatory experience for later clinical and clerkship years.

CONCLUSION

Introduce clinical skills center as a new innovative method to provide comprehensive clinical skills training and to ensure that all students have the necessary learning opportunities, and chances of rehearsal and consolidation of learning materials before approaching real patient and not to replace traditional bedside teaching in hospital, was well-perceived by students.

RECOMMENDATIONS

Further studies are recommended for continuous development and evaluation.

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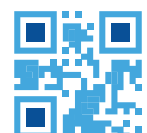
Prune-Belly Syndrome in A Libyan Boy with Down Syndrome: A case report

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ABSTRACT

Prune belly syndrome is a rare congenital anomaly of uncertain etiologies. It is characterized by deficiency of abdominal muscles, undescended testes, and severe urinary tract abnormalities. The association between prune belly syndrome and Down syndrome is very rare. We report the first case of 12 hours old term Libyan male who was found to have features of Down syndrome and Prune-belly anomalies.

NTRODUCTION

Prune belly syndrome (PBS), also known as "Eagle- Barrett Syndrome" was first described by Frolich in 1839. Although it was thought to be more common in people of African descent in USA, there were few reports of this syndrome from African countries.[1-3] It has been reported in siblings indicating an Autosomal pattern of inheritance.[4] Mainly boys were affected, only 3-4% of non-familial forms were females which suggested X Linked or autosomal recessive pattern. PBS is a group of birth defects that involve three main problems; Poor development of abdominal muscles, causing skin of the belly area to wrinkle likes a prune, cryptorchidism, and urinary malformations which may include hydro ureter and hydronephrosis, and/or vesicouretral reflux. The margins of the liver and spleen, as well as bowel loops are visible. Thoracic deformity with flaring of the lower ribs and impaired diaphragmatic functions have been reported.[5] Antenatal ultrasound may show maternal oligohydramnios, hydronephrosis and distended urinary bladder. In some cases, antenatal ultrasound may help to detect other anomalies like ventriculo septal defect, atrial septal defect, and tetralogy of fallot have been reported in 10% of patients. Musculoskeletal abnormalities, clubfoot, gastrointestinal tract problems, malrotation with mesenteric defect, imperforate anus, gastroschisis, and Hirschsprung disease and or underdeveloped lungs; hypoplasia and atelectasis were reported.[4] PBS affects 1 per 30,000-40,000 live births, predominance of male, and 4% of all cases were products of twin pregnancies.[6-8] Prune belly syndrome has been reported to be associated with Trisomy 18 and Trisomy 21.[9-11] In India in 1987, two infants with rare manifestations of prune belly syndrome were described, besides the usual features,

the first infant had Down syndrome, and the second infant had arthrogryposis multiplex congenita, bilateral talipes equinovarus and low set malformed ears.[12] Unfortunately, 20% of babies with Prune Belly syndrome may die before birth (Still birth), and 50% die from renal disease in the first two years of life. The remaining 30% of infants had varying degrees of urinary problems.[13] There is no cure for this syndrome, but intensive antibiotics for urinary tract infection and early surgery for abdominal muscles, urinary tract problems, and undescended testicles are recommended.[13]

CASE REPORT

A 12 hours old Libyan male baby referred from peripheral hospital to Special care baby unit at Tripoli Medical Centre as Down syndrome with generalized hypotonic, poor sucking, abdominal distension, and anuria.

Birth history: Post term baby boy delivered by emergency cesarean section due to fetal distress to 38 years old mother G9 P6 + 2 abortions, no antenatal care, birth Wight of 4.300Kg and delayed crying after delivery.

Physical Examination: Term male baby with clinical feature of DS (Figure 1), global hypotonia, not tachypnic, not distressed with no cyanosis, and no skeletal deformity. The baby has pan-systolic murmur with good perfusion, a complete AV canal confirmed by echocardiography. Abdomen appears distended with deficient muscle wall, bulging flanks, mild wrinkled abdominal skin (Figure 2,3), visible peristalsis, supra pubic mass up to umbilicus with dullness on percussion (full urinary bladder), bilateral undescended testes and normal anus (Figure 2). After emptying the bladder ultrasound of abdomen showed mild hydronephrosis of both kidneys with few tiny cortical

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cysts and mild ascites.

Micturating-cystouretrography study showed grade V bilateral vesicoureteric reflux.

Investigations: Blood sugar, blood gases, CBC and chest x ray were normal, C-reactive protein and viral screen were negative, urea was 42 mg/dl, creatinine was 1.3 mg/dl, Sodium and Potassium both were normal, 24 hours urine collection for creatinine 40 (NR 14-36 mg/kg/24hours), and chromosomal study revealed ~ 47XY + 21. The baby was referred to pediatric nephrologist but unfortunately lost in follow up.

Figure 1: Feature of Prune-belly syndrome and Down syndrome.

Figure 2: FPS (Abdomen distended with deficient muscle wall, bulging flanks, mild wrinkled abdominal skin, and bilateral undescended testes).

Figure 3: Plane X ray (Abdomen distended, dilated bowel, and bulging flanks).

DISCUSSION

The association between PBS and Down syndrome was reported in few cases.[8-14] The cause of this association is still unknown. Down syndrome has been associated with renal hypoplasia, hydroureter hydronephrosis; ureterovesical and ureteropelvic junction obstruction, posterior urethral valve and vesicoureteric reflux.[15-17]

The etiology and pathogenesis of PBS are still not clear, despite very intensive investigations performed in that field.[17] Various theories have been proposed to explain clinical features of PBS; fetal outlet obstruction theory, theory of mesodermal arrest and yolk sac theory. Unfortunately none of above explains the entire components of PBS.[18]

Clinical and pathologic experience with several cases of prune-belly syndrome indicates that urogenital anomalies can be attributed to a functional urethral obstruction which is the results of prostatic hypoplasia (mechanical cause).[19] In1991 report of two cases of Prune Belly syndrome (female and male newborns) were reported with urethral obstruction and other associated malformations: imperforate anus, vaginal septae and bicornate uterus in female case; unilateral anorchia and hyaline membrane disease in male. These findings support mechanical pathogenic theory. In cytogenetic studies no chromosomal abnormalities were detected. Both karyotypes were normal.[12] PBS has been reported without genetic alteration or other genetic syndromes.[8-10, 14-20]

In 2003 Al Harbi reported first case of a girl born to a diabetic mother who was found to have Down syndrome and Prune Belly anomalies[12], in 2005 one case of Prune Belly syndrome in a Nigerian Child with Down syndrome was reported[14], in 2008 a report of an Egyptian infant with Down syndrome and prune belly syndrome.[11]

In Japan 2007 a report of two siblings diagnosed as having Beckwith-Wiedemann syndrome, in addition to Beckwith-Wiedemann syndrome, one of the siblings was also diagnosed with Prune Belly syndrome and the other sibling suffered from obstructive uropathy and unilateral cryptorchidism, which are also seen in prune belly syndrome. These two cases point to a potential association between Beckwith-Wiedemann syndrome, Prune Belly syndrome, and urinary tract anomaly.[21] In 2007 PBS with VATER/VACTERL association was reported. This association is extremely rare.[22]

It has been recognized recently that many genes involved in renal nephrogenesis either reappear or are expressed to a markedly greater degree in renal disease. Siebert and Walker reported on the recurrence of urethral stenosis/atresia in 2 sibling fetuses with bladder outlet obstruction, severe oligohydramnios, pulmonary hypoplasia, and prune belly syndrome, a micro deletion of 6p25.3 was identified in the mother and one fetus, but noted that it is not associated with a gene known to be involved in urethral development and was therefore of unknown significance.[23]
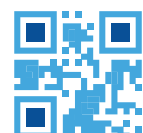
CONCLUSION

Down syndrome may be associated with prune belly syndrome. Both had renal complications, which may suggest that prune belly sequence occurs secondary to obstructive uropathy.

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