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Contents:

Antimicrobial Activities of neonatal Umbilical Cord Infection

(Original Research Article)

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Abstract: The infection of the umbilical stump. It typically presents as a superficial cellulitis that can spread to involve the entire abdominal wall and may progress to necrotizing fasciitis, myonecrosis, or systemic disease. Omphalitis is uncommon in industrialized countries outside the setting of umbilical vessel catherization; however, it remains a common cause of neonatal mortality in less developed areas. It is predominantly a disease of the neonate, with only a few cases having been reported in adults. Risk factors for omphalitis included septic delivery, unplanned home delivery, maternal chorioamnionitis, and prolonged rupture of membranes, low birth weight, and umbilical vessel catheteri. This study is about the underlying causes of infection that cause umbilical cord inflammation in newborns. The information of this study was collected from Tobruk Medical Center, Department of Microbiology, for files between 2018 to 2020, and it recorded the causes of infection and the antibiotic used for treatment, and where we tried to know the most infectious bacteria, A variety of the following types of bacteria, including Staph aureus, Eshrsha coli,Staph epidermis, proteus, klebsiella, Klebsiella spp ,Enterobact, Streptococcus pyogen ,Candida albicans fungi.

Keywords: Umbilical cord care, Bacterial infections, Antibiotic resistance, Uumbilical cord inflammation.

Introduction

The umbilical cord is a tube that connects you to your baby during pregnancy. It has three blood vessels: one vein that carries food and oxygen from the placenta to your baby and two arteries that carry waste from your baby back to the placenta. A substance called Wharton's jelly cushions and protects these blood vessels. The

umbilical cord starts to form at about 4 weeks of pregnancy and usually grows to be about 22 inches long.The umbilical cord, lifeline of the fetus, is very much undervalued and certainly not being studied sufficiently frequently (Benirschke et al,.2000).

The umbilical cord, which connects the baby and placenta in the uterus, is made of blood vessels and connective tissue. It is covered by a membrane that is normally bathed in amniotic fluid. After birth, cutting the cord physically and symbolically separates the mother and her baby. The cord stump dries and falls off, and the wound heals The World Health Organization estimates that a quarter of the world's neonatal deaths are due to infection; 75% of these occur in the first week of life, with the umbilical cord being the gateway.The umbili-cal cord is an important bacterial colonisation site. A possible consequence of bacterial colonisation is cord stump infection, a factor that can greatly increase morbidity and mortality. The risk of infection increases until the stump detaches The newborn's skin and umbilical cord begin to colonise with saprophytic bacteria provided by the mother through skin contact.

The umbilical cord is colonised by microorganisms of the vagina, skin, and hands of the birth attendant. Umbilical cord rot becomes an excellent growing medium for microbial flora. Omphalitis is an infection of the umbilical cord stump. Tracking bacteria along the umbilical

vessels may lead to septicaemia, which can result in neonatal morbidity and mortality. The average age of presentation of omphalitis is the third or fourth day of life of the newborn.Omphalitis can be extremely serious, causing sepsis, due to the permeability of the umbilical vessels that persists until approximately 20 days of age of the newborn

 Prevention of this disease and its associated neonatal mortality is of great public health importance.The exact incidence of cord infections is unknown. They appear to be relatively rare in developed countries, but they are probably under-reported.

Overall, omphalitis risk varies substantially and depends on the level of direct and indirect exposures to the stump (e.g.,absence of hand washing and other hygiene practices by carers), variation in definition, standardisation, and frequency of measurement . Estimated that the incidence of omphalitis in newborns in developed countries is around 0.7% and rises to 6–8% in developing countries. Even with the low incidence of omphalitis, the open wound of the umbilical stump remains an entry point for pathogenic bacteria, and the undetached cord stump ofte worries mothers. Rapid healing of the cord is an important aspect of infection prevention (Redline, R. W.et al,. 2006,).

Umbilical Cord Care

1. Before proceeding to the care of the stump wash hands thoroughly with soap and water

2. To ensure the stump heals properly only clean the umbilical stump when it becomes dirty or sticky. The best way to clean it is rub gently, around the stump and the area with gauze soaked in warm water and mild soap, whenever you notice any kind of dirt or debris.

3. In order to promote proper healing , the umbilical cord stump should be exposed to air and remain dry and clean. When putting on your baby's diaper, make sure it is folded down properly to keep the stump exposed. Covered with a clean shirt. Change the shirt when it gets dirty with secretions of the stump.

4. Do not covers umbilical cord stumps with bandages or anithing else that wil restrict airflow. Allow the stump to fall off by itself. Never pull on the stump in an attempt to remove it. Even if it looks like it would come off easely, you sholuld resist the urge to tug at it. In this way naturally heal (Stewart, D et al., 2016).

Types of Bacteria that Cause Infection to Umbilical Cord

- Normal flora are microorganisms (bacteria, fungi, protozoa, and viruses), mostly bacteria that continuously inhabited the human body (Resident Normal Flora). Under normal conditions in a healthy human they are harmless and may even be beneficial. A fetus is sterile when born (No Normal Flora), then newborn start having the normal flora from its mother, air, food and the environment .(Engelkirk, P. G et al.,2000).

- *Staphylococcus aureus* Gram positive non spore-forming non-motile, spherical cells, usually arranged in grape-like clusters single cocci , pairs, tetrads and chains are seen in liquid culturesFrequently non-pigmented after over-night incubation. Hemolytic on blood agar plate.S .aureus (coagulase positive).(de Benito, S., Alou, L et al.,2018).

- *S.epidermidis* are white colonies, non-hemolyticS.epidermidis (coagulase-negative) .Prevention and control source of infection is shedding human lesions, the human respiratory tract and skin contact spread of infection occur in hospitals.(Dumontet, V., Pelissier, F et al., 2013).

- *Streptococcus pyogenes* are non-motile, non-sporulating, gram- positive facultative anaerobes. Spherical or oval cells characteristically forming pairs or chains during growth .They are widely distributed in nature and are found in upper respiratory tract, gastrointestinal tract and genitourinary tract as normal microbial flora S. pyogenes- Shows clear zone of hemolysis in blood agar plate.S. pyogenes Lancefield group A(Hanski, E et al.,1992).

- *Escherichia Coli* (gram-negative rods) are normal flora in human and animal gastrointestinal tract. . Found in Urinary tract infection- cystitis, pyelonephritis . Wound infection- appendicitis,peritonitis . Neonatal septicemia and meningitis .

E.coli-associated diarrheal disease. Culture: Lactose-fermenting mucoid colonies on mac conkey agar and some strains are hemolytic on blood agar.

- *Klebsiella species* are non-motile, lactose-fermenting, capsulated, gram-negative rods has culture: Large, mucoid, lactose-fermenting colonies on mac conkey agar, and shows stringy type. Growth when cultured in broth medium. In healthcare settings, klebsiella bacteria can be spread through person-to-person contact.(Casewell, M et al., 1977).

- *Enterobacter species* are gram-negative lactose fermenting motile rods, and found as a commensal in the intestinal tract of humans and moist environments. Medical important species is Enterobacter aerogens. It produces mucoid colony resembling klebsiella on Mac Conkey agar.Enterobacter aerogens is associated with urinary tract infection, wound infection and septicaemia in immunocompromised and chronically deblitated patients.

- *Proteus Mirabilis* found in the intestinal tract of humans and animals, soil, sewage and water. They are gram-negative, motile, non-capsulated Culture: produce characteristic swarming growth over the surface of blood agar. Ditching of culture media prevents spread of proteus species. Non-lactose fermenting colonies in mac conkey agar.(Vediyappan, Get al.,2013)

- *Candida albicans* is an opportunistic fungal pathogen , it becomes opportunistic pathogen for immunocompromised patients, for some immunologi cally weak individuals, or even for healthy persons. The infection caused by C. ALBICANS is commonly known as candidiasis. The original with candida infection is often associated with vaginal flora from a mother with history of vaginal candidiasis. Tiraboschi, I. C. Net al.,2010).

Kalathia, M. B., et al (2013) their studies was Organisms grown in were Pseudomonas (45%, 5 out of 11), Acinetobacter (27.27%, 3 out of 11), Escherichia coli (18.18%, 2 out of 11), and Klebsiella (9%, 1 out of 11). Kalathia, M. B., et al 2013) (Kalathia, M. B., et al 2013).

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Faridi, M. M., et al (1993) their study umbilicus becomes colonized with many different types of bacteria. Gram-positive cocci are present within hours, followed shortly by the presence of many enteric microorganisms (Faridi, M. M., et al 1993).

Cushing, A. H.., et al (1985) their study Aerobic bacteria are present in approximately 85% of infections, predominated by Staphylococcus aureus, group A Streptococcus, Escherichia coli, Klebsiella pneumoniae, and Proteus mirabilis.Methicillin-resistant S aureus has also been described in association with omphalitis (CUSHING, A. H.., et al 1985).The aim of our study is to know the reasons for the occurrence of umbilical cord contamination, to identify the most types of bacteria as the main cause, to know the appropriate antibiotics, and to alert on how to care for the umbilical cord to avoid contamination.

Materials and Methods

Between 2017 and 2020 obtain information of umblical cord samples were collected from microbiology labratory at the Medical Center The variables analyzed were sex, and bacteria, antibiotics with higher sensibility and with higher resistance A total of 47 antibiotics were used the cases of contamination resulting from some types of bacteria were identified in order to study and know the causes and avoid some of the causes of pollution cases. We sorted the cases according to sex to find out more cases of infection, whether females or males, and also sorted the types of bacteria that cause infection to know the most cases of contamination that occur from any type of bacteria and to provide precautions. As shown in Table 1. As well as Table 3 and 4 shows resistance and sensitivity of microbes by cultured bacteria as shown in fig 1.

Table 1. The Sex of the Infected and the Type of Microorganism causing the Infection.

Variable	Number of Cases
Sex	
Male	**18**
Female	**28**
Microbes	
No growth	6
Skin flora	2
Staph aureus	18
Eshrsha coli	3
Staph epiderms	3
Proteus	1
Klebsiella	7
Klebsiella spp	2
Enterobact	1
Streptococcus pyogen	1
Candida albicans	1
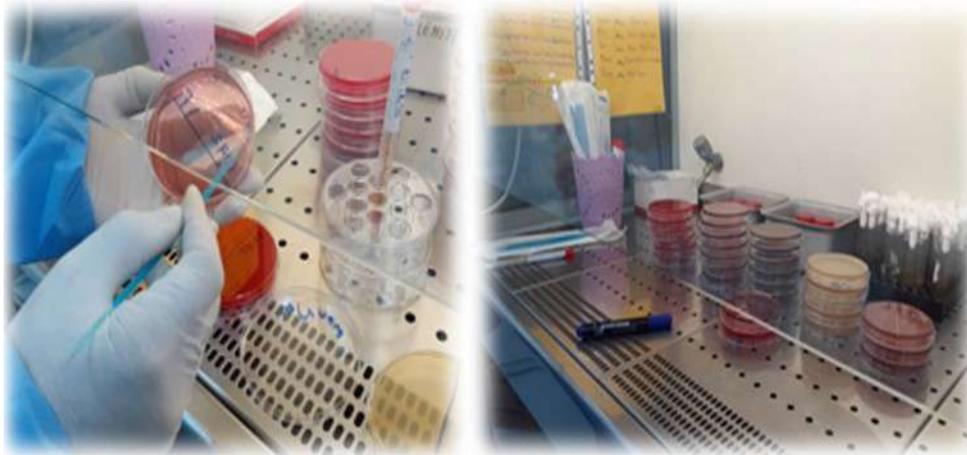
Figure 1. Culture Media of some Umbilical Cord Samples.

Table 2. Antibiotic Sensitive Bacteria

Name Antibiotic	Staphyloccocus aureus	Klebsiellla	Enterobacteria	Proteus	Staphyloccocus Epidermis	Escherichia coli
Cephalothin	2	0	0	0	0	0
Cefoxitin	3	2	0	1	1	0
Vancomycin	2	0	0	0	0	0
Ceftazidime	1	0	0	0	0	0
Clindamycin	5	1	0	0	0	0
Cefuroxime	1	0	0	0	0	0
Ciprofloxacin	8	4	1	0	2	2
Cefotaxime	4	2	0	0	1	0
Imipenem	5	5	1	1	1	2
Amikacin	6	3	2	1	1	2
Cefipime	2	0	0	0	0	0
Piperacillin	0	0	0	0	0	0
Erythromycin	0	0	0	0	0	0
Tetracycline	0	0	0	0	0	0
Azithromycin	1	0	1	0	0	1
Ceftriaxone	0	1	0	0	0	0
Cefixime	1	0	1	0	0	1
Colistin	0	0	0	0	0	0
Meropenem	0	0	0	0	0	0

Table 3 Antibiotic Resistant bacteria

Name Antibiotic	Staphyloccocus aureus	Klebsiella	Enterobacteriace	Proteus	Staphyloccocus Epidermis	Escherichia coli
Cephalothin	3	3	0	0	0	0
Cefoxitin	5	4	0	0	0	1
Vancomycin	3	1	0	0	0	0
Ceftazidime	5	2	2	0	2	1
Clindamycin	0	0	0	0	1	1
Cefuroxime	1	5	0	0	0	1
Ciprofloxacin	9	5	1	1	1	1
Cefotaxime	4	3	1	1	2	1
Imipenem	0	1	0	0	1	0
Amikacin	5	3	0	0	0	0
Cefipime	2	0	0	0	1	0
Piperacillin	0	1	0	1	0	0
Erythromycin	1	0	0	0	0	0
Tetracycline	0	2	0	0	0	0
Azithromycin	0	0	0	0	0	0
Ceftriaxone	2	1	0	0	0	0
Cefixime	0	0	0	0	0	0
Colistin	1	0	0	0	0	0
Meropenem	0	0	1	0	0	0

Table 4. Total Frequently Number of Antibiotic Resistance and Sensitivity
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Name of antibiotic	Frequently Number of Antibiotic (Resistance)	Frequently Number of Antibiotic (Sensitivity)
Cephalothin	6	2
Cefoxitin	10	7
Vancomycin	4	2
Ceftazidime	11	1
Clindamycin	2	6
Cefuroxime	7	1
Ciprofloxacin	18	17
Cefotaxime	12	7
Imipenem	2	15
Amikacin	8	15
Cefipime	3	2
Piperacillin	2	1
Erythromycin	1	0
Tetracycline	2	0
Azithromycin	0	3
Ceftriaxone	3	0
Cefixime	0	1
Colistin	1	0
Meropenem	1	0

Results and Discussion

This study on some cases of umblical cord infection in Tobruk Medical Center, Libya, Libya and Tobruk especially between 2017 to 2020. The results of our research included about 28 girls infected with Staph aureus, and boys were infected with the lowest percentage, about 18, and the Staph aureus bacteria was higher, with the number of infections about 18, followed by Klebsiella, the number of infections was 7. 46 cases in microbiology department were followed up with the hospital. We will also explain the information of our results by means of the graph for sorting the bacteria that cause umbilical cord inflammation, as well as by sorting the sex as following (figure 2).
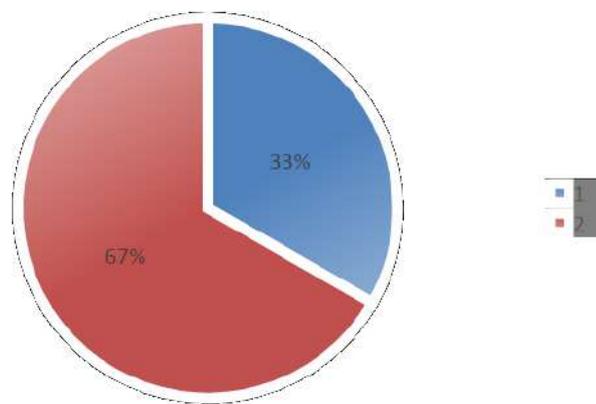

Figure 2. Number of Females and Males with Infected Umblical Cord.

The graph describes number of females was 28 while, number of males was 18. They infected with umblical cord.
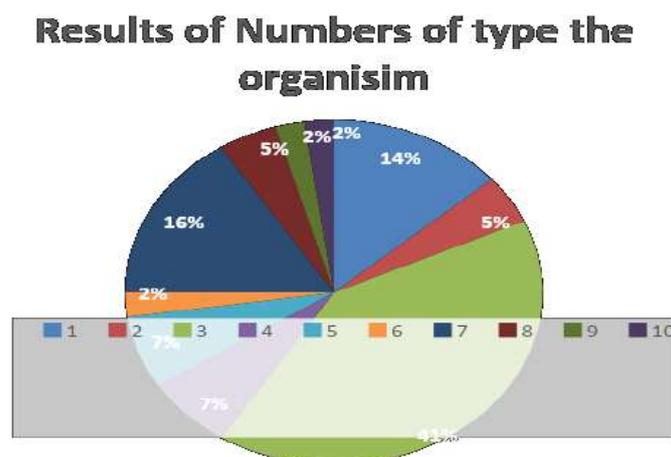
Figure 3. Total of Organisms cause Umblical Cord Infection and the Most Organism Causing Infection.

This diagram explains the total organisms cause umblical cord infection and describes bacteria causes most infection. The *Staphylococcus aureus* bacteria was higher, with the number of infections about 18, followed by *Klebsiella,* the number of infections was 7 .
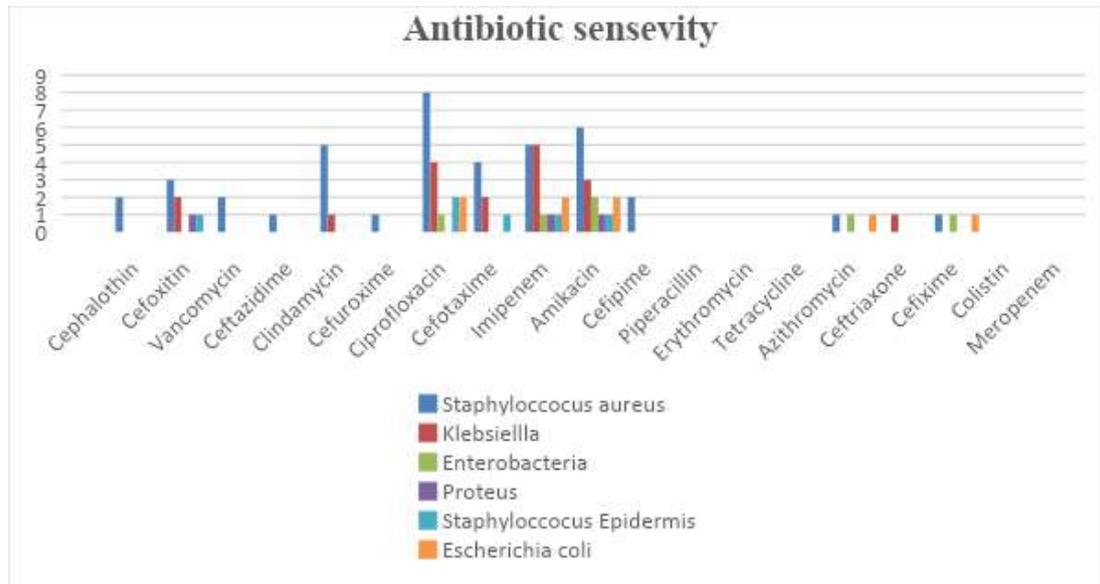
Figure 4. Good Sensitivity Profile for Antibiotics

Good sensitivity profile for antibiotics showed that most sensitivie antibiotic in this study was Ciprofloxacin. The bacteria Staphylococcus has higher rate. The general sensitivity report was: good sensitivity profile for antibiotics like Ciprofloxacin ,Amikacin ,Imipenem and Clindamycin as previously The most sensitivity antibiotic in this study was Ciprofloxacin (Table 2).

The resistance for all the samples reported was as follows Ciprofloxacin, Ceftazidime ,Cefoxitin , Amikacin in infection with Staphylococcus and Cefuroxime ,Ciprofloxacin in Klebsiellla infection. The most resistant antibiotic in this study were Ciprofloxacin, Ceftazidime and the most sensitivity antibiotic in this study were Ciprofloxacin, Amikacin and Imipenem (Table 2).

The results in this research reveal that due to their good sensitivity profile for antibiotics like Ciprofloxacin ,Amikacin ,Imipenem and Clindamycin therapy in Staphyloccocus aureus in patient umblical cord infection always personalizing trying to avoid the development of antibiotic resistance.Also prove all of Imipenem as previously (figure 4).Amikacin the good sensitivity in the case Klebsiellla, Escherichia coli .

Other sensitive or resistant antimicrobials, which without altering the results, leaves out some antibiotics that could be resistant or sensitive than those presented in this study. In the following (graph 5) explain antibiotic resistance:
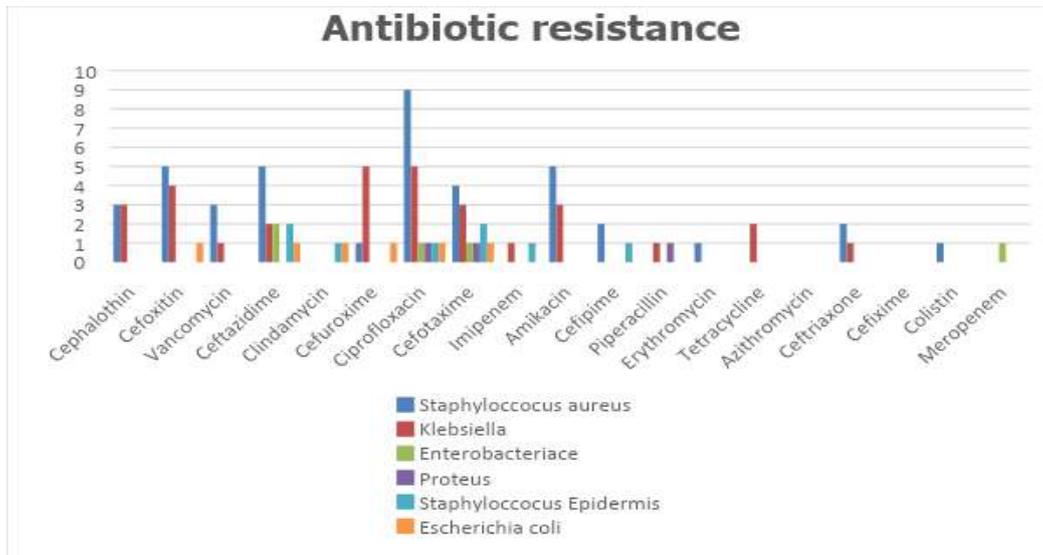
Figure 5. Antibiotic Resistance Bacteria.

From Figure 5, the resistance for all the samples reported was as follows Ciprofloxacin,Ceftazidime ,Cefoxitin ,Amikacin in infection with Staphylococcus and Cefuroxime ,Ciprofloxacin in Klebsiellla infection . The most resistant antibiotic in this study was Ciprofloxacin as shown in fig 6.The most sensitivity antibiotic in this study was Ciprofloxacin, imipenem and Amikacin.
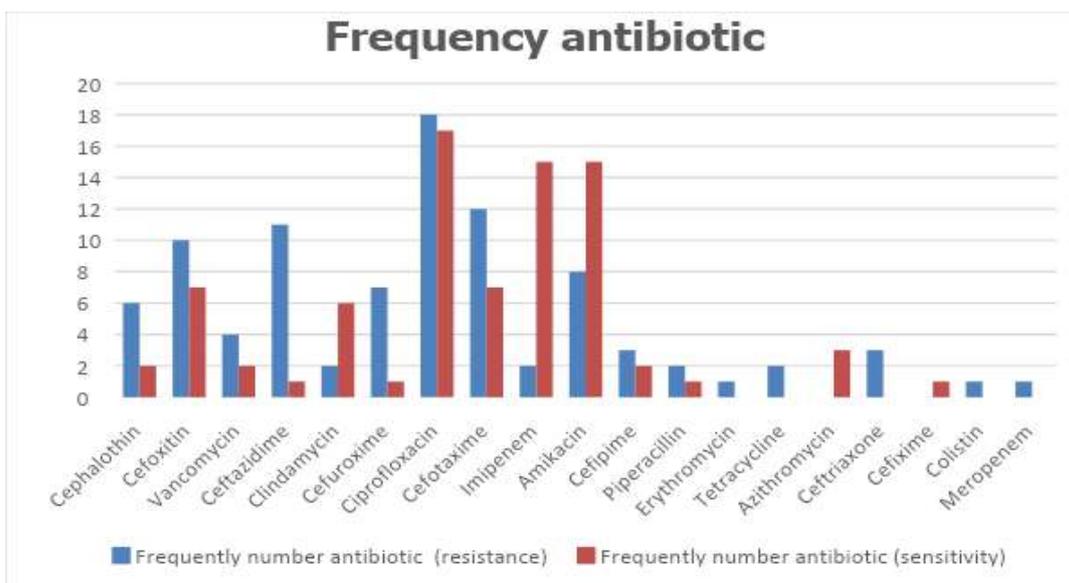
Figure 6. Total Frequently Number of Antibiotic Resistance and Sensitivity.

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Conclusion

We conclude from our study of bacteria responsible umblical cord infection at Tobruk Medical Center and although it is considered the first of its kind. the Staphylococcus aureus remains the most frequently reported organism.

The results in this research reveal that due to their good sensitivity profile for antibiotics like Ciprofloxacin ,Amikacin ,Imipenem and Clindamycin therapy in Staphyloccocus aureus in patient umblical cord infection always personalizing trying to avoid the development of antibiotic resistance.Also prove all of Imipenem ,Amikacin the good sensitivity in the case Klebsiellla ,Escherichia coli. The most resistant antibiotic in this study was Imipenem and most sensitivity antibiotic in this study was Ciprofloxacin.

Through this study, so we recommend maintaining and caring for umblical cord to ensure the stump heals properly only clean the umbilical stump when it becomes dirty or sticky. The best way to clean it is rub gently, around the stump and the area to the care of the stump wash hands thoroughly with soap and water. With gauze soaked in warm water and mild soap, whenever you notice any kind of dirt or debris In order to promote proper healing, the umbilical cord stump should be exposed to air and remain dry and clean. When putting on your baby's diaper, make sure it is folded down properly to keep the stump exposed. Covered with a clean shirt. Change the shirt when it gets dirty with secretions of the stump.

Acknowledgement

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Distribution of ABO Blood Groups and Rhesus Factor in Derna, Libya

(Original Research Article)

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Abstract— ABO and Rhesus (Rh) blood group antigens are hereditary characters and are useful in population genetic studies, in resolving medico-legal issues and more importantly for the immunologic safety of blood during transfusion. This study is aimed to determine the distribution pattern of the ABO and Rh blood groups among population in Derna city/ Libya and compare it with other data from similar studies within Libya and all over the world. It is a retrospective study, was conducted on 772 blood donors, people who attended different health centers and private laboratories at Derna city. The study period was from January 1st 2018 to April 31st 2019. The subjects of both genders (aged between 18-65 years) were analyzed. Information regarding medical history, ages, sex was also obtained. Blood group was determined by forward and reverse grouping by conventional tube method. The age group and sex of the subjects, frequency of ABO and Rh blood groups were reported in simple percentages. Overall blood group- O was the highest (**39.50%**) and the second most frequent ABO blood groups was A (28.24 %), while the AB blood group was the

lowest (7.90 %). The prevalence of Rhesus positive and negative distribution in the studied population was 90.5% and 5.5% respectively. Blood group frequency with respect to ABO , Rhesus positive and Rhesus negative was found to be shown by formula O> A>B >AB. Knowledge of frequencies of the different blood groups is very important for blood banks and transfusion service policies that could contribute significantly to the National Health System**.**

 Key Words: ABO Blood Group; Rh Blood Group; Frequencies.

Introduction

   Human red blood cells contain on their surface a series of glycoproteins and glycolipids, which constitute blood group antigens. Development of these antigens are genetically controlled, inherited in a mandelian fashion and appear early in fetal life and remain unchanged till death [Firkin F 1989].
 Nearly 700 erythrocyte antigens are described and organized into 30 blood group systems by the International Society of Blood Transfusion of which ABO and Rh are most important [Garraty G 2000].
   The ABO blood group system was the first human blood group system to be discovered by Landsteiner in 1901[Garraty G 2000]. Later Landsteiner and Wiener defined the Rh blood group in 1941[Rahman M,2004]. Together these two systems have proved to be the most important, for blood transfusion purpose.
Discovery of ABO blood group system opened the way for discoveries in the field of immunohaematology, blood transfusion among humans irrespective of their natives, unmatched pregnancy, legal medicine, anthropology and the discovery of other blood group systems [Jolly J 2000].
   The ABO blood group system is divided into four blood types on the basis of presence or absence of A and B surface antigens. The blood groups are A,B,O and AB. ABO blood group system is important because of the fact that A and B are strongly antigenic and anti A and anti B are naturally occurring antibodies present in the serum of persons lacking the corresponding antigen. These antibodies are capable of producing intravascular hemolysis in case of incompatible transfusion [Harmening MD,2005].
   Rh antigens are highly immunogenic. Out of 49 Rh antigens identified till now, D antigen is most significant. D negative individuals produce anti-D if they encounter the D antigen through transfusion or pregnancy and causes hemolytic transfusion reaction, or hemolytic disease of fetus and newborn. For this reason, the Rh status is routinely determined in blood donors, transfusion recipients, and in mothers-to-be [Bethesda DL. 2005].
Apart from their importance in blood transfusion practice, the ABO and Rh blood groups are useful in clinical studies population genetic studies, researching population migration patterns as well as resolving certain medicolegal issues, particularly of disputed paternity cases [Khan MS,2004] .

All human populations share the same blood group systems; although they differ in the frequencies of specific types. The incidence of ABO and Rh groups varies markedly in different races, ethnic groups, and socio-economic groups in different part of the world [Sidhu S, et al. 1980].

Knowledge of availability of different Blood groups at various levels is need of the hour for more efficient delivery of blood bank services and so is the need of this study In the present study distribution of blood groups is studied in Derna City, Libya.

Materials and Methods

In this retrospective study, data of 772 blood donors, routine medical sampling for people who attended different health centers and private laboratories at Derna city were collected from their records. The study period was from January 1st 2018 to April 31st 2019. The subjects of both genders (aged between 18-65 years) were analysed. Information regarding medical history, ages, sex was also obtained. Blood group was determined by forward and reverse grouping by conventional tube method from the pilot samples, following the standard operative procedures.

For blood collection tube with EDTA, it inverted for 8 to 10 times to mix well with the anticoagulant. Blood samples were centrifuge at 1000 to 1500 rpm for 10 min. Erythrocytes were separated for the determination of blood type. For complete ABO grouping (forward and reverse) mono clonal anti A, anti B, anti AB antisera and A, B, O pooled cells were used. For Rh typing anti-D antisera were used. Final blood group was confirmed only if forward and reverse groups are identical. Rh negative blood groups were confirmed by antiglobulin technique. Data on frequency of ABO and Rh-D blood groups were reported in simple percentages and compared with the similar studies by other authors.

Data Analysis

Data were analyzed using the SPSS software version 20 (SPSS, Inc., Chicago, IL, USA). Descriptive statistics expressed as mean, standard deviation (SD) and the frequency with percentages were calculated for interval and categorical variables, respectively.

Results

During the period between January 1st 2018 to April 31st 2019, a total of 772 subjects were collected. Of these, there were blood donors, routine medical sampling for people who attended different health centers and private laboratories at Derna city. The overall average age of the subjects was (45 ± 21). Overall blood group- O was the highest (39.50%) and the second most frequent ABO blood groups was A (28.24 %), while the AB blood group was the lowest (7.90 %).

The distribution of ABO blood groups in both Rh(D) positive and negative subjects are illustrated in Table1and Fig 1, respectively. Amongst whom blood group O+ was found to be the most common type (34.5%), followed by groups A+ (25.6%), B+ (22.0%) and AB+ (7.3%), whereas amongst the Rh negative subjects, blood group O- was the most frequent (5.1%), followed by groups A- and B- (2.6%), (2.3%) respectively and AB− were the lowest frequency (0.6%).

Table (1): Overall Frequencies of ABO Blood Group with Rh

Blood group	Frequency	Percent %	Cumulative %
A-	20	2.6	2.6
A+	198	25.6	28.2
AB-	5	.6	28.9
AB+	56	7.3	36.1
B-	18	2.3	38.5
B+	170	22.0	60.5
O-	39	5.1	65.5
O+	266	34.5	100.0
Total	772	100.0	
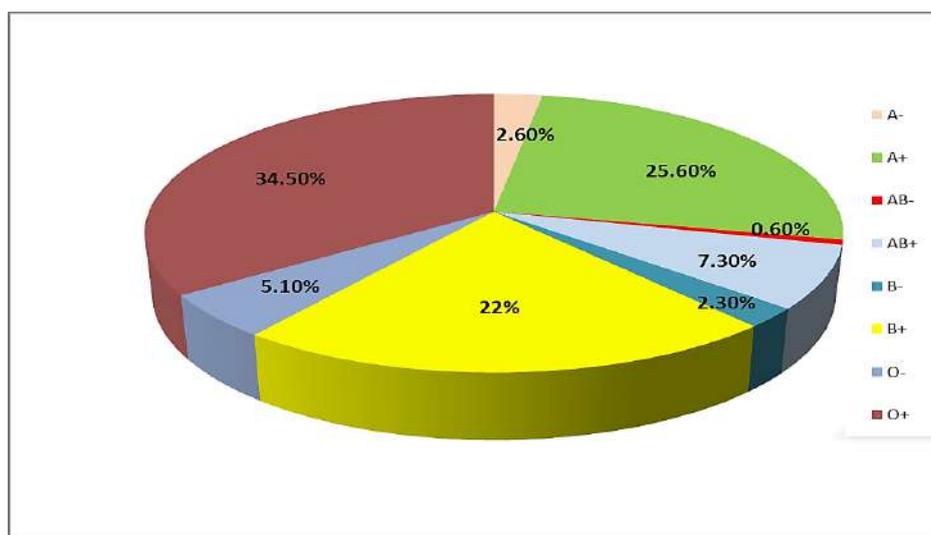
Figure (1): Overall Frequencies of ABO Blood Group with Rh.

According to the Rh system the Rh positive comprised (89.4%) and the Rh negative (10.6%) among participants as shown in figure (2).
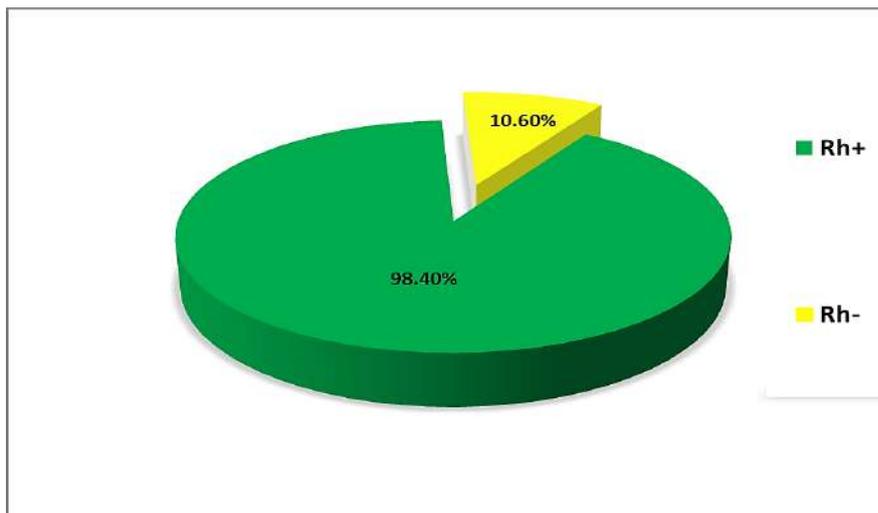
Figure (2): Overall Rh+,Rh- Distribution   (2018-2019)

The distribution of Rh+and Rh- among males and females in derna city year (2018-2019) was similar as shown in table 2& 3, respectively**.**

Table (2): Rh+,Rh- Distribution among Males

Rh Type	Frequency	Percent %
Rh+	333	90.5
Rh-	35	9.5
Total	368	100

Table (3): Rh+,Rh- Distribution among Females

Rh Type	Frequency	Percent %
Rh+	357	88.4
Rh-	47	11.6
Total	404	100

RH blood group distribution according to ABO type in the year (2018-2019) was explained in Table:4.

Table 4. RH Blood Group Distribution according to ABO Type in the Year (2018-2019)

Rh Type	ABO Group			
	A	AB	B	O
RH+	198	56	170	266
within group%	90%	92%	90%	87%
RH-	20	5	18	39
within group%	10%	8%	10%	13%
Total	218	61	188	305

However, comparing the overall ABO blood group distribution in both Rh(D) positive and negative subjects are among males and females was similar in (O+, A+, B+ ,AB+, AB-) while was different in (A-,B-,O-) as shown in Figure 3.
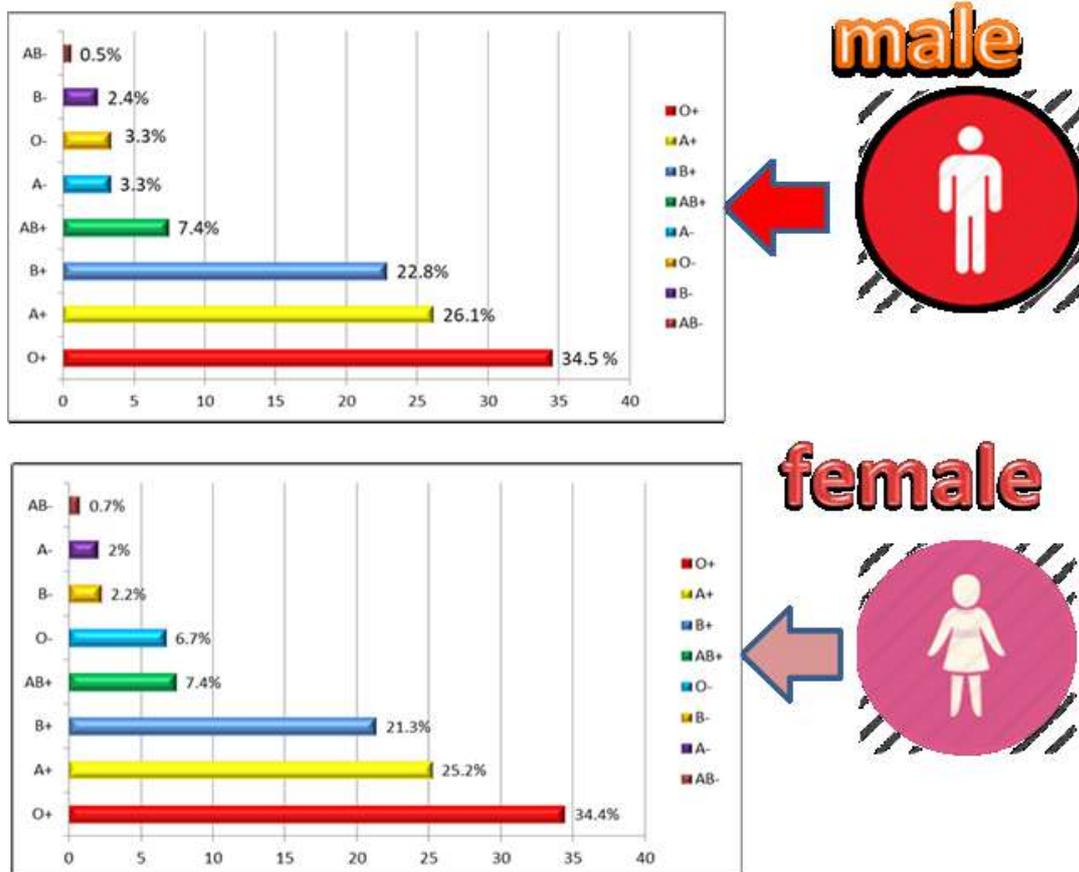
Figure (3): Distribution of ABO &Rh Blood Group Proportions Classified according to Gender.

Discussion

ABO and Rh genes and phenotypes vary widely across races and geographical boundaries [Dacie JV, Lewis SM.2001], despite the fact that the antigens involved are stable throughout life. The results of polymorphism remains important in population genetic studies, estimating the availability of compatible blood, evaluating the probability of haemolytic disease in the new born, resolving disputes in paternity/maternity and for forensic purposes [Bakare AA, 2006]. The present study is, therefore, useful in providing information on the status of ABO and Rh blood group distribution in Derna city / Libya.

Blood group-O was the predominant (**39.50**%) and AB was the least common (7.90%) blood group in both Rh(D) positive and negative subjects. Noor, F. and F.I.N. Eldin (2013), they studied the ABO frequency in western part of Libya and they found that the percentage of blood group O (48.9%) is the highest, followed by A(33.1%) and B (12.8%) [Noor, F. and F.I.N. Eldin (2013),] which is similar to frequency in this study.

A similar distribution of ABO blood groups to our study was found in West Bank, Saudi Arabia, Egypt, Sudan, Iraq, Libya and Kuwait. (Al-Bustan S,2002). However, other countries such as Syrian Arabs, Lebanon, Israel, Jordan and Tehran (Hanania S, 2007) have a different ABO spectrum in which blood group-A is the predominant.

Rh(D) positive individuals reported the highest percentage in this study and this is in agreement with previous studies (Hanania S, 2007, Kawakeb A. 2016). From our view point, this could have a significant implication to the major blood bank and hospitals in Derna city and ,where certain blood groups are needed more than others in emergency conditions. In addition, to give the chance for researchers to explore the reasons of increasing of one blood group to another by linked genetic influences and effects of inter and intra marriage.

Apart from transfusion service, knowledge of ABO and Rh blood groups are useful in population genetic studies, researching population migration patterns as well as resolving certain medicolegal issues particularly disputed parentage and preventive measures against the diseases which are associated with different blood groups. Studies concerned about possible association between ABO blood group and cardiovascular diseases have confirmed that persons of group A are affected more frequently with coronary heart disease, ischemic heart disease, venous thrombosis and atherosclerosis, while its low in people with blood group 'O'.[Khan M I etal,2009] 'O' group individuals are known to have a 14 % reduced risk of squamous cell carcinoma and 4 % reduced risk of basal cell carcinoma when compared to non-O group [Xie J, etal 2010]. It is also associated with a reduced risk of pancreatic cancer [29,30]. The 'B' antigen is associated with increased risk of ovarian cancer [Gates M A et al

2010].Gastric cancer is more common in blood group 'A' and least in group 'O' [Aird I et al 2011].

Conclusion

Up-to-date knowledge of the distribution of blood types in a local setting is critical to the functioning of any national health service. Distribution of blood groups among the population in a specific geographic area helps for a good inventory management. The knowledge of frequencies and distribution of the different blood groups is very important for blood banks and transfusion services so that they could contribute significantly to the National health system to formulate the policy. Having knowledge of own blood group is important for everyone. It saves lives when transfusion is needed. This study will definitely helpful for blood banks management and blood donation in crisis. To date, there has been a lack of data on this important topic in Libya. Similar studies are needed across the country and further research and mobilization are required. The present study is original in that, it's the first comprehensive study that documented the frequency of ABO and Rh (D) blood groups in Derna city / Libya.There are some limitations to this study as it was conducted in the Derna city , the results should not be generalized to Libya as a whole.

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Trend of Seroincidence of Hepatitis B Virus Infection in Eastern Libya: A 10-Years Study from Tobruk Medical Center

(Original Research Article)

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Abstract: Hepatitis B virus (HBV) is a significant blood transmitted viral infection. It causes a serious liver infection and can be transmitted to the uninfected individuals via contact with the body fluids of infected individuals. HBV infection remains a main health concern for both health workers and patients in health care settings worldwide. The aim of this study is to estimate the seroincidence of HBV in individuals who attended Tobruk Medical Center for different medical or surgical conditions from January 2010 to April 2020. Also, to estimate its distribution based on age and sex, geographical distribution and nationalities of the cases during the study period; in addition to increase awareness about the spread and the way of control of this viral infection in the community. A retrospective study of 10 years at Tobruk Medical Centre, eastern Libya. Medical records department of the hospital follow the guidelines of international classification of diseases-10 for coding the diseases. The research estimates the frequency and distribution of HBV infection based on age, sex, geographical distribution and nationalities during the study period from January 2010 to April 2020. 113 cases (mean age 40.12 ± 15.7) were found positive for HBV infection over the study period. 41.6 % of the cases were males and 58.4 % were females. The HBV infection was most prevalent in the older age groups of 20->50 years. The frequency of the disease according to the nationality was: Libyan (89.4%), Egyptian (4.4%), Sudanese (1.8%) and small other percentages from other nationalities. The frequency of the disease according to the region was: Tobruk (86.5%), Derna (7.1 %) and small other percentages from other regions. This study reported a significant decline in the incidence of HBV infection in the last five years and this decline may be because of the weakening of health screening services. The best way to control or eradicate HBV infection in the community is by vaccination of all newborn and high-risk groups, and following stricter standard precautions in

health-care-providing centers, in addition to surveillance of occupationally acquired HBV infections.

Key Words: Hepatitis B Virus, Seroincidence, Tobruk Medical Center , Retrospective Study.

Introduction

Hepatitis B virus (HBV) is significant blood transmitted viral infection worldwide. The virus infects the liver and can cause both acute and chronic disease.[1,2] HBV is the leading cause of liver cancer in the world.[3] WHO estimates that in 2015, 257 million people were living with chronic HBV infection.[4] HBV infection is endemic in Asia and the Pacific islands, Africa, Southern Europe and Latin America.[5]

The epidemiology of hepatitis B can be described in terms of the prevalence of hepatitis B surface antigen (HBsAg) in a population, broadly classified into high- (>8% HBsAg prevalence), intermediate- (2%–7%) and low-prevalence (<2%) areas.[6] High-HBV prevalence is common in Asia Pacific and sub-Saharan African regions.[7] while intermediate-HBV is common in North Africa and the Middle East, parts of Eastern and Southern Europe, parts of Latin America, and South Asia[8] Low-prevalence HBV is common in Australia, Asia, Northern and Western Europe, Japan, North America, and some countries in South America.[9] In Libya, the prevalence of HBV carriersin general population according to the latest national screening reports is 2.2%.[10] HBV is transmitted through exposure to infected blood and bodily fluids (particularly semen and vaginal secretions).[11]

Significant preventive measures have been made by health authorities in Libya in recent decades to prevent incidence of HBV infection either in health care settings or in community. These measures include implementing universal standard precautions in health service centres; such as obligations of all patients to do pre-operative screening for HBV as a routine pre-intervention investigation to help protect both health care workers (HCWs) and patients. Andintroducing of HBV national vaccination programs to all new-born babies and to high risk groups such as HCWs.[12] In addition, providing more efficacious treatments to treat infections of this pathogen and providing sensitive screening tests to check all blood units before blood donation.

However, as for screening blood donors, several studies have recommended addition of screening antibodies for the total hepatitis B core antigen (anti-HBc) as an additional screening assays to HBsAg (the test that used in Libyan blood bank units) to further enhance blood donation safety[13-18], furthermore, screening for this blood transmitted pathogen is obligatory to all immigrants and individuals as a part of their preemployment and premarital medical checkup.[19;20]

However, with all of these preventive measures, HBV infection remains a major health concern worldwide and in Libya in health care setting for both health workers and patients.[21] Seroprevelance of HBV infection in general population in Libya is documented, and several studies were performed to determine the incidence of HBV seromarkers among HCWs to tackle such problems among HCWs.[22,23]

However, to the best of our knowledge no studies on the incidence of this pathogen in individuals who attend health care providing centre in the country were conducted. Therefore, this study was performed to estimate the seroincidence of HBV infection in individuals attended to Tobruk medical Centre for various reasons, in order to explore the extent and the burden of this pathogen and to increase the awareness about the methods of spread and prevention of this important pathogen in the region.

Materials and Methods

The present retrospective study was conducted at Tobruk Medical Centre. The data were retrieved from medical records of Tobruk Medical Centre. The study aims at estimating the frequency and distribution of HBV infection based on age, sex, geographical distribution and nationalities during the study period from January 2010 to April 2020.HBsAg assay was performedin the Tobruk Medical Centre Medical Laboratory as a routine prior intervention in cases that require contact with patient body fluids such as minor and major surgical procedures and invasive investigation as well as natural labors. The assay is performed as measure of universal precautions to protect both patients and HCWs. The screening of HBsAg was by the commercially available enzyme-linked immunosorbent assay. The test was performed according to the manufacturer's instructions. The data were analysed by using SPSS computer software (Version 20, SPSS Inc.). Age of patients was presented as mean ± SD, Frequencies, percentages were computed and tabulated. A chi-square test was used to highlight if there any statistical significance in differences between variables. Statistical significance used < 0.05.

Results

A total of 113 were found positive for HBsAg over the study period. The ages of the infected individuals ranged from few 7 to 86 years, with a mean of 40.12± 15.7 years. 47 cases were males, 41.6 %, and 66 cases were females, 58.4 %.Out of 113 registered HBV cases, one case (0.9%) were in the age group of <10 years, 4 (3.5%) were in in the age group of 10 - 19 years, 24 (21.2%) cases were in the age group of 20-29 years, 29 cases (25.7%) were in the age group of 30-39 years, 23 cases (20.4%) were in the age group of 40-49 years, 32 cases (28.3%) were in the age group of >50 years and above. The majority of the infection was in the older age groups in age groups from 20 - >50 years (Figure 1).
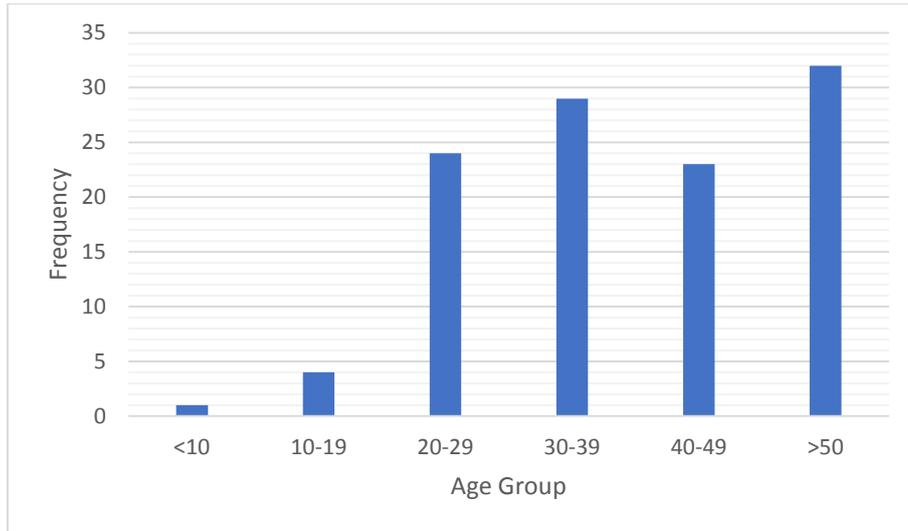
Figure 1: Seroincidence of HBV Infections among Different Age groups.

The overall rate of HBV infection was varied among the different nationalities. The highest rates were found among Libyan (101 cases, 89.4%), followed by Egyptian (5 cases, 4.4 %) and in Sudanese the incidence was (2 cases, 1.8%) and small percentage from different other countries. (Table 1)

Table1: HBV Infection among Different Nationalities.

Nationality	Frequency	Percentage
Americ	1	**0.9%**
Egypti	5	**4.4%**
Mauritanian	1	**0.9%**
Iraqi	2	**1.8%**
Libyan	101	**89.4%**
Sudane	2	**1.8%**
Syrian	2	**1.8%**
Total	113	100.00%

The majority of cases were from Tobruk region (99, 87.6%), followed with individuals come from Derna city (8, 7.1%) and followed by Albayda city (3 cases), Benghazi (2 cases) and sporadic cases from other nearby cities. A steady declining trends of seroincidence of HBV infection was observed over the last 5 years (Figure 2).
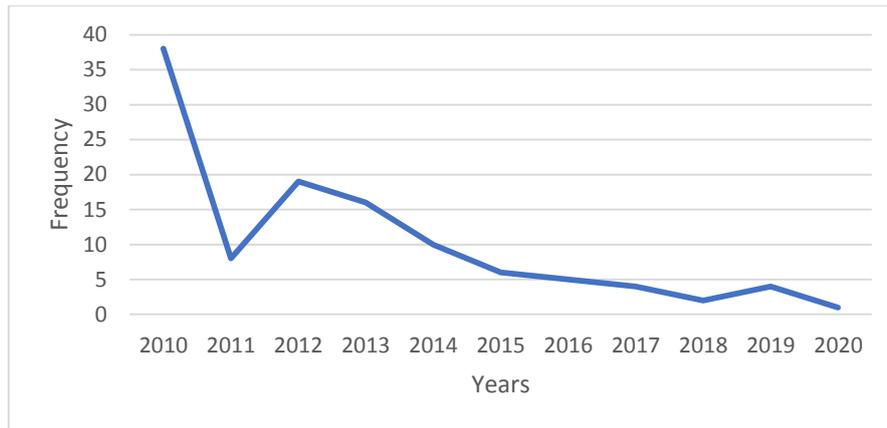
Figure 2: The Trends of HBV Seroincidence over the Study Period.

Discussion

The study of the seroincidence of HBV infection among individuals who attended Tobruk Medical Centre, which serves neighbouring cities as well, is an important step toward estimation of the spread of this viral infection among people attending health care providing centres in the region and therefore formulating effective preventive policies to prevent transmission this pathogen in health care setting.This study reported an overall rate of HBV over the whole period of study (2010- April 2020 was 113 cases, who were attending to Tobruk Medical Centre for a number of medical and surgical conditions. HBV analysis test was performed as a routine laboratory tests either prior to medical intervention, invasive investigations, minor and major surgical procedures, as well as natural labours.

HBV cantransmitted in healthcare settings when blood or other body fluid from an infected person enters the body of a person who is not infected. In a healthcare setting, this contact is primarily through contaminated needles, syringes, or other sharp instruments.[24] HBV infected individuals who attend health care providing centres is a major source of HBV infection for both health workers and other patients.The transmission of HBV infection in health care setting in the world is well documented; several reports have studied the spread of HBV infections and its spread from HCWs to patients and the opposite. Most of these reports stated that the transmission occurred as a result of lack of applying protective barrier. [25-27]

In this research, a significant and steady declining trend of seroincidence of HBV infection was observed over the last years ($p < 0.05$). (Figure 2) this declining may be due to deteriorated health screening services and preventive policies, i.e. lack of financial resources for screening tests to all individuals who will have invasive medical intervention. Regular researches on HBV infection in health care setting is

important; as these kind of researches provide health authorities with burden of this pathogen; in addition, the obtained information from such a researches is needed to implement more effective preventive measures to prevent the risk of this pathogen transmission from patients to patients also from patients to HCWs. In addition, prospective observational studies to evaluate the number of procedures that include evidence of blood contact of any type should be conducted.

Conclusion

The present study estimated the seroincidence of HBV infection in individuals who attended Tobruk Medical Center (2010 – April 2020). An important declining has been observed in the last years, this may be owing to inadequate health screening services and preventive strategies. Estimating the seroincidence of HBV infection will assist evidence-based public health preventive measures within our community and at the nationwide level.

Recommendations

Stricter standard precautions should be taken for the care of all patients in hospitals regardless of their presumed infection status to prevent transmission of this infection in healthcare settings. In addition, conducting regular surveillance of occupationally acquired HBV infection and reviews the efficacy of the used preventive measures in health care providing centers such as using protective barriers and performing pre intervention blood analysis and giving vaccination to HBV to health care workers. Furthermore, country health authorities are advised to regularly update the practice guidelines for the ideal management of the infected individuals with HBV infection.

Acknowledgements

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Prevalence of Toxoplasmosis among Pregnant Women in Tobruk City, Libya

(Original Research Article)

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Abstract: *Toxoplasma gondii* is an ubiquitous apicomplexan parasite which causes toxoplasmosis in humans and animals. It is represent most important parasitic infection during pregnancy and may causing severe complications and even fetus death. This study aimed to determine the prevalence of toxoplasmosis among pregnant women in Tobruk city. The study included 295 pregnant women aged from 16 to > 45 years, blood samples were collected during the period from January 2019 to January 2021. The Enzyme-Linked Immunosorbent Assay (ELISA) were used to detect Levels of IgG and IgM antibodies against *T. gondii* in the patients sera. The results this study showed that 35.9 % were positive by ELISA (IgG & IgM) which considered as a confirmed toxoplasmosis cases, 5.4 % of them had positive IgM which are acutely infected, those can be considered as a major risk group and more likely to get congenital toxoplasmosis, while 30.1% had positive IgG. The highest infection rate (50.9 %) was observed among the age group 36- > 45 years, followed by the age group 26 -35 years (33.8%). Meanwhile, the lowest infection rate (30.6%) was observed among the age group 16 -25 years, there was no statistical significant difference in toxoplasmosis infection rate between the different age groups was observed. The risk and severity of congenital toxoplasmosis are greatest when acquired during the first three months of pregnancy. it shows the need to provide health education and serological follow-up during pregnancy are of great importance in the prevention of congenital toxoplasmosis. This study indicates that there is a considerable rate of toxoplasmosis infection among pregnant women in Tobruk city. Moreover, it shows the need to provide health education to pregnant women in order to prevent primary infection during pregnancy.

Key Words: *Toxoplasma gondii*, Congenital Toxoplasmosis, Congenital Anomalies, Toxoplasmosis.

Introduction

Toxoplasmosis, caused by *Toxoplasma gondii*, is an intracellular protozoan infection distributed worldwide, with a heterogeneous life cycle that practically affects all warm blooded mammals and in which felines act as definitive reservoirs [1]. It is a significant public health problem worldwide. An estimated 8–22% of people are infected [2]. However, *T. gondii* infections increase in different regions of the world as a result of changing environmental conditions [3].

Congenital toxoplasmosis has a global annual incidence of more than 190.000 cases, according to estimates. Congenital toxoplasmosis has the highest burden of any food-borne infection. [4], were seen in South America and in some Middle Eastern and low-income countries [5]. Human and animal infection become infected through consuming infected raw or undercooked meat containing tissue cyst or ingestion of contaminated water, soil, vegetables, or anything contaminated with oocysts shed in feces; blood transfusion or organ transplants or intrauterine or transplacental transmission; and drinking infected unpasteurized milk [6]. Although these infections are usually either asymptomatic or associated with self-limited non-specific flu-like symptoms in adults e.g., fever, malaise, and lymphadenopathy.

Initial infection acquired by pregnant women may cross the placenta and reach the fetus. *Toxoplasma* tachyzoites multiply and invade fetal tissues to cause acute or chronic disease. This congenital infection may be systemic and result in fetal death, premature birth, abortion, intrauterine growth retardation, fever, pneumonia, hepatosplenomegaly, thrombocytopenia, or involve the eyes and brain [7]. Manifestations of ocular or encephalic disease in the fetus may include chorioretinitis, meningoencephalitis, hydrocephaly, microcephaly, or calcifications of previous areas of necrosis; however, infants generally do not show clinical signs at birth and instead may become deaf later in life. When women acquire the infection more than 6 months prior to gestation, risk of transmission to the fetus is considerably reduced. Although preventable and treatable, congenital, ocular, and postnatal *T. gondii* infection is not curable and persists in all infected persons [8,9].

Transplacental transmission becomes more common as the gestational age increases. The transplacental passage of tachyzoites is uncommon at early pregnancy, but the effects are severe on fetus [7]. Moreover, toxoplasmosis is also a major opportunisti infection in immunodeficiency conditions, reactivation of a latent infection in immune deficiency conditions such as AIDS and organ transplantation can cause fatal toxoplasmic encephalitis [10]. Furthermore, recent studies have shown that toxoplasmosis is a risk factor for schizophrenia [11], and highly virulent atypical

strains of *T. gondii* have been incriminated with pneumonia, even in immunocompetent people [12].

Epidemiological studies recording the high prevalence of *T. gondii* infection in Latin America (about 50–80%), parts of Eastern and Central Europe (about 20–60%), the Middle East (about 30-50%), parts of Southeast Asia (about 20–60%), and parts of Africa (about 20–55%) [13]. The diagnosis of toxoplasmosis infection can be made directly by biological, serological, histological or molecular methods [14]. Among these methods, serological assays are rapid and have good accuracy for detecting anti-*T. gondii* antibodies in pregnant women sera using various diagnostic tests, the most common method is enzyme-linked immunosorbent assay (ELISA) [15].

The primary infection is considered if the Toxoplasma immunoglobulin M (IgM) is positive and the immunoglobulin G (IgG) is negative or low avidity which consider a dangerous to the fetus and is more likely to cause a miscarriage or serious birth defects . While past or chronic infection is suspected by IgG positivity [16]. As mentioned above and taking into consideration that toxoplasmosis is more important in pregnant women which are the major risk group in population and regarding the fact that the prevalence of this disease is often silently; This study aimed to determine the infection rate of *T. gondii* among women in Tobruk city by detection of IgG and IgM anti toxoplasma antibodies using ELISA technique.

Materials and Methods

295 blood samples were collected from women aged between 16 -48 years. Samples were collected during period from January 2019 to January 2021. Anti-*Toxoplasma* antibodies were measured in pregnant women to detected infected cases. This was performed by ELISA method using ELISA kit according to manufacturer instruction. For this objective, anti-*Toxoplasma* IgG and IgM were assessed as the new infections to be distinguished from the old ones.

Sample Collection

Approximately 5 millilitres (ml) of venous blood sample was collected in labelled plain tube from each woman, the sample left at room temperature then undergone centrifugation at 3000 rpm for 5 minutes. The serum was collected in plain tubes and used to determine the toxoplasma specific IgM and IgG antibodies.

Immunological study by Enzyme Linked Immunosorbent Assay (ELISA)

The *T. gondii* IgG and IgM antibodies detection by ELISA kits (PerkinElmer Health Sciences, Inc. *Toxoplasma* IgG. USA, catalogue No. 10234, *Toxoplasma* IgM USA,

catalogue No. 10235), are a quantitative determination of the parasite antibodies in blood samples. Both tests were performed according to the manufacturer's instructions. For this objective, anti-Toxoplasma IgM and IgG were assessed as the new infections to be distinguished from the old ones.

Statistical Analysis

Data was collected and recorded in Microsoft Excel 2010 spreadsheet and then analyzed with Statistical Package for Social Sciences (SPSS) version 20. Chi-square test was used to compare the differences in prevalence of toxoplasmosis between the age groups.

Data were considered statistically significant when the *P*-value was < 0.05.

Results

A total of 295 women aged from 18 to 48 years were involved in the study. The results showed that 106 were positive for *Toxoplasma gondii* giving an overall prevalence of toxoplasmosis among pregnant women was 35.9 % (Table 1).

Table (1). Number and Percentage of Toxoplasmosis among Examined Cases

Total Samples	Toxoplasmosis Positive Cases	
	No.	(%)
295	106	35.9

Table 2 shows number and the percentage of anti-*T. gondii* IgG and IgM antibodies among positive cases. Out of 295 sera tested, 90 samples were IgG positive (30.5 %), while 16 serum samples were IgM positive (5.4 %).

Table:(2). Number and Percentage of IgG and IgM Toxoplasmosis Cases.

Toxoplasmosis Cases			
Toxoplasma-Specific IgG		Toxoplasma-Specific IgM	
No.	(%)	No.	(%)
90	30.5 %	16	5.4 %

Table 3 and figure 1 show the distribution of toxoplasmosis cases according to the age. The results revealed that high infection rate of toxoplasmosis was detected among age group   36 - > 45 years amounting to 50.9%. The age groups (16 – 25)

and (26-35) showed infection rates of 30.6% and 33.8% respectively, there is no statistical significance difference in infection rate among age groups ($P > 0.05$).

Table (3). Distribution of Toxoplasmosis Cases According to their Age.

Age groups (in years)	No. Examined	Toxoplasmosis Cases	
		No	%
16 -25	101	31	30.6
26 -35	139	47	33.8
36 - > 45	55	28	50.9
Total	295	106	35.9
χ^2(**P value**)	6.0 (***0.199***)*		

χ^2: Chi square test. * Not Significance.
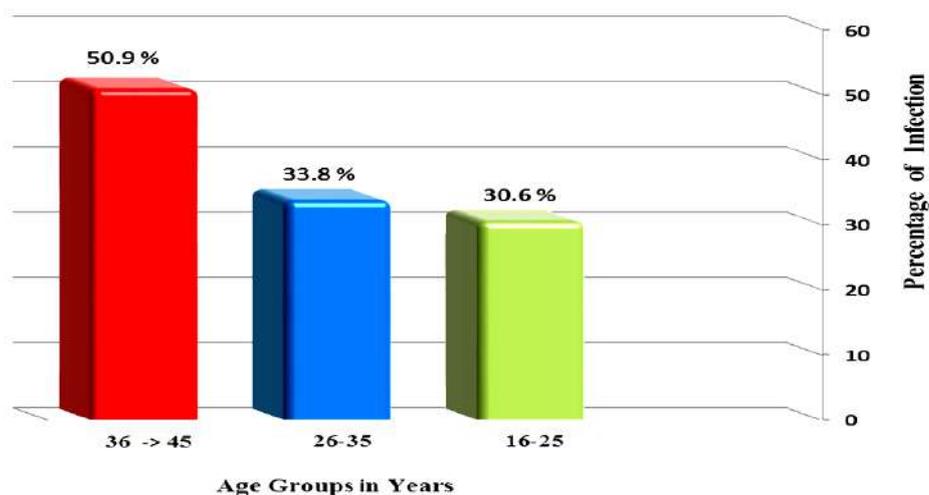
Figure 1: Distribution of Toxoplasmosis Cases According to their Age.

Discussion

Toxoplasmosis is ubiquitous infection affecting 500 million people around the world, with rang incidence 12-90% [17]. Maternal infection by *T. gondii* during pregnancy may have serious consequences for the fetus, ranging from miscarriage, central nervous system involvement, retino choroiditis, or subclinical infection at birth with a risk of late onset of ocular diseases [18]. The ELISA method for the detection of IgM and IgG anti-*Toxoplasma* antibodies was chosen in this study because acute toxoplasmosis usually diagnosed based on IgM antibody detection. In acute infections, IgM antibodies levels rise within one to two weeks of infection [19].

The present study included 295 women of which 106 were positive for toxoplasmosis with overall prevalence 35.9 %. The prevalence rate of this study agree with previously conducted studies in different regions in Libya. in Ben Jawad city revealed prevalence of 37.17%. [20]. Similar finding were reported in 2015 by Gamal et al. in Al-khoms City, Libya the prevalence in that study was 39.3% [21]. In Tripoli, a study was carried out in 2003 and showed the infection rate 41.3%, this finding not so far from the result reported in this study [22].

In El- Jabal El- Akhdar district a study conducted by El-Zaidi in 2007, the result revealed that the prevalence of *T. gondii* infection was 30.7% and 25.6 % in different regions in El- Jabal El-Akhdar district [23], other study conducted by Salem et al in Misurata they also showed that the prevalence of toxoplasmosis among pregnant women was 26.7 % [24].

Similar finding was reported by Gashout et al., 2008 [25, 26]. In Benghazi a study was conducted among only aborted women revealed that 44.8 % positive for toxoplasmosis [27], which indicate most of the abortion may attributed to toxoplasmosis infection. Data of this study showed the seropositivity of anti- *T. gondii* IgG among cases was 30.5%, while IgM positive case which represents the acutely infected women and the major risk group was 5.4 % from all examined cases. This finding is in agreement with findings in reported previously in Libya from different region, for example in Ben Jawad were 37.16% for IgG and 3.5% for IgM [20]. In Tripoli, result obtained by Gashout et al showed 17.6% acute or recent infections [28].

The variation in the prevalence rates of *T. gondii* among studies can be attributed to the differences in the study populations and study areas, as well as the different diagnostic methods used for blood examination. Also, the differences in toxoplasmosis rates can be interpreted on the basis of similarity or differences of climatic conditions of location and that the various ages of patients study, nutritional and immune status, hygienic habits, sanitary supplies and socioeconomic conditions in study's region. In general the prevalence of protozoans was strongly associated with a variety of risky factors including host, sociodemograph, environmental and zoonotic transmission [29].

According to age groups, the present study revealed that, highest percentage of toxoplasmosis was detected among the old age group (36 - > 45 years) which represent 50.9%. This is consistence with other results previously reported in Benjawad, Libya, revealed that, high rate of toxoplasma infection was detected among the old age group with no significance differences in infection rate among age groups [20]. Also, Kassem et al. in Benghazi city reported highest infection rate among pregnant women in was among the old age group reaching 63.3%. [26].

A study performed in Al-Khoms revealed that the percentage of seropositive cases was 30.5% in age group range 30-35 years [21]. Disagreement with the current study results reported by Salwa. S. et. al which showed the highest positive percentage with *T. gondii* at age (19-28) years 35.29 % while the lowest percentage at age (49-58) 12.94 % [28]. These differences may be due to wide variations in age groups used and these results reflected the contact with cats or infected materials and vegetables in these age groups. In addition, this may be due to decrease of immunity in old ages, and increase the chance for more exposure to infection [20].

Conclusion

The present work indicates that there is a considerable rate of toxoplasma infection among pregnant women in Tobruk city. Among risk groups, especially those pregnant or planning to pregnancy in future, it is important to obtain a serum sample for toxoplasma serology as early as possible. For some patients, it is possible to analyses a preconceptional serum sample or a sample from early pregnancy to avoid congenital infection. Moreover, there is a need to provide health education to pregnant women in order to reduce or to prevent primary infection during early months of their pregnancy. Seroprevalence of toxoplasmosis is positively with age, contact with cats and consumption of undercooked meat is a risk factor should be avoided.

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Single CRP Measurement Vs Serial Measurements as a Predictive Value for Neonatal Sepsis

(Original Research Article)

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Abstract

Neonatal Sepsis is a clinical manifestation of bacteremia caused by microorganisms and their toxins. Diagnosis of neonatal sepsis is not easy because of unspecific signs & symptoms that may mimic other noninfectious conditions, This study is to to compare between single and serial CRP measurements; which may alter the diagnosis and management of neonates with possible sepsis. This prospective study was conducted in Neonatal department of Al-Wahda Teaching Hospital of Derna in the period from July 2020 to July 2021. This study was conducted involve 160 neonates admitted to the neonatal department with possible sepsis. The patients divided into two groups group A (n=80) for the single and group B (n=80) for the serial measurements. Serial CRP was more significant than single CRP as a marker for neonatal sepsis. Serial CRP levels are useful in the diagnostic evaluation of neonates with suspected infection. The sensitivity of a normal CRP at the initial evaluation is not sufficient to justify withholding antibiotic therapy. The positive predictive value of elevated CRP levels is low, especially for culture-proven early-onset infections.

Introduction

Neonatal Sepsis is a clinical manifestation of bacteremia caused by microorganisms and their toxins [1]. Diagnosis of neonatal sepsis is not easy because of unspecific signs & symptoms that may mimic other non infectious conditions [2].

CRP is an acute phase reactant whose level increases within 6 hours of an acute inflammation, parallels the activity of the inflammatory process, and then decreases faster than any other APR. These characteristics make CRP very useful in monitoring response to antibiotics [3].

Aim of the work was to compare between single and serial CRP measurements; which may alter the diagnosis and management of neonates with possible sepsis.

Methods

A **prospective study** had been conducted at the Neonatal department of Al-Wahda Teaching Hospital of Derna in the period from July 2020 to July 2021 to involve all the neonates admitted to the neonatal department with possible sepsis fulfilling the inclusion criteria.

The number of patients involved will be (**80**) for the single and (**80**) for the serial measurements with total of (**160**) patients.

The **SPSS** will be used for statistical analysis in this study.

The Inclusion criteria: Gestational Age > 33 weeks, Age of patient > 12 hrs, Both Gender, with Signs & Symptoms of Sepsis.

The Exclusion criteria: Gestational Age ≤ 33 weeks, Age of patient < 12 hrs, Associated Illnesses that rise CRP other than Sepsis like (MAS, Perinatal Asphyxia and IVH).

Samples Collection: For the SINGLE measurement; a **single** sample obtained at admission " if age > 12 hrs " or after 12 hrs of onset of S&S of sepsis. For the SERIAL measurements; **3** samples collected as follows: **CRP 0**: At Time of Admission or after 12 hrs of onset of S&S of Sepsis, **CRP 1**: Obtained 24 hrs of CRP 0, and CRP **2**: Obtained 24 hrs of CRP 1.

Results

There is no significant difference between the two studied groups as regard demographic data Table 1.

Table (1): Demographic Distribution of the Two Studied Groups.

Variable		Group (A) (n=80)	Group (B) (n=80)	t / χ²	p
Age (days) Mean ± SD		6.21 ± 7.48	6.48 ± 7.38	.248	.825
Maternal age (years) Mean ± SD		30.42 ± 5.71	29.75 ± 4.94	.794	.429
Sex	Female	31 (38.8%)	25 (31.2%)	.989	.320
	Male	49 (61.3%)	55 (68.8%)		
Birth weight (kg) Mean ± SD		3.06 ± 0.572	2.98 ± 0.559	.895	.372
GA	**Preterm** (> 33 weeks)	19 (23.8%)	15 (18.8%)	.598	.440
	Term	61 (76.2%)	65 (81.2%)		

There is no significant difference between the two studied groups as regard diagnosis.
Table 2.

Table (2): Diagnosis between the Two Studied Groups.

	Group (A) (n=80)		Group (B) (n=80)		χ²	p
	N	%	N	%		
ABO incompatibility	7	8.8	6	7.5		
Acute cystitis	0	--	2	2.5		
Sepsis	9	11.3	10	12.5		
Mastitis	4	5	1	1.3		
Gastroenteritis	0	--	2	2.5		
Bronchopneumonia	5	6.3	4	5		
RDS	6	7.5	3	3.8		
Meningitis	8	10	9	11.3	17	.261
Pneumonia	11	13.8	16	20		
Jaundice	10	12.5	3	3.8		
Hypocalcemia	2	2.5	2	2.5		
UTI	7	8.8	13	16.3		
Omphalitis	0	--	2	2.5		
Perineal cellulitis	3	3.8	3	3.8		
Unknown	8	10	4	5		

There is no significant difference between the two studied groups as regard routine laboratory parameters Table 3.

Table (3): Routine Laboratory Parameters of the Two Studied Group

Variable	Group (A) (n=80)	Group (B) (n=80)	t	P
Hemoglobin (g/dL) Mean ± SD	11.56 ± 1.55	11.69 ± 1.46	.546	.586
TLC (10^3 /μL) Mean ± SD	10.91 ± 2.38	11.64 ± 2.51	1.89	.061
PLT (10^3 /μL) Mean ± SD	327.15 ± 67.41	316.95 ± 52.72	1.07	.288
Albumin (g/dL) Mean ± SD	3.95 ± 0.355	4.05 ± 0.444	1.57	.118
ALT (U/L) Mean ± SD	30.48 ± 7.18	28.55 ± 6.38	1.8	.074
AST (U/L) Mean ± SD	31.65 ± 6.57	30.54 ± 6.71	1.06	.292
Serum creatinine (mg/dL) Mean ± SD	0.853 ± 0.064	0.847 ± 0.072	.557	.578
BUN (mg/dL) Mean ± SD	21.78 ± 4.18	20.63 ± 4.21	1.73	.085

There is a significant difference between the two studied groups as regard single CRP Table 4.

Table (4): CRP of the Two Main Studied Groups

Variable	Group (A) (n=80)	Group (B) (n=80)	MW	p
CRP (mg/dL) Mean ± SD	26.1 0 - 251	39 0 - 296	2038	.002
CRP 1 (mg/dL) Mean ± SD	---	36.5 0 – 325		
CRP 2 (mg/dL) Mean ± SD	---	45 0 – 384		

There is a positive significant correlation between CRP with TLC in both groups. Table 5.

Table (5): Correlations between CRP and other Parameters in the Two Studied Groups

| Variable	Group (A) (n=80)		Group (B) (n=80)	
	r	P	r	p
Age	.129	.588	.281	.230
Birth weight	.336	.147	.163	.492
Hemoglobin	.097	.684	-.009	.970
TLC	**.367**	**.025**	**.329**	**.005**
Creatinine	.011	.962	.149	.530
Albumin	-.225	.341	-.244	.132
ALT	.191	.419	.203	.390
AST	.148	.532	.374	.105
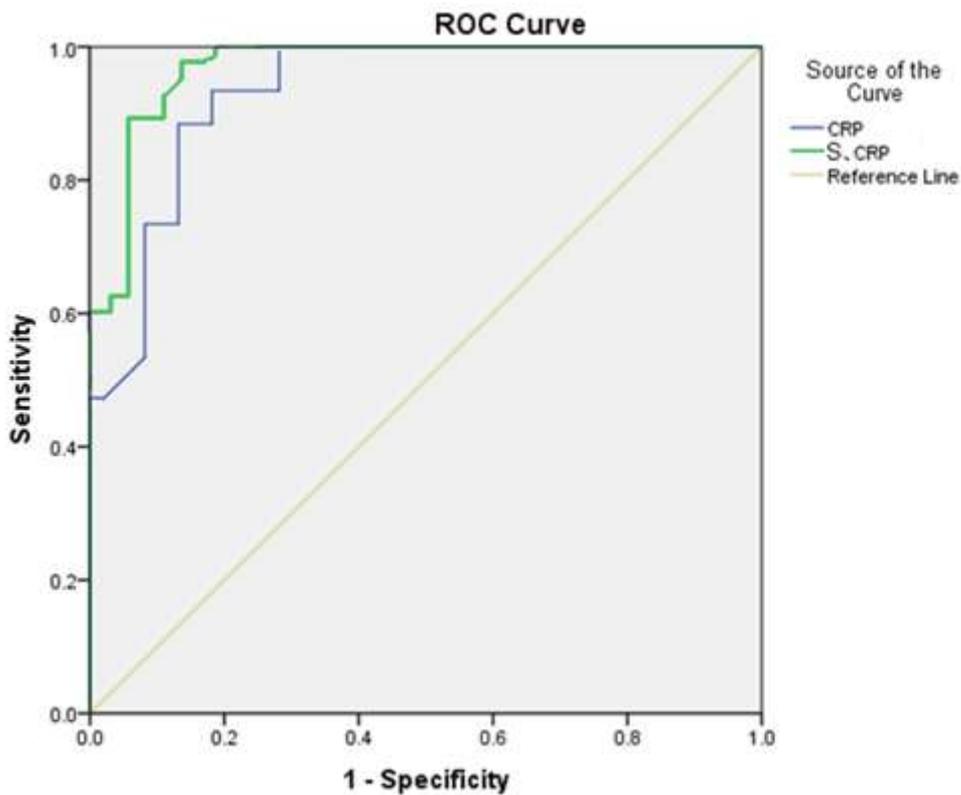
Figure 1: ROC Curve of Single CRP and Serial CRP as a Marker of Neonatal Sepsis

We found that serial CRP was more significant than single CRP as a marker for neonatal sepsis Table 6.

Table (6): Validity of CRP.

	AUC	S.E.	Sig.	95% Confidence Interval	Sensitivity	Specificity
CRP (single)	.924	.030	**.000**	.894 - 1.000	93%	79%
Serial CRP	.995	.007	**.000**	.982 - 1.000	96%	81%

Discussion

The raised of CRP concentration in septic individuals correlates well with organ failure and increases risk of death [4]. In the absence of methods for detecting the pathogenic bacterial agent, sepsis is diagnosed using clinical signs and increases in CRP concentrations [5]. CRP concentration is not affected by a prior taking of antibiotics, unlike blood culture [6].

The main aim of this study was to compare between single and serial CRP measurements; which may alter the diagnosis and management of neonates with possible sepsis.

This prospective study was conducted in Neonatal department of Al-Wahda Teaching Hospital of Derna in the period from July 2020 to July 2021. This study was conducted involve 160 neonates admitted to the neonatal department with possible sepsis. The patients divided into two groups group A (n=80) for the single and group B (n=80) for the serial measurements.

In the current study regarding the demographic distribution of the two studied groups, we found that there is no significant difference between the two studied groups as regard demographic data.

The present study was supported by **Sundarapandian et al.** [7] aimed to study the utility of serial CRP levels in the neonatal infection/sepsis diagnosis. Patients classified into three groups: proven sepsis (culture positive from anybody fluid), probable sepsis (culture negative but clinical and laboratory parameters suggestive of sepsis), and no sepsis (not suggestive of sepsis). Suspected infection was evaluated as early-onset (EONS, ≤72 h) in 300 neonates and late-onset (LONS, >72 h) on 150 occasions in 100 neonates. Demographics were comparable in both groups except for the age at evaluation.

Also, the study by **Valinjkar et al.** [8] aimed to assess role of CRP as a promising marker in diagnosis of neonatal sepsis and to determine the utility of CRP as a prognostic indicator in neonatal sepsis. The study enrolled 200 neonates with signs and symptoms of neonatal sepsis. 117 (58%) neonates were male and 83 (42%) neonates were female. Of these 200 neonates 143 (72%) neonates are vaginally delivered &57 (28%) neonates delivered by LSCS.

Regarding Diagnosis between the two studied groups, we found that there is no significant difference between the two studied groups as regard diagnosis.

The study by **Sundarapandian *et al.*** [7] revealed that There were 38 episodes of proven sepsis (EONS=18, LONS=20), 62 of probable sepsis (EONS=44 and LONS=18), and 350 of no sepsis. Organisms were isolated from 25 blood cultures (EONS=11 and LONS=14), 6 urine cultures (3 each in EONS and LONS), and no CSF cultures. Blood and urine culture isolated the same organism in two cases each of EONS and LONS. Staphylococcus epidermidis (coagulase-negative staphylococci) was isolated from blood culture in two cases of EONS and three cases of LONS. Of these five cultures, sepsis screen was abnormal in one case. Klebsiella pneumoniae was the most frequently isolated organism in EONS and Escherichia coli and Staphylococcus aureus in LONS. In EONS, proven sepsis was less common and probable sepsis was more common, vice versa was observed in LONS. Although CSF culture was negative in all the cases, the cell counts, glucose, and protein levels were abnormal in one case of EONS and four cases of LONS suggesting the fact that meningitis is probably a common occurrence in LONS.

However, **Mkony *et al.*** [9] revealed that 67.3% of the participants had fever, 38.9% low muscle tone, and 79.8% were found to have fast breathing. A positive blood culture was found in 40 (19.2%) of the 208 blood samples. The bacteria isolated included Klebsiella spp 14 (35%), E. coli 12 (22.5%), CoNS 9 (30%), S.aureas 4 (10%), and Pseudomonas aeroginosa 1 (2.5%).

Furthermore, the study by **Yaseen *et al.*** [10] regarding signs and symptoms reported that refusal to feed was a complaint in more than 90% of both groups (sepsis and no sepsis). Lethargy was less frequent among cases with sepsis (82.7%) compared to 95.5% of cases without sepsis, the difference was statistically significant. Seizure was reported in 12.5% of cases with sepsis compared to only 4.3% of no sepsis group, the difference was significant (p=0.039). No significant difference between the two groups was observed regarding other symptoms. Tachypnea was the most frequent sign in both groups (37.5% and 44.6% respectively). Fever was observed in about 10% of both groups. No statistical differences have been observed between the two groups regarding any sign.

Regarding the routine laboratory parameters of the two studied group, we found that there is no significant difference between the two studied groups as regard routine laboratory parameters.

Many attempts have been made to develop a set of screening tests, which can rapidly diagnose infected neonates, thus, preventing delay [11]. The diagnosis based on culture of blood, cerebrospinal fluid or urine is established after delay of 24 hours. However, many patients with bacterial infection have negative blood cultures [12]. It has been suggested that a combination of hematological tests (total leucocyte count (TLC), absolute neutrophil count (ANC), immature to total neutrophil ratio(I/T ratio), platelet count and C-reactive protein (CRP) estimation provide early diagnosis of bacteremia. [13]

The study by **Arif** *et al.* [14] reported that the combination of TLC, ANC and CRP is more sensitive in detection of culture positive than culture negative cases of neonatal sepsis.

Also, the study by **Choo** *et al.* [15] revealed that the incidence of neonatal sepsis was non significantly correlated to the WBC and Platelet count but significantly correlated with ANC.

Regarding the CRP of the two main studied groups our results showed that there is a significant difference between the two studied groups as regard single CRP. And we found that there is a positive significant correlation between CRP with TLC in both groups.

This was in agreement with the study by **Arif** *et al.* [14] who reported that there was positive significant correlation between CRP with TLC.

Similarly, **Ahmed** *et al.* [16] revealed that TLC was significantly correlated with CRP and concluded that a set of investigations including CRP, TLC, ANC, thrombocytopenia, cytoplasmic vacuolization in the neutrophils and GAC for polymorphs are highly sensitive in detection of culture negative cases of neonatal sepsis. Moreover, a combination of three tests enhances the sensitivity of these tests.

To test the validity of single and serial CRP we used ROC curve analysis of single CRP and serial CRP as a marker of neonatal sepsis. And we found that We found that serial CRP was more significant than single CRP as a marker for neonatal sepsis.

Our results were in agreement with **Sundarapandian** *et al.* [7] who revealed that there was a strong correlation between the diagnoses of proven or probable sepsis and elevated CRP levels ($\geq$1.0 mg/dl), for both early- and LONS episodes, supporting the diagnostic utility of CRP. The sensitivity of CRP 2 was > CRP 1, but maximum sensitivity was achieved by CRP 3 level only. A CRP level has a much higher predictive value in ruling out than ruling in neonatal infection/sepsis (reaching almost 99-100% for both sepsis types). So, they concluded that Serial CRP measurements are useful in the diagnosis of neonatal infection/sepsis.

This was supported by **Valinjkar** *et al.* [8] who reported that Negative predictive value of SERIAL CRP increases from 35% on day 1 to 94% on day 10 / or on discharge, which signifies that serial CRP value rules out sepsis with high accuracy and helpful in deciding duration of antibiotics in neonatal sepsis. Sensitivity of SERIAL CRP increases from 31% on day 1 to 53% on day10 / or on discharge which is significant. And they concluded that CRP is the rapid diagnostic test which has high sensitivity and negative predictive values in diagnosis of neonatal sepsis.

Also, the study by **Mkony** *et al.* [9] revealed that Single CRP in combination with Rubarth's newborn scale of sepsis can be used for rapid identification of neonates with sepsis due to high sensitivity (95.6%) but cannot exclude those without sepsis due to low specificity (56.4%). Serial CRP done 12hrs apart can be used to exclude

non-cases. This study demonstrated very high levels of resistance to the first-line antibiotics.

Our results were also in agreement with **Benitz et al.** [17] as they concluded that serial CRP was more significant than single CRP as a marker for neonatal sepsis.

Conclusion

Serial CRP levels are useful in the diagnostic evaluation of neonates with suspected infection. The sensitivity of a normal CRP at the initial evaluation is not sufficient to justify withholding antibiotic therapy. The positive predictive value of elevated CRP levels is low, especially for culture-proven early-onset infections.

Declarations

Consent for Publication: I confirm that all authors accept the manuscript for submission

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Diagnosis and Rehabilitation Clavicle Fracture by Radiography and Physiotherapy

(Original Research Article)

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Abstract

The aim of this study to investigate about the causes that lead to fracture of clavicle, especially the operation that is performed in Almahmed Center where there are many reasons that cause problem in fracture of clacicle. And the shoulder girdl ,which is one of the largest and most complex region in the human body.There are many reasons that the doctor may resort to implanting the joint for the patient,. As we have looked at this study for the most common reasons found in Tobruk. In this study we will discuss the structure of the clacicle bone and the structures surrounding it from the muscles, ligaments, nerves and bones. Then diagnosis byradiotherapy (X-ray, MRI, CT) and also rehabilitate them by physical therapy to recover in the least time to reduce any complication and gone back to normal daily activity. Whereas information were collected about the cases of the almahmed centre in Tobruk, it has been found 8 patients with clavicle (3 male 5 female). It has been found cases with different reason that led to clavicle fracture such accident. Cases had followed up after operation was 2. Clavicle fractures are one of the most complex fractures in terms of difficulty in fixing them, which sometimes require surgical intervention and a long period of physiotherapy, but the patient returns to his daily activity thanks to physiotherapy.

Keywords: Liver Disease, Hepatitis C, HCV, Treatment Hepatitis C, Tobruk Liver Center.

Introduction

The clavicle serves as the sole bone structure connecting the axial skeleton to the shoulder girdle through the sternoclavicular joint medially and the acromioclavicular joint laterally. It is a complex struc- ture that plays an important role in the stability, movement, and cosmetic aspect of the shoulder girdle. The close relationship between the clavicle, its shape, the muscles and ligaments forms the basic platform for the full range of motion of the shoulder (Lazarus and Seon.,2006). There are two clavicles, one on the left and one on the right and there are several muscles attach to the clavicle along its length.

A clavicle fracture is also known as a broken collarbone. Clavicle fractures are very common injuries in adults (2–5%) and children (10–15%) and represent the 44–66% of all shoulder fractures. It is the most common fracture of childhood. A fall onto the lateral shoulder most frequently causes a clavicle fracture. Radiographs confirm the diagnosis and aid in further evaluation and treatment. While most clavicle fractures are treated conservatively, severely displaced or comminuted fractures may require surgical fixation (Bentley TP, Journey JD., 2020).

Clavicle fractures represent 2% to 10% of all fractures. Clavicle fractures are:

1. Affect 1 in 1000 people per year
2. Are the most common fractures during childhood, Neonatal clavicle fracture has been previously reported to occur in association with shoulder dystocia, suggesting liability on behalf of the obstetrician(Beall, M. H., & Ross, M. G., 2001).
3. Approximately two-thirds of all clavicle fractures occurring in males. with the mechanism of injury included motorvehicle accidents, any type of falls, sport injuries, work accidents and injuries of unknown aetiology; males were more frequently involved than females (Postacchini, R., et al., 2010
4. There is a bimodal distribution of clavicle fractures, with the 2 peaks being men younger than 25 (sports injuries) and patients older than 55 years of age (falls).
5. The middle third of the clavicle is fractured in 69% of cases following the distal third in 28% of cases, and the proximal third in 3% of cases.
6. Comprise up to 10% of all sport-related fractures and have the third-longest return time to sport with as many as 20% of athletes with such injuries failing to return to sport.

The clavicle is the only osseous link between the upper extremity and the trunk. Due to its superficial subcutaneous location and the numerous ligamentous and muscular forces applied to it, the clavicle is easily fractured. Because the midshaft of the clavicle is the thinnest segment and does not contain ligamentous attachments, it is the most easily fractured location (Robertson GA, 2016).

Diagnosis clavicle fracture by radiography X-rays: The simplest way to see if the collarbone is the cause of the pain is to look at it. X-rays provide the easiest, quickest, and cheapest option. The X-ray is at least going to be a direct frontal view of the side of the chest that hurts (myoclonic staff.,2022).

The inter-observer and intra-observer study of diagnosing vertical instability of the clavicle using x-rays alone shows a high level of reproducibility while for horizontal instability the values were more variable. In general, numerically measured parameters appear to be more accurate and reliable among researchers than visual classification alone. Currently, evidence for the value of weighted observations in MRI and other additional diagnostic imaging to supplement standard X-rays is controversial (Iovane, A., et al, 2004). A CT scan and MRI may also be ordered for more detailed images (Terry Gemas, MD., 2017) Rehabilitation and physical therapy after treatment fracture, The primary goal of rehabilitation is to improve and restore the function of the shoulder for activities of daily living, Conservatively treated fractures of the clavicular midshaft usually unite between 18 and 28 weeks after the injury. So regular follow- up needs to be done to check whether the fracture site is properly unioned or not. So rehabilitation protocol may also vary based upon individual co-morbidities (E. Wilk, K., et al., 2005).

The clavicle fracture that has united with deformity or shortening may have an adverse effect on normal shoulder girdle function. In each patient, the functional status of the involved limb was improved after physiotherapy (Chan, K. Y., et al 1999). In first week should Fixation proved a relatively safe and successful treatment to Restore anatomy and shorten time to union. Supportive treatment with a sling or \ brace is Used for comfort to decrease pain and prevent deformity (Van der Meijden, O. A., et al., 2012). 3-6 weeks Post -injury begin normal light daily activities with the arm and shoulder, Isometric exercises of Shoulder with tolerable resistance is started, avoid heavy lifting for the full. In 6-12 weeks Post-injury free active and active assisted range of motion of shoulder in all planes is usually allowed, Sporting activities and work, demanding weight-bearing and the use of the arm, are usually suspended until the patient is free of pain with radiographic signs of progressing fracture consolidation, usually after 6-12 weeks.In 12 weeks and beyond Return to specific sports is determined by the physical therapist through functional testing specific to the patient's demands according to which progressive sport-specific training is planned. Advance activities including muscle endurance activities (upper body ergometer) and cardiovascular endurance exercises (treadmill, cycling) can be prescribed.Contact sports should be avoided for 3-4 months. Return to full contact sports requires the athlete should demonstrate radiographic evidence of bony healing, no tenderness to palpation, a full range of motion, and normal shoulder strength (Stone clinic., 2019).

Materials and Methods

Patients

Medicare Provider Analysis and Review files were used to identify all cases for clavicle fracture in Almahmed centre in Tobruk, Libya 2021, where found 8 cases clavicle fracturre 3 male and 5 female that dignosed by orthopeiest with x-ray and MRI as shown in (fig 7 & 8), but only 2 cases were followed up with the centre. cause of fracture was accident just one of male as result overthrow, the age of patients at a young age expect

one female was in 56 old year. All patients used a sling for three to four weeks post-injury to help support the clavicle as it heals and immobilization the arm did not lift much or rais much until fracture healed. and then followed by physiotherapist.
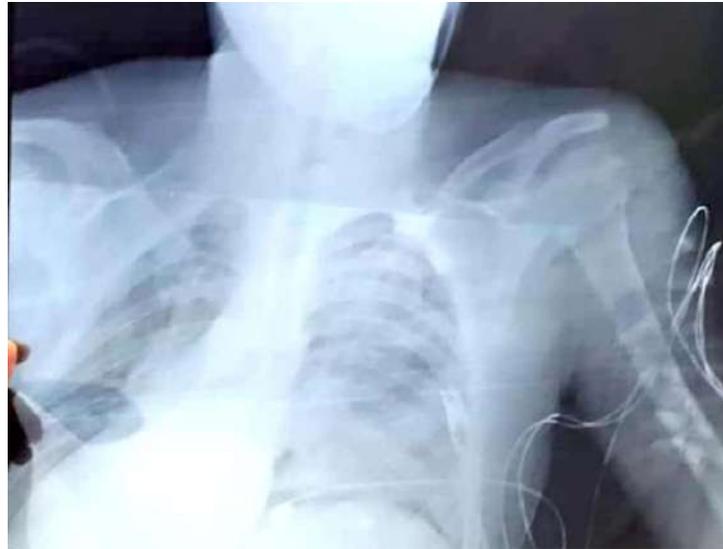
Figure 1. X-ray Clavicle Fracture.

Figure 2 . MRI Clavicle Fracture.

Physical Therapy

- heat, ice, or transcutaneous electrical nerve stimulation (TENS) to relief pain in first week After fracture apply ice and prevent move the up or down and go for doctor direct then use sllong and braces or as doctor advise.
- Range of motion (ROM): Joint mobilization techniques to restore joint mobility and prevent stifmess.
- Strength: Strengthening exercises to help restore the muscle and bone strength lost during immobilization performed isometric or static exercises daily.

- grip-strength exercise: Squeeze a small ball with gentle but even pressure several times per day.
- Isometric triceps exercises.
- Rotator cuff exercises.
- Hydrotherapy.

Results and Discussion

The aim of this study to investigate about the causes that lead to fracture of clavicle in Al mahmed centre in Tobruk where found 8 cases that has physical therapy to rehabilitation after fracture 3 male and 5 female as shown in graphic 1. The mechanism of injury included motor vehicle accidents, any type of falls, work accidents and injuries of unknown aetiology; females were more frequently involved than males. Only 2 patient have followed for 5 month and the male had recovered in 3 month because he has hydrotherapy. The physical therapy play important role to recovered patients in short time.
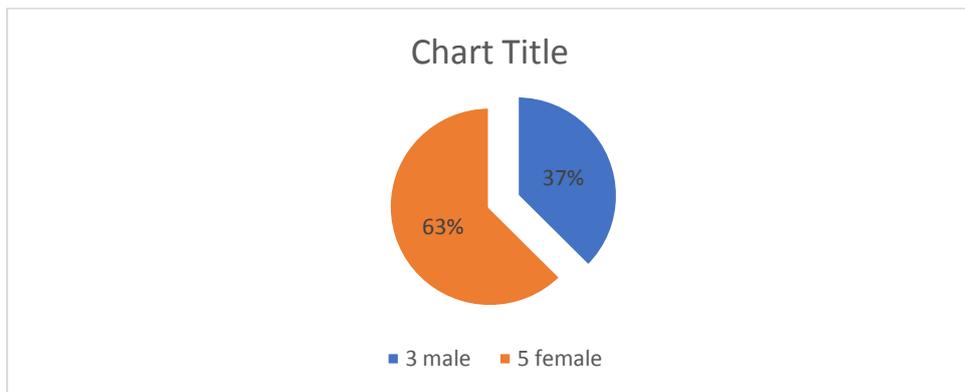

Figure 1. Ratio of Males and Females.

8 patients have recorded in this study with clavicle fracture where the females were more than males.
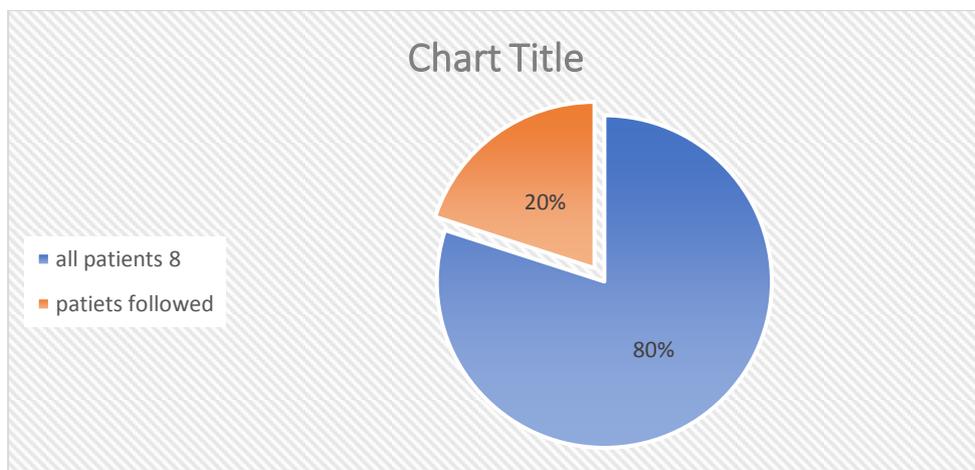

Figure 2. Patients followed to Physiotherapy.

Only 2 patients has follow with physiotherapy as result the other patients lived so far or in village around Tobruk.

Physiotherapy at al mahmed centre played an important role for patients to recover and return to normal life in the least time, physiotherapists followed patients until full recovery by providing them with advice and following up on the rehabilitation program.

Patients were satisfied with the physcial therapy and confirmed that they are more comfortable after the physiotherapy espicaaly hydrotherapy and reurn to normal daily routine as befor.

Meijden, O. A., et al., (2012) Clavicle fractures are common in adults and children (Meijden, O. A., et al., 2012). This does not agree with our study, as the injuries varied between young and old.

Radiograghy is important to diagnosis the type and detect location of clavicle fracture (myoclonic staff.,2022 & Terry Gemas, MD., 2017). Agreement with this studies.

Beall, M. H., & Ross, M. G., (2001) conducted studies Neonatal clavicle fracture has been previously reported to occur in association with shoulder dystocia, suggesting liability on behalf of the obstetrician(Beall, M. H., & Ross, M. G., 2001). In our study, there were no children among the patients

Chan, K. Y., et al (1999) The clavicle fracture that has united with deformity or shortening may have an adverse effect on normal shoulder girdle function. In each patient, the functional status of the involved limb was improved after physiotherapy (Chan, K. Y., et al 1999). Agreed with this studies the patients whose followed by physiotherapist were recovery and improve function without any deformity.

Postacchini, R., et al., (2010). Conducted studies with the mechanism of injury included motorvehicle accidents, any type of falls, sport injuries, work accidents and injuries of unknown aetiology; males were more frequently involved than females (Postacchini, R., et al., 2010). We agree with this study in terms of the type of injuries, as most of them were the result of accidents, collisions or falls, but the number of injuries was more in females than males.

Physiotherapy play important role to healing in short time and return to daily activity by use fixation, immobilization by braces in first week and use lightly exercise in 6 week after injury, then active exercise and strength muscles after 12 week (Van der Meijden, O. A., et al., 2012 & Stone clinic., 2019). Agree with this study in addition, hydrotherapy that help to accelerate recovery in short time.

Conclusion

We conclude from our study on fracture of clavicle at al mahmed centre where it was noted that most of the injuries were a result of accidents, falls, or sudden excessive movement, and most of the ages were young and not related to certain diseases. Through this study, we recommend maintaining proper nutrition, exercising and avoiding all wrong practices that may lead to fall or overthrow. Physiotherapy played an important role in recovering patients

in a short time and returning to daily activities. In addition to hydrotherapy, which works recovery in the shortest time, further studies are required to confirm these findings.

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Congenital Anomalies in NNICU at Tobruk Medical Center

(Original Research Article)

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Abstract: Background: Birth defects, encountered frequently by pediatricians, are important causes of childhood morbidity and mortality. The aim of our study was to assess the prevalence and gender distribution of congenital anomalies (CAs). A cross sectional design (descriptive study) was applied. Date was collected with review of records in all files of neonates born with congenital anomalies in Tobruk hospital along the duration between January 2020 to September 2021 All women giving birth to viable babies were included. Demographic details and the type of CAs in all babies were recorded. Diagnosis of CAs was based on clinical evaluation, radiographic examination, ultrasonography, echocardiography and chromosomal analysis of the newborn whenever recommended. The overall incidence of CAs among live born neonates was studied. During the study period 1071 newborns admitted to NICU of Tobruk medical hospital,100 neonates of them have congenital anomalies, the prevalence of congenital anomalies(CAs) was (0.093) 9% , with heigh proportion among male to female 56% and 41% with male to female ratio of 1.3:1 ,the Gastrointestinal malformations about 27% is the most common malformation followed by Chromosomal anomalies with Involvement of more than one system observed in (26%) cases followed by the central nervous system(21%) Musculoskeletal defects represent about 14% and others congenital anomalies represent about 12%. The evidence from this study suggested the most frequency of CAs in newborn admitted to NICU of Tobruk medical center in this period was to GIT Abnormality followed by Chromosomal malformation.

Key Words: Congenital Anomalies Incidence, Descriptive Study, Babies.

Introduction

Congenital anomalies can be defined as structural or functional anomalies (for example, metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth, or sometimes may only be detected later in infancy, such as hearing defect (1). The etiology of CAs is still unknown and multifactorial causes was play role in 20-25% of cases, (5) environmental factors include any non-genetic factors (example: maternal infection, maternal drug abuse (teratogenic) and nutritional deficiency (e.g., folic acid deficiency) (2). Chromosomal anomalies are responsible for most malformations that occur due to genetic factors. The importance of CAs lies not only in their contribution to neonatal and perinatal mortality, but also that they lead to disability in infants and children. The prevalence of congenital anomalies may vary over time or with geographical location, this variation reflecting a complex interaction of known and unknown genetic and environmental factors, there are many studies tried to estimate the prevalence of CAs in the world. The compare our study with other studies on the world for example, Congenital anomalies accounts for 1.9 – 2.7% the incidence in India (3). Another study was done in Fayoum Governorate, Egypt in 2021 (4) the prevalence was 7.4%. The aim of our study to estimate the frequency of CAs in newborns admitted to Tobruk medical center through January 2020 to September2021 All the records of newborn in this period was reviewed.

Methods

A cross sectional design (descriptive study) was applied. Data were collected with review of records in all files of neonates born with congenital anomalies in Tobruk hospital along the duration from January 2020 to September 2021. The total number of newborns admitted during that period was reported 1071newborn.

The work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans Inclusion criteria: Any case with congenital anomaly reported in the files during neonatal care workup.

Ethical considerations: As no intervention or direct interview was made, no consent was taken from family or guardian. Anyhow, authorized consent from administration of the hospital has been obtained and all of workup was made with strict confidentiality.

All health records in Tobruk hospital from (january2020- September 2021) were reviewed to collect data.

Statistical Analysis

Analysis of data was evaluated using SPSS version 20. Values that were recorded as mean and standard deviation were compared using Student's t test. P value <0·05 was considered significant.

Results

Total number of congenital anomalies that reported and admitted to NNICU at Tobruk medical center in period between January 2020 to September 2021 is 100 cases (table 1). showed that most of the cases with congenital malformations were males (56%) while females represented (41%) of total neonates with congenital malformations. heigh with male to female ratio of 1.3:1(table 7)

Maternal age ranged between 19 years and 49 years. Median maternal age was 35 years., the mean was 34.5 table 8 and showed that multiparity was present in 70. % In mother whose babies had congenital anomalies. Primigravida 30% table 9, the Gastrointestinal malformations about 27% table5 is the most common malformation followed by Chromosomal anomalies with Involvement of more than one system observed in (26%) table 2cases followed by the central nervous system (21%) table 4 Musculoskeletal defects represent about 14% table 3 and Others congenital anomalies represent about 12% table 6.

Table 1: Total Distribution of Congenital Anomalies

Cases	Cases	Percentage
Chromosome	26	24%
GIT	27	27%
CNS	21	21%
SKELETAL System	14	14%
Others	12	12%

Table 2: Chromosomal abnormalities

Cases	Total	Male	Female	Percentage
Down syndrome	8	5	3	8%
Edward syndrome	3	2	1	3%
Patau syndrome	4	2	2	4%
Marfan syndrome	3	3	0	3%
Noonan syndrome	1	1	0	1%
Prune belly syndrome	1	1	0	1%
Pierre robin syndrome	1	1	0	1%
Multiple congenital anomalies	3	0	3	3%
Sirenomelia	1	0	0	1%
Hay-wells syndrome of ectoderm dysplasia	1	1	0	%1
Total	26	16	9	26%

Table 3: SKELETAL Malformations.

Cases	Total	Male	Female	Percentage
Polydactyl	3	1	2	3%
Symbrachydactyly	4	2	2	4%
Congenital knee dislocation	2	2	0	2%
Osteogenesis	3	2	1	3%
Achondroplasia	2	1	1	2%

Table 4: CNS Malformation

Cases	Total	Male	Female	Percentage
Arnold Chiari malformation	8	3	5	8%
Hydrocephalus with meningomyelocele	3	3	0	3%
Hydrocephalus alone	3	2	1	3%
encephalocele	2	1	1	2%
Anencephaly	2	1	1	2%
iniencephaly	1	0	1	1%
craniorachischisis	1	1	0	1%
Moebius syndrome	1	1	0	1%
Total	21	12	9	21%
Arnold Chiari malformation	8	3	5	8%
Hydrocephalus with meningomyelocele	3	3	0	3%

Table 5: GIT Malformation

Cases	Total	Male	Female	Percentage
DIAPHRAGMATIC hernia	7	5	2	7%
Paraumbilical hernia	1	0	1	1%
omphalocele	5	2	3	5%
gastroschisis's	2	2	0	2%
Esophageal atresia	3	2	1	3%
Duodenal atresia	1	0	1	1%
Imperforated anus	3	1	2	3%
Cleft lip and palate	3	1	2	3%
Cleft palate	1	1	0	1%
Multiple intestinal atresia	1	1	0	1%
Total	27	15	12	27%

Table 6: Others

Cases	Total	male	Female	percentage
Choanal atresia	1	2	0	3%
Ambiguous genitalia	0	0	3	3%
Bladder exstrophy	2	0	0	2%
Hydrops fetalis	2	1	0	3%
Collodion baby	0	0	1	1%
Total	5	3	4	12%

Table 7: Malformed baby.

Male	54%
Female	41%

Table 8: Maternal factor

	Mean	34.1
Mother Age	**Median**	35
	Range	19 – 49

Discussion

We found the prevalence of CAs is 9% among 1071 newborns in this study done in Tobruk medical center. this is high when we compare with other study done in Fayoum Governate, Egypt. Was 7.4%, and other done in India was 1.9-2 the countries have variable rates of CAs: 2.46% in Oman (7), 1.25% in Kuwait (8), 2.4% in Lebanon (16), 3.76% in the Islamic Republic of Iran (9), 15% in Pakistan (10), 6.2% in Nigeria (11), 6.2% in Barbados (12), 2.89% in the United States of America (USA) (13), 8.39% in Nepal (14) and 6.2% in Bangladesh (.7%).

In our study the GIT malformation was the most common 27% followed by chromosomal abnormality 26%, CNS 21%, and then skeletal abnormality 14%

The down syndrome the most common in chromosomal abnormalities 8% then Patau syndrome 4%and Marfan syndrome 3% with Edward syndrome3%, Down syndrome is the most common chromosomal anomalies worldwide and this is approved by many studies. Moorthy et al. [28] demonstrated that Down syndrome is the most common chromosomal anomalies among live broth worldwide

In the current study show the GIT is the most common 27% and diaphragmatic hernia is the commonest one 7% compare with other studies done in the world, e.g., Iraq, the most common CAs were CNS anomalies, (23) also in Iran Islamic Republic CNS anomalies were

the most common, (24) in Egypt, in Assiut, was the musculoskeletal system, followed by genitourinary system and CNS (25). In Zagazig, anomalies of the musculoskeletal system were the most reported, followed by the CNS and GIT (26).,

But there is study done in Egypt, Alexandria pediatric university hospital had same resulted the high frequency of GIT abnormality 38% (21)

In the present study, , it was found that most of the cases with congenital malformations were males (56%) while females represented (41%) of total neonates with congenital malformations, (table7)

The study demonstrated multiparity was present in 70. % in mother whose babies had congenital anomalies. The relation between multiparity and congenital anomalies has been well documented in a study done by Prasad and Sukladas (20). show significant high incidence of malformations among the multipara in comparison with primipara.

The overall incidence of CAs in neonatal period in comparing with other studies is high despite the congenital heart diseases(is not focus in our study as it focus by other author in separate study)and this may be explained the fact that termination of pregnancy is illegal in libya

Conclusion

Most frequent congenital malformation in newborn admitted to NICU in Tobruk –Libya in two years was gastrointestinal malformations about27 % followed by chromosomal abnormality. The least frequent was the urinary and genitalia abnormality and with more frequent in male than female.

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The Pattern of Thyroid Disorders in the Eastern Part of Libya: A Retrospective Study in Albieda Hospital

(Original Research Article)

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Abstract: Diseases involving the thyroid gland are one of the most common endocrine disorders affecting the general population. They can be non-neoplastic or neoplastic lesions. The prevalence and pattern of these disorders depend on various factors including sex, age, ethnic and geographic location mainly depending on iodine contents in the soil, water, and food supply. The present study aimed to determine the pattern of thyroid lesions in surgically resected thyroid specimens received in the pathology department of Albieda hospital -Libya and to characterize the histopathological patterns of thyroid lesions in thyroidectomy specimens among Libyan patients, and their frequency in relation to age and gender of the patients. A retrospective study was carried out and analyzed the data of 652 thyroidectomy specimens diagnosed over eleven years (2008 – 2019) at the Department of Pathology, Albieda Hospital, Albieda, Libya. A total of 652 consecutive thyroidectomy specimens were selected, Patient's age ranges from 11-85 years, in thyroidectomy specimens 603 females (92.4%) and 49 (7.5%) males, There were 79 (12.1%) neoplastic lesions, and 573 (87.8%) were non-neoplastic. the majority of non-neoplastic lesions is colloid goiter 476 (83%). The follicular adenoma form the most common neoplastic lesion 63(80%). 14 out of 79 neoplastic

lesions were carcinoma, the most common histological type is papillary carcinoma (14%). The peak age for thyroid malignancy was the 4th to 6th decades. Non-neoplastic thyroid lesions are more common than neoplastic ones, colloid goiter was the most common non-neoplastic lesion and papillary carcinoma is the common thyroid cancer seen in females. There was a marked female predominance in all types of thyroid diseases.

Keywords: Thyroid Diseases, Histopathology, Thyroidectomy Specimens, Libya-Albieda.

Introduction

Diseases of the thyroid gland are one of the common endocrine problems encountered in clinical practice worldwide, most of them are benign (Kochupillai N, 2000). The incidence of thyroid diseases varies from one geographical region to another, mainly depending upon iodine deficiency status (Vanderpump MP (2011). Mountainous regions are considered as an endemic for goiter as the soil, water, and food supply contain low iodine (Elahi S et a, 2005). Other risk factors for thyroid lesions include sex, age as thyroid disorders increases with age, and incidence in women are 10 times more likely than men (Bayliss R., 1982), a diet rich in goitrogens, Pregnancy, Radiation to the neck, Family history, and Smoking (Hussain N, et al, 2005). Thyroid lesions are classified into non-neoplastic and neoplastic. Non-neoplastic lesions are common and Multinodular goiter is the commonest cause (Hussain N, et al, 2005). Goitrous thyroid lesion is considered a precursor to thyroid carcinoma (Marita et al, 2008). Thyroid cancer is the commonest endocrine cancer accounting for 92% of all endocrine malignancies. the most common thyroid malignancy is Papillary carcinoma (Gurleyik E, 2016). Diagnosis of thyroid disease can be made by clinical examination, ultrasonographic examination, fine needle aspiration cytology (FNAC) of the enlarged gland, hormonal evaluation, and thyroid scan. The histopathological examination gives a definitive diagnosis in thyroidectomy specimens (Sushel C et al, 2009, Welker MJ et al, 2003) In the eastern part of Libya no similar studies have been performed, as Libya is a developed country and the resources in the health sector are inadequate, the present study aims to determine the pattern of thyroid lesions in thyroidectomy specimens received in the pathology department of Albieda hospital, Libya.

Materials and Methods

This is hospital-based research (a retrospective study) of thyroid specimens received at the Department of Pathology, Albieda Hospital, from (2008 to December 2019). All patients presenting with thyroid enlargement, who underwent any type of thyroid operation (i.e. lobectomy, subtotal thyroidectomy, or total thyroidectomy) were included in this study, cytology specimens obtained by fine-needle aspiration (FNA) were excluded. Clinicopathological and demographic data (age and sex) of all such patients were obtained from pathology reports and reviewed; different lesions were categorized, into neoplastic and non-neoplastic lesions. The non-neoplastic thyroid diseases were classified on histological grounds and grouped into six major categories: 1. colloid goiter (diffuse and multinodular goiter),2. thyroiditis (Hashimoto's thyroiditis, Lymphocytic Thyroiditis, Riddles Thyroiditis,

Granulomatous (de Quervain's).3. colloid cyst, 4. Toxic goiter, 5. Grave's disease, 6. Thyroglossal cyst. Neoplastic lesions were classified according to the third edition of the World Health Organization (WHO) classification of endocrine tumors published in 2004 (Delellis RA et al., 2004)

There were informations excluded in this study like; ethnicity/race, information on food consumption, and the correct address of the patients. Because there was a lack in the information. Data entered into the SPSS program version 22 for analysis. Frequencies and percentages were used. The study proposal was reviewed and accepted by the hospital ethical committee.

Results

A total of 652 thyroid specimens were received in the Department of Pathology, Albieda hospital, Albaida, Libya from January 2008 to December 2019. As shown in figure (1), the majority of samples were received in 2013.
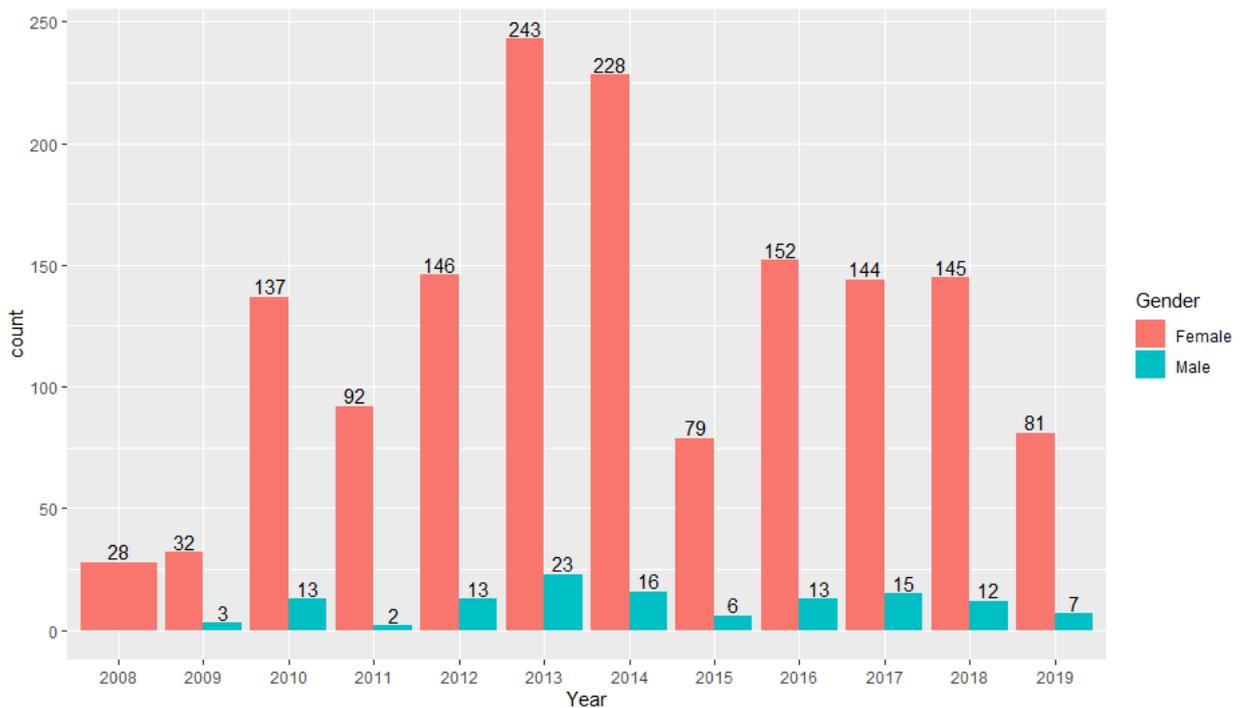

Figure : (1) The Number of Thyroid Samples Received in the Pathology Laboratory, Albida Hospital (2008-2019).

Table (1). Percentage of Histopathological Pattern of Thyroidectomy Specimens.

Category	Histologic Sub Type	NO(%)
Neoplastic	Follicular Adenoma	63 (80)
	Hurthle Cell Adenoma	1 (1.3)
	Trabecular Adenoma	1 (1.3)

	Hyalinizing Trabecular Carcinoma	1 (1.3)
	Papillary Carcinoma	11 (14)
	Medullary Carcinoma	2 (2.5)
Total		**79 (12.1%).**
Non-Neoplastic	Colloid goiter	476 (83)
	Colloid Cyst	39 (7)
	Thyroiditis	34 (6)
	Toxic Goiter	22 (4)
	Grave`s disease	1 (0.17)
	Thyroglossal Cyst	1 (0.17)
Total		573 (87.8%),

As shown in table (1) Regarding the histological pattern of our cases the majority were non-neoplastic lesions 573(87.8%), while neoplastic lesions were 79 (12.1%). Colloid goiter was the most common non-neoplastic lesion 476 (83%). The follicular adenoma form the most common neoplastic 63(80%). 14 out of 79 neoplastic lesions were carcinoma, the most common histological type is papillary carcinoma (14%) all were female.

Table (2): Proportion of Thyroid lesions in Males and Females.

I. Neoplastic Lesions	No (%)	No. Female	No. Male
Hurthle Cell Adenoma	1 (1.3)	1	-
Hyalinizing Trabecular Carcinoma	1 (1.3)	1	-
Follicular Adenoma	63 (80)	58	5
Papillary Carcinoma	11 (14)	11	-
Trabecular Adenoma	1 (1.3)	1	-
Medullary Carcinoma	2 (2.5)	1	1
Total (%)	79 (4.8)	73 (92.4)	6 (7.6)
II. Non-neoplastic lesions			
Colloid goiter	476 (83)	443	33
Thyroiditis	34 (6)	33	1
Colloid Cyst	39 (7)	34	5
Toxic Goiter	22 (4)	19	3
Grave`s disease	1 (0.17)	1	-
Thyroglossal Cyst	1 (0.17)	-	1
Total (%)	**573 (35.2)**	**530 (92.5)**	**43 (7.5)**

As shown in table (2), there is a female predominance found in all histological subtypes 603 (92.4%) and 49 (7.5%) males.The patient's age ranges from 11-85 years, we found a peak incidence of goiter in the third and fourth decade of life. The peak age for thyroid malignancy was 4th to 6th decades table (3).

Table (3) Age-wise distribution of different types of thyroid diseases

| I. Non-neoplastic lesions	Number of Cases within each Age Group				
	0-19	20-39	40-59	60-79	80-99
Colloid goiter	9	228	202	36	1
Thyroiditis	2	12	17	3	-
Colloid Cyst	2	20	14	3	-
Toxic Goiter	-	14	8	-	-
Grave`s disease	1	-	-	-	-
Thyroglossal Cyst	-	1	-	-	-
Total	**14**	**275**	**241**	**42**	**1**
II. Neoplastic lesions					
Hurthle Cell Adenoma	-	-	1	-	-
Hyalinizing Trabecular Carcinoma	-	1	-	-	-
Follicular Adenoma	4	32	24	3	-
Papillary Carcinoma	-	4	6	1	-
Trabecular Adenoma	-	-	1	-	-
Medullary Carcinoma	-	-	2	-	-
Total	**4**	**37**	**34**	**4**	**-**
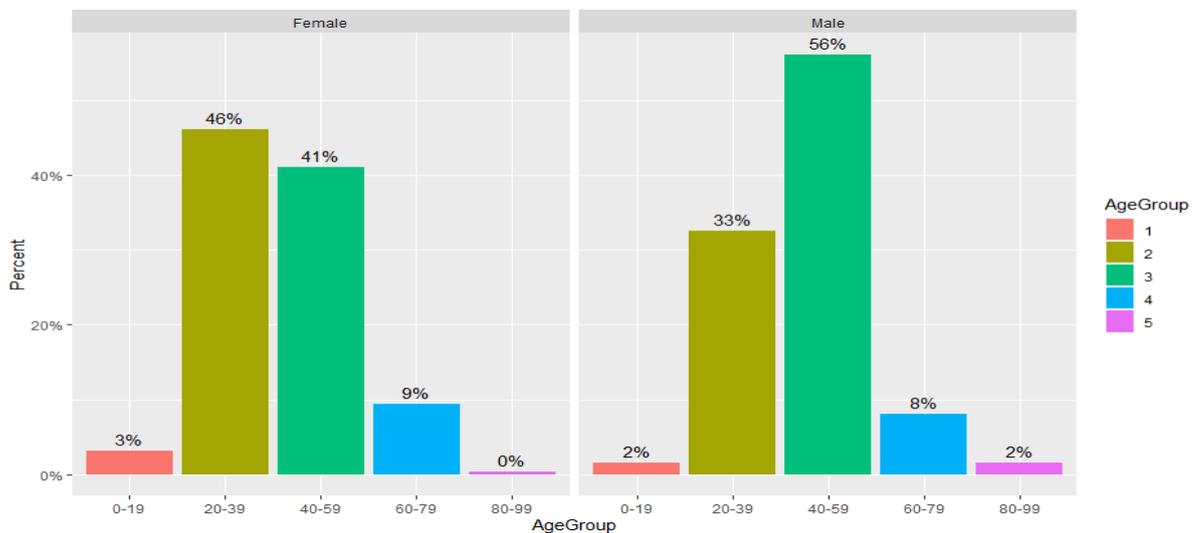
Figure (2) showed that the incidence of thyroid diseases in females occurs mainly in twenty and thirty decades and in males it was above forty.

Discussion

Thyroid disorders are common all over the world, with varying frequency and incidences depending upon iodine deficiency status (Vanderpump MP, (2011). Reported studies on thyroid disorders in Libya are few. To the best of our knowledge, this is the first such study published from the north-eastern region of Libya to the date of publication of this article.In our study, non-neoplastic diseases are more common than neoplastic lesions in thyroidectomy specimens. Our findings are consistent with other studies from across the world, that have reported that non-neoplastic lesions are more common than neoplastic lesions (Popoveniuc Get al, 2012, Chukudebelu O et al, 2012, Fahim A et al, 2012, Mirzakarimov F et al, 2012, Darwish AH et al, 2006, Salama SI et al, 2009).

Among the non-neoplastic lesions, there is an agreement in all previous studies, that nodular goiter is the commonest lesion. in an endemic area of Greece, research reported that 54.9% nodular goiter in their 264 cases of total thyroidectomies specimens (Abdulkareem KF. (2010). From Zambia, Mirzakarimov et al. (2012), in their 239 thyroid specimens found 172 cases (71.96%) of nodular goiter. Similarly, recent works from Pakistan report multinodular goiter was the commonest diagnosis in their study (Chukudebelu O, et al. 2012. Misiakos EP et al. 2006). Within the Arab world, Abdulkareem KF (2010) from Iraq report 59% colloid goiter (nodular and diffuse); while Darwish et al., (2006) from Bahrain in their 110 cases report 55 cases (45.5%) of nodular goiter and concluded as the most common in their experiences. Salama et al., (2009), studied 845 cases of thyroidectomies and found 311 cases (36.8 %) of multinodular goiter.

After the commonest diagnosis of colloid goiter we found the following breakdown of lesser frequent diagnoses: Colloid cyst and thyroiditis 7% and 6%, toxic goiter 4%.other investigators have mentioned close results. from Greece, Misiakos et al. (2006), after reporting 54.9% nodular goiter, mention 3.8% Hashimoto thyroiditis in their series of 264 cases. From Zambia, only 1.2% thyroiditis, 8.1% thyroid cysts, and 3.8% toxic goiter were reported (Mirzakarimov et al., 2012). Hussain et al. (2005), from Pakistan in their total of 662 cases, found 26 cases of thyroiditis)(Khanzada TW et al., 2011) In a study from Bahrain, after the common disease of nodular goiter, toxic goiter was found in 8% cases and thyroiditis in 7% cases (Darwish et al., 2006).

Within the neoplastic lesions, benign lesions predominated over malignant lesions in our study. follicular adenoma (80%), among the malignant, papillary carcinoma is the commonest (14%), followed by medullary carcinoma (2.5%), the least one is Hyalinizing Trabecular Carcinoma (1%). our study is consistent with Chukudebelu et al. (2012), from Ireland in their 1003 thyroidectomies found that 742 were benign lesions and 261 were malignant, of which papillary carcinomas is the commonest accounted for 75.1%. which is contrary to the findings in studies from Nigeria, in their 1,207 cases series found, 174 cases (14.4%) of thyroid gland neoplasms. Seventy-six (43.7%) cases were benign and 98 (56.3%) cases were malignant (Hussain N et al., 2005). Al-Amri (2012), studied a total of 143 patients with thyroid tumors who underwent thyroidectomy. The most common thyroid epithelial cancer was the papillary type (74%) (Ariyibi OO et al., 2013). Our results are

consistent with the international recent data regarding the predominance of papillary carcinoma.

Thyroid diseases have traditionally been known mostly to affect the female sex. in our study the majority of the cases of thyroidectomy were females (92.4%), Similar are the finding in recent literature from around the world ranging. Within the Middle East region, the study of thyroid disease from Bahrain (Darwish et al., 2006) found 76.36% females in 110 thyroidectomies, and 78.9% females in 845 thyroidectomy cases from the Western region of KSA (Salama et al., 2009). Al-Bouq et al., (2006) found 84.65% females in their total 189 cases in the study from the Madinah region (Al-Amri (2012). The results from other world countries are from 71.5% females in a study of 358 thyroidectomies from Pakistan (Fahim et al., 2012) to as high as 88.7% females from Zambia (Mirzakarimov et al., 2012), figures of 77.46% from Ireland (Chukudebelu et al., 2012), and 84.8% from Turkey (Veyseller et al 2009)

In our study of 652 thyroidectomies, we found a peak frequency of goiter in the third and fourth decade of life, similarly with the results of Al-Bouq et al (2006) from Madinah, KSA. Regarding age in the present study the non-neoplastic lesions: colloid goiter is more common in age less than the 40s, while thyroiditis is more above 40s. (Darwish et al., 2006) reported nodular with a peak at 31-40 years. The follicular adenoma is more at younger age 20-40. Whereas on the malignant side, the age range for carcinomas is (40-60) years, 6 out of 11 cases of papillary carcinoma are above 40. the study from Kazakhstan reports a peak incidence of thyroid cancer in 70 years and older population (Igissinov et al., 2011). we also reported that the incidence of thyroid diseases in female occurs at a younger age (twenty and thirty decades) while the range of ages of males are above forty.

Conclusion

The present study concluded that the histological spectrum of thyroid diseases in the thyroidectomy specimens from the Al-Beida region is closely similar to that seen around the globe. Non-neoplastic thyroid lesions are more common than neoplastic ones, with colloid goiter being the most common lesion. A follicular adenoma is the common benign tumor and papillary carcinoma is the commonest malignant lesion.In the present study, more cases are reported in females compared to males and the peak number of cases is reported in 40 to 60 age groups Since there are no open population epidemiological studies to determine the true prevalence of thyroid disease in the Albieda city/Libya. A prospective study on iodine status, autoimmunity, and goitrogens is required to further reveal the causes of this sex dominance as well as discover other possible etiological factors. This will help outline policy for prevention, early diagnosis, and management of common thyroid disorders.

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Assessment of Modified Vacuum Assisted Closure in The Management of Diabetic Foot Ulcers

(Original Research Article)

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Abstract: Diabetic foot ulcer (DFU); is a common, complex and costly sequelae of diabetes mellitus. DFU is a serious global health issue that led to amputation of lower extremity, causing significant morbidity and increased financial burden. Management of diabetic foot ulcers remains a significant challenge that requires a thorough knowledge of the available dressing techniques in addition to the frequent routine evaluation. Negative pressure wound therapy (NPWT) or vacuum assisted closure (VAC) is a recently introduced technology that has been widely practiced in the treatment of such ulcers. However, the consumables for VAC are very expensive and not economically feasible in the developing countries. Therefore, this study aims to assess the effects of modified vacuum dressing compared with standard care wound therapy (Wet saline dressing) and compare healing rates. A prospective study of convenient 50 patients divided into two groups (25 each) has been carried out. Group A consisted of patients with modified vacuum dressing and group B with wet saline dressing. Both groups were compared for healing rates. There was a 44.75% decrease in area of the ulcer in group A compared to 25.15% in group B after 4 weeks. Decrease in wound depth was 55.41 % and 26.94% in group A and B respectively. The mean hospital stay was 33.18 days in group A compared to 45.58 days in group B. The average cost incurred for patients in group A was Egyptian pounds 18,756 compared to 19,662 Egyptian pounds in group B. The vacuum dressing methods reduces the average time to complete healing, as well as the hospital stay. Thus, we recommended modified vacuum dressings might be considered as a promising method of treating diabetic foot ulcers.

Keywords: Diabetic foot, Negative Pressure Dressing, Modified Vacuum Dressing, Wound Healing.

Introduction

The prevalence of diabetes is steadily increasing worldwide [1]. Over the past few decades, diabetes and its complications cause substantial economic loss to the diabetic patients, health systems as well as to the national economies; most markedly in the world's middle-income countries [2]. People with diabetes are prone to develop foot ulcers, which if not heal, can cause serious health issue leading to increase cost, reduce productivity and implied high rates of morbidity and mortality. The lifetime risk of developing foot complications is 25% [3]. The standard-of-care therapeutic modalities are not sufficient for some refractory and complex diabetic foot ulcers (DFU). Wet saline dressing has been the standard topical therapy for DFU for years. However, it is difficult to optimize the amount of moisture and promote an ideal wound environment with these dressings. Negative pressure wound therapy (NPWT) is a relatively newer noninvasive adjunctive therapy that involves the application of a wound dressing attached to a vacuum assisted closure device (VAC) under controlled negative pressure [4]. This study has been carried out at Alexandria Vascular Center to assess the effectiveness of modified VAC compared with the conventional saline dressings in healing of diabetic foot ulcers.

The present study used a prospective comparative quasi experimental designed. 50 patients were recruited at Alexandria Vascular Center/ Egypt from November 2020 to June 2021. The study was was cleared by institution ethics committee. All patients who fall within the inclusion criteria were randomly divided into two groups- study group and control group. Odd numbers were in Group A and even numbers in Group B.

Study group (A): Received modified vacuum dressing therapy.

Control group (B): Received daily dressing with wet saline gauze.

Patients who aged >40 years; have diabetic foot ulcers with Wagner grade II, III; dorsal or plantar foot ulcer >2 cm^2 after debridement; and those whom dorsalis pedis pulse were palpable; were included in the study.

Patients who aged > 75 years, who had obvious septicemia, osteomyelitis, venous insufficiency, serious pre-existing cardiovascular disease in the last 6 months, have chronic kidney disease on dialysis; using enzymatic debridement; ulcers resulting from electrical, chemical, collagen vascular diseases, malignancy, and inadequate perfusion; pregnant/ lactating ladies; patients on being treated with corticosteroids, immunosuppressive drugs or chemotherapy and those who are not willing to consent were excluded from the study.

Study Procedure

After initial sharp surgical debridement and taking pus for culture and sensitivity, all patients were started on amoxicillin and clavulanic acid empirically and then changed based on culture. In Group A patients, a sterilized gauze-based dressing was applied over the wounds

under aseptic conditions. An evacuation tube embedded in the gauze was connected to a vacuum generator machine and sub atmospheric (negative) pressure of 125 mmHg on an intermittent basis (half hour VAC applied every 1 hour interval) for 72 hours was applied. The group B received once daily saline-moisted gauze dressing. After every 3 days, microbial cultures were taken from the base of the ulcer to assess the bacterial flora. Ulcers were treated until 100% wound closure with re-epithelialization or scab with no wound drainage present and no dressing required. Blood glucose levels were monitored strictly and appropriate doses of insulin given. The study aimed to compare healing The observations were noted and all results were tabulated and analyzed using SPSS statistical package. The percentage change in wound size and the appearance of granulation tissue and the primary study endpoint were tested for significance and the necessary statistical tables were constructed.

Results

In this study on 50 patients, we found that wound healing was much faster in cases in which modified VAC was applied. The mean age was 54.13 in Group A and 52.15 in Group B. The study had 24 (48%) females and 26 (52%) males. The mean area of the ulcers in Group A prior to treatment was 28.20 cm^2 and in Group B 25.15 cm2. After 2 weeks of treatment mean area of Group A was 24.65 cm^2 and in Group B 23.52 cm^2.

After 4 weeks mean area of Group A was 15.30 cm2 and Group B was 20.23 cm^2 . There was a 44.75% decrease in area of the ulcer compared to 25.15% in group B after four weeks. The patients in group A had a 55.41% decrease in wound depth compared to 26.94%. The average duration of hospital stay was 33.18 days in group A compared to 45.58 days in group B. The mean cost incurred for patients in group A was 13756 compared to 19662 EGP.

Table 1: Glycemic Control – HbA1C.

		GROUP A No (%)	GROUP B No (%)	Total No (%)
HbA1c	7.5-8.5	5 (20)	7 (28)	12 (24)
	8.5-9.5	14 (56)	10 (40)	24 (48)
	>9.5	6 (24)	8 (32)	14 (28)
	Total	25 (100)	25 (100)	50 (100)

Table 2: Grade of Ulcer among Groups.

Wagner grad	GROUP A No (%)	GROUP B No (%)	Total No (%)
Grad II	12 (48)	7 (28)	19 (38)
Grad III	13 (52)	18 (72)	31 (62)

Table 3: Reduction in Depth of Wound.

Depth mm	GROUP A	GROUP B
Week 1	18.36	16.07
Week 2	15.82	1552
Week 4	7.89	3.41
% Change in depth	55	26

Our study also reveals that the non-healing diabetic foot ulcers with larger surface area and a higher Wagner score have better results with a modified VAC group. Modified VAC dressing results are complementary to the conventional VAC dressing technique in achieving complete healing in selective patients, reducing wound surface area, depth, volume, and pain, and increasing comfort in subjects with a chronic non-healing diabetic foot ulcer.
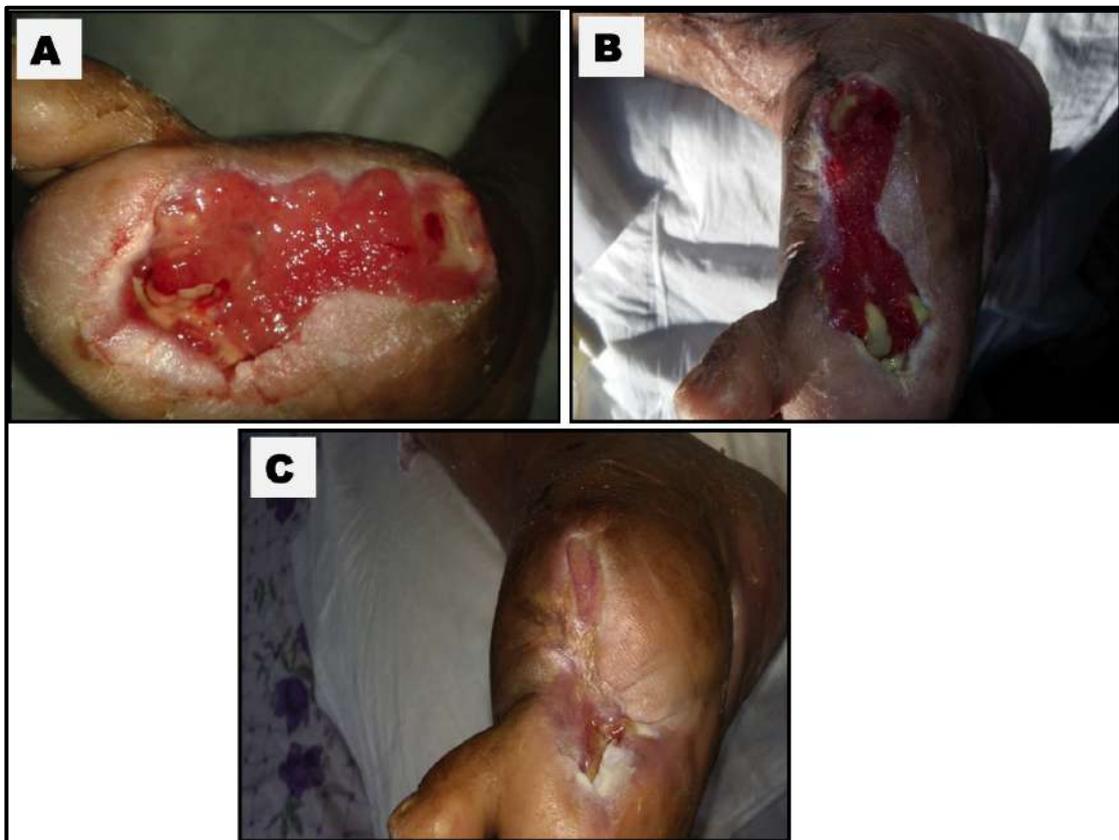

Figure 1: Showing the Ulcer: **(A)** Before applying modified VAC. **(B)** After 2 weeks of applying modified VAC. **(C)** After 4 weeks of applying modified VAC.

In Group A, patients wound bed healed twice as fast. Neuropathy and decreased distal vascularity were identified to have a direct effect on the wound healing pattern in both the groups.

As it was seen, the effect of distal vascularity was directly proportional to the wound healing, while the presence of neuropathy dampened the healing in both the groups. There were a better patient compliance and satisfaction within the modified-VAC group.
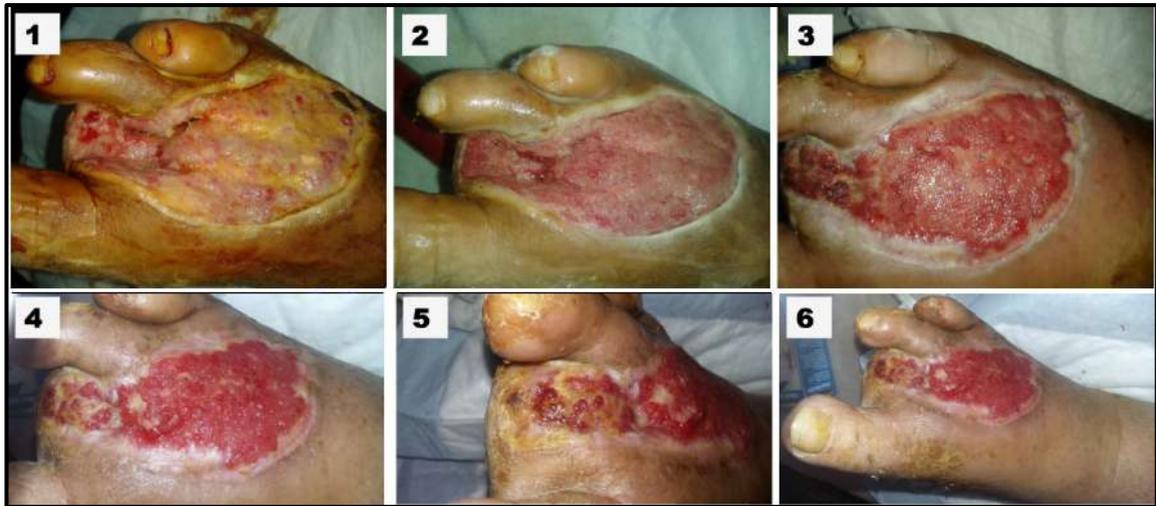
Figure 2: Gradual Reduction in Wound Area.

Modified VAC was effective in reducing wound area. This technique significantly improves the quality of life. There is a marked reduction in the number of inpatient days which indirectly cuts the treatment cost. The total cost for treatment was lesser than when compared with the conventional saline group and moreover it was much lower when compared with the standard VAC therapy.

Patient compliance was better with modified VAC group, as it was less painful. There was a marked reduction in wound infection particularly nosocomial and the need for therapeutic antibiotic also less in the modified VAC group.

Among topical wound management, NPWT therapy is the most discussed and described form of treatment modality. There are numerous trials done so far based on various variables all of which are aiming for a better faster healing, with an acceptable risk during treatment [7]. The mechanisms of action that can be attributed to NPWT therapy are an increase in blood flow- perfusion (human and animal studies), Promotion of angiogenesis (animal studies only), granulation tissue formation, Reduction in the wound surface area of several types of wounds (chronic) but not all wounds (acute), A positive modulation of the inhibitory contents in the wound fluid, there is an induction of cell proliferation (in vitro and animal studies only), reduction of oedema and bacterial clearance, removal of exudates [8] In short it is a fact that VAC therapy, is a faster more effective and clinically proven wound healing. One of the major problem facing of people low socio-economic subset of the population is the cost for dressing. So we introduce a technique of topical dressing with slight modification without losing the basic concepts of negative pressure wound therapy. In our study, we consider objectives like healing rate and economic cost[9]. In our study satisfactory healing was attained in 33.18 and 45.58 days as compared to 22.8 day and 42.8 days in a study done by Mc Callon et al. The percentage decrease in surface area of wounds in our study were

43.75% and 25.15% in the modified VAC group to control group compared to 28.4% and 9.5% by Mc callon et al. [10] The patients in group A had a 55.41% decrease in wound depth compared to 26.94% in group B vs 59% and 8% in a study by Ramanujam et al. [11] In our study VAC therapy group had better healing, had significantly lower 'In-Patient' days. VAC therapy is a cost-effective and relatively safe non-invasive procedure with better outcome in terms of meeting the endpoints as incomplete closure of wounds or till skin graft ability of wound is achieved. In our study the mean duration of hospital stay in cases is 33.18 days and for the control group is 45.58 days. The mean costs of treatment for case and control groups are 13756 EGP and 19662 EGP respectively. This is mainly because of the fact that there is a marked decrease in hospital stay, number of surgical debridement/ amputations, and decreased use of therapeutic antibiotic during treatment in cases or modified-VAC group.

Conclusion

Our study compared the effectiveness of modified vacuum dressing versus conventional wet normal saline dressings in the healing of chronic diabetic foot ulcerations in terms of healing, economic cost, and patient stay in hospital. We found that the healing was much faster in cases in which modified VAC was applied by reducing wound surface area, depth, and the volume of the ulcer. VAC significantly improves quality of life. There is a marked reduction in the number of "inpatient" days and there is an early achievement of endpoints, which indirectly cuts the treatment cost. There is a rapid filling of granulation tissue and the disappearance of discharge from the ulcer bed. Prepare wound bed over twice as fast. Number of surgical intervention is also less and a better patient compliance. Our study also reveals that the non-healing diabetic foot ulcers with larger surface area and a higher Wagner score III have better results with a modified VAC group. Modified VAC dressing results are complementary to the conventional VAC dressing technique in achieving complete healing in selective patients. Our study like other previous studies has established that NPWT technique has a better outcome when compared to the conventional modalities. With adequate resource and follow up problems of chronic diabetic foot ulcer could be managed in an effective economical way.

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Prevalence of Vitamin D Deficiency for Obese Women in Western of Libya

(Original Research Article)

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Abstract: Today, an association between vitamin D deficiency and obesity is well known, but the mechanisms are not clear yet. This study was designed to investigate the effect of body weight on serum vitamin D levels in obese women. This study has been carried out between 1st of April and 20th of Jun 2021 for obese women (BMI $\geq$ 30 kg/m2). The obese women diagnosed with vitamin deficiency were aged from 18 to 60 years. The study was performed in government and private clinics of Nutrition and Dietetics for weight loss in Tripoli, Libya. This subjects' sociodemographic features, anthropometric measurements (height, weight, body mass index (BMI), hip and waist circumference, body composition (body fat mass in kg, body water content in kg) and biochemical parameter measurements calcium (Ca), vitamin D,TG was analyzed through face-to-face interview method. Serum vitamin D level was measured in all obese women by obtaining 2 milliliter blood samples. A standard interview-based questionnaire form was to obtain data on demography. The questions provide details about personal characteristics include age, occupation, income social status, illness, medication, using vitamin D, calcium and another laboratories investigation such as Lipid Profile. A statistically significant relation (p=0.02) was found between serum vitamin D and BMI values in obese women. Also, there was a high relation between serum calcium values and vitamin D values (p= 0.008). This indicates that women diagnosed with vitamin D values from 10 to 20 have the highest level of calcium.

Key Words: Obesity, BMI, Vitamin D Deficiency, Obese Women.

Introduction

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health. People are generally considered obese when their body mass index (BMI), a measurement obtained by dividing a person's weight by the square of the person's height, is over 30 kg/m^2, with the range 25–30 kg/m^2 defined as overweight. Obesity increases the probability of several diseases and conditions, principally cardiovascular diseases, type 2 diabetes, obstructive sleep apnea, certain types of cancer, osteoarthritis and depression. The increase in obesity rates presents a major public health concern. In Europe, its frequency is in the range of 10–25% in men and 10–30% in women. [1] Obesity remains stigmatized in much of the modern world (particularly in the Western world), though it was seen as a symbol of wealth and fertility at other times in history and still is in some parts of the world. In 2013, the American Medical Association classified obesity as a disease. [2] Although there are genetic, behavioral and hormonal effects on body weight, obesity happens when you take in more calories than you burn through exercise and normal daily activities. The body stores these excess calories as fat. Obesity can sometimes be traced to a medical cause, such as Prader-Willi syndrome, Cushing's syndrome, and other diseases and conditions. [2,4,5] Obesity usually results from a combination of causes and contributing factors, counting Genetics, Family lifestyle, Inactivity, Unhealthy diet, medical problems, certain medications and financial issues Age, Pregnancy, Quitting smoking, Lack of sleep. Due to obesity, it is likely to develop a number of potentially serious health problems, including high triglycerides and low high-density lipoprotein (HDL), type 2 diabetes, high blood pressure, heart disease, stroke, gallbladder disease, and Osteoarthritis. [6,7]

Vitamin D works mainly as a steroid hormone called hydroxyl coli, such as capitol or calcitriol. It works by interacting with vitamin D receptors in cells, affecting gene replication, affecting more than 50 genes, including the protein gene. The most important function of vitamin D in the body is its role in the balance of calcium and phosphorus.in the intestinal wall, which absorbs it, it also stimulates calcium channels to absorb it.[8] In the absorption of phosphorus, re-absorb k of calcium and phosphorus in the kidneys. Additionally, to its role with thyroid hormone, the thyroid gland stimulates the release of calcium from the bones and the release of phosphorus in the urine if the level of calcium in the blood decreases. [8,9]. Many recent studies have a role for vitamin D in regulatingimmune system responses, as immune system dysfunction occurs in some autoimmune diseases, such as type 1 diabetes, scleroderma, inflammatory bowel disease and rheumatism caused by autoimmune disorders. There are many reasons why a large number of women are exposed tovitamin D deficiency.[10].

Obesity and overweight, Inadequate exposure to sunlight, Use of sunscreen, Avoiding the focus on nutritional sources of vitamin D, Poor absorption of vitamin D in the intestine, Women with dark skin. (11,12) There are many sources where vitamin D can be obtained from [13,14] Exposure to the sun: and eat foods that contain vitamin D naturally: such as fish includingsalmon, tuna, whale liver oil, and yolks. Vitamin D deficiency is linked to obesity

and weight gain. There is a hormone called leptin produced by fat cells in the body. Its function is to send a signal to stop eating. Vitamin D helps the hormone in its function and sends signals in an effective way. Previously, will give a sense of stop eating, and thus can control food consumption, moreover to it increases the metabolism of fat cells, and reduces the incidence of inflammation that causes weight gain. Causes ofvitamin D deficiency live in places that do not get enough sunlight. Intense a little vitamin D, those who are allergic to milk, vegetarians, and dark-skinned people are more likely to have vitamin D deficiency. The incapability of the kidneys to convert vitamin D to its active form as a person progresses in age, leading to a decrease in the body.[15]. The Aim of the study was to evaluate the association between vitamin D deficiency and obesity and to detect changes in the level of vitamin D and other factors such asage, education and exposed to the sun.[16].

Materials and Methods

This study has been carried out between 1st of April and 20th June 2021 on obese (BMI ≥ 30 kg/m2) premenopausal women with vitamin deficiency aged between 18 and 49 years, who have applied to government and private clinic of Nutrition and Dietetics for weight loss in Tripoli city, Libya. Throughout the study, a total number of110 subjects who complied with the study The subjects' sociodemographic features, anthropometric measurements (height, weight, body mass index (BMI), hip and waist circumference, body composition (body fat mass in kg, body water content in kg) and biochemical parameter measurements (F.B.S, vitamin D, TG, LDL, HDL was analyzed through face-to-face interview method. Serum vitamin D level was measured in all obese women by obtaining 2 milliliter blood samples_.If vitamin D deficiency was defined as a serum vitamin D level lower than 30mg/dl.

Study Design

A standard interview-based questionnaire was used toobtain data on demography, clinical and family history. The questionnaire consists of 3 sections each section including many questions. Section I including personal characteristics (age, Education, income social status), section II including (illness and types, medication, using vitamin D, Calcium and another laboratories investigation such as FBS, HBA1C and Lipid Profile).

Statistical Analyses

Data of the questionnaire and results of blood tests were analyzed using software program statistical statraphics (version, 24). N (110), the percentages were performed to investigate the significance in the association of the different variables and the prevalence of vitamin D deficiency. Our findings were given in tables as arithmetic mean and standard deviation. Difference between groups was assessed with one-way ANOVA and Correlations between variables were assessed using Pearson's coefficient of correlation. In all cases, p<0.05 was considered significant.

Results

First: Personal Information

Age and Vitamin D Level

22.5% of individuals were aged between 18 and 30 years and 49.5% were between 31 and 45 years of age and 27.9% of subjects were 46-65years Figure 1.
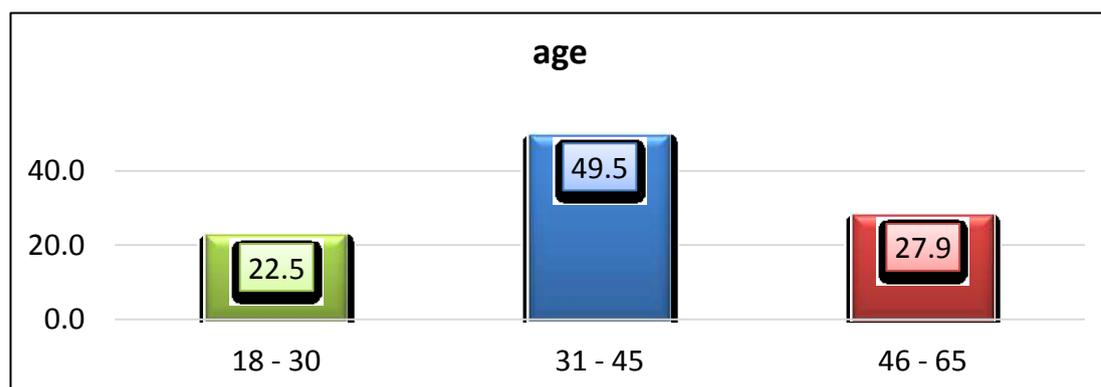
Figuer.1 The Percentage of Patients Related to their Age.

From data analysis, there were a high correlation between vitamin D level and age especially for the subjects aged 18-30 years (M=10.85, Std= 4.66) (p=0.000). It was a strong relation between obese women who aged 18-30 and TG value (M=142.84, Std= 61.465, r=.421, P= 0.000) > (0.05). As well as there were a high significant between BMI and participants who aged 18-30 (M=39.48, Std= 5.283, P=0.000<0.05). It was found that, a strong relation between age and BMI (M=39.48, Std= 5.28, P value=0.000<0.05). From the analysis there were no relation between age and TG, HDL, LDL investigations (Tables 1, 2).

Table 1: Relation between Age and Vitamin D level.

Vit.D level					
	N	Average	Std. Deviation	F	p value
18 – 30yr	25	10.85	4.653	11.731	0.000 *
31 – 45yr	55	17.53	10.398		
46 – 65yr	31	26.06	17.093		
Total	111	18.41	12.936		

Table 2: The Relationship between Age and BMI.

BMI					
	N	Mean	Std. Deviation	F	p value
18 - 30	25	39.48	5.283	12.704	0.000 *
31 - 45	55	35.93	5.784		
46 - 65	31	32.24	4.578		
Total	111	35.70	5.905		

* Significant at the 0.05 level.

N: Number of cases.

Education and Vitamin D level

In relation to statistical analysis, there were a high correlation between vitamin D level and education, whereas a strong relation between non educated obese women and vitamin D level (M=13.06, Std=7.735, P value=.008<0.05) Figure 2.
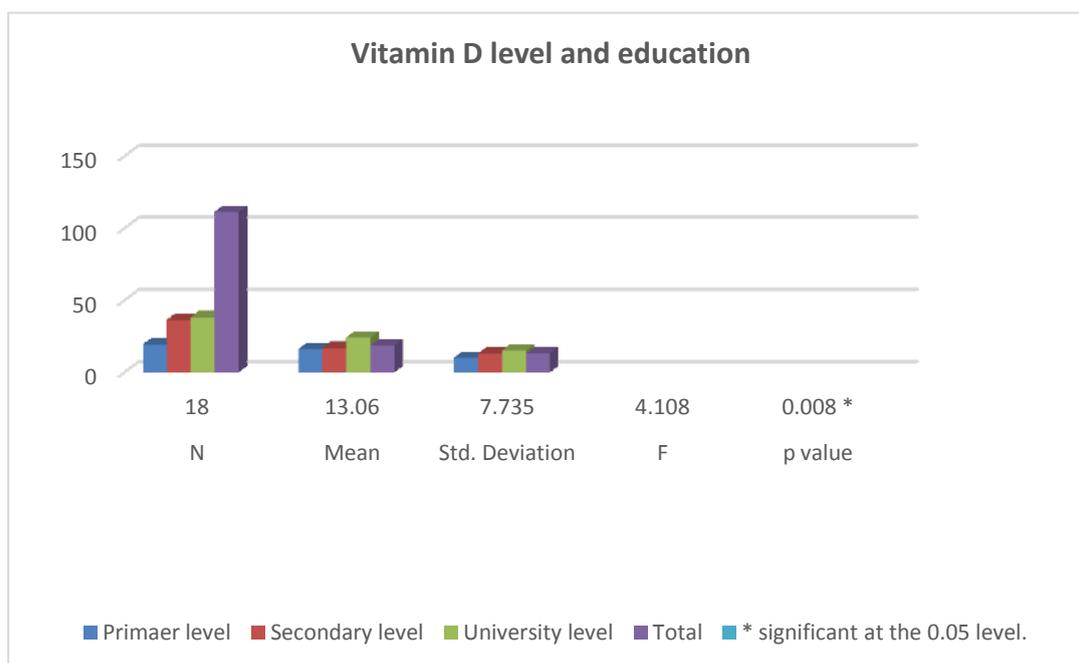

Figure 2: The relationship between vitamin D level and education. [N: Number of cases].

Second: Medical History

Laboratory Investigations

According to laboratory investigation obese women, we were found that, minimum level

from vitamin D is 3.00 and the maximum level was 85.00. Furthermore, BMI, the minimum was 20 and the maximum was 53.33 (Table 2).

Table 2: The Minimum and Maximum Levels of Laboratory Investigations.

	Minimum	Maximum	Mean	Std. Deviation
Vit.D level	3.00	85.00	18.41	12.936
TG	32.00	300.00	125.98	58.758
HDL	9.00	150.00	47.56	19.588
LDL	27.00	260.00	107.41	37.360
Wight	61.00	135.00	91.37	14.933
Height	147.00	171.00	159.59	5.821
BMI	20.00	53.33	35.70	5.905

Vitamin D level and Age

From data analysis there were a high relation between the obese women who age 18-30 years and vitamin D (M=10.1085, SD=4.653, p value=0.000<0.05) (Table 3).

Table 3: The Relation between Age and Vitamin D level.

Vit.D level					
	N	Mean	Std. Deviation	F	p value
18 – 30yrs	25	10.85	4.653	11.731	0.000 *
31 – 45yrs	55	17.53	10.398		
46 – 65yrs	31	26.06	17.093		
Total	111	18.41	12.936		

* Significant at the 0.05level.

Third: Vitamin D level and BMI

From analysis, there were a strong relation low vitamin D level and BMI, the obese women there vitamin D level between 0-29 nm 85% and there were a high correlation between BMI & vitamin D (mean=34.84, SD=4.88,p value=0.000<0.05) (Tables 4, 5).

Table 4. The Percentage of Vitamin D Deficiency

Vit.D level	Frequency	Percent
0 – 29yrs	95	85.6
30 +yrs	16	14.4
Total	111	100.0

Table5. Correlation between vitamin D deficiency and BMI

		N	Mean	Std. Deviation	t	P-Value
BMI	0 - 29	95	34.84	4.883	-3.988	0.000
	30 +	16	40.81	8.592		

Vitamin D level and Exposed to the Sun

In this study, it discovered that, about 50% of the participants who suffer from vitamin D deficiency are not exposed to the sun, meaning that there is a strong relationship between lack of sun exposure and vitamin D deficiency (Table 6).

Table 6: The Relation between Vitamin D level and Sun Exposure.

Vit.D level	N	Mean	Std. Deviation	T	p value
Yes	52	25.86	14.277	6.764	0.000 *
No	59	11.83	6.657		
Total	111	18.41	12.936		

Discussion

Geographic location played a significant role in the vitamin D status. Libya is one geographic area where vitamin D deficiency is highly prevalence. In spite of Libya is summary, warm climate which is supposed to be less liable developing vitamin D deficiency among its population. In the present study, it found that a positive association between vitamin D deficiency and obesity. The concept of maintaining an increased vitamin

D status for decreasing adiposity also warrants further evaluation. In this study, there was no significant difference between vitamin D levels and education, age. Relationship was found between obese women and vitamin D, that is, BMIlevel increased as vitamin D levels decreased. However, the relationship was not significant because of the low number of samples. When comparing these results with the study in Turky 2017, it was discovered that vitamin D level was insufficient in 93.2% of individuals and this level has increased to 97.7% after the study. Otherhand, the study in Benghazi,2018 they found that a high significant relation between serum vitamin D and BMI values in obese women and it was same our results. [19,18].

Number of epidemiological studies proving the relation between Obesity and vitamin D is continuously increasing. An important study related to this issue is claiming that there is an adverse relation between body fat ratio and 25 (OH) D concentrations and that there is an independent relation between low serum level 25(OH) D and increased BMI and body fat mass. When comparing this study with Astudy by Ambaraka Elferjani et.al 2018 in Benghazi, Results found that a high significant relation (p= 0.02) between serum vitamin D and BMI values in obese women. It is found that 60% of obese women were less than 10 Mg/dl and 45% from women their vitamin D values 10-20mg/dl and 32%their vitamin D values less than 3omg/dl and were discovered that a high relation between serum calcium values and vitamin D values (p= 0.008). It found that the women who vitamin D values 10-20 they have the highest level from calcium.[19].

Another study comparing obese and healthy overweight individuals has found out that vitamin D deficiency and obesity are interrelated and that, according to vitamin D deficiency, obese individuals are under 3.36 relative risk compared to normal weight individuals. [38] The study by Abdelkarem, et al. on obese women vitamin D levels were found to be inadequate in 59.6% of obese women, 19.3% were moderate inadequate and 21.3% were found adequate.

Similarly, Raja Kumar, et al. have found out that serum 25(OH)D level has inverse relation with BMI, total body fat percentage, visceral fat tissue and subcutaneous fat tissue [37]. The possible explanation, the mechanisms that link excess body weight and vitamin D are not fully elucidated. The possible explanation maybe that certain vitamin D receptor (VDR) polymorphisms are associated with obesity, expression of human VDR in mature mice adiposities lead to expression of VDR in preadipocyte cell lines, thereby inhibited adiposity differentiation and increased adipose mass.

Alternatively, some experimental data have suggested that vitamin D deficiency can cause greater adiposity by promoting parathyroid hormone levels and overflow of calcium into adipocytes, thereby increasing lipogenesis. On the other hand, leptin plays a very important role in the occurrence and development of obesity and vitamin D is an essential factor of generating this leptin, which can cause obstacles of leptin synthesis. Thus, depletion of vitamin D can increase appetite and lead to obesity. Additionally, outdoor activity, food intake and exercise levels can influence 25(OH) D levels. In this study, there was a negative

correlation between the amount of body fat loss and PTH level after the study. A negative correlation between age, education level, TG, income level and vitamin D was also determined.[19].

A recent meta-analysis study reported the vitamin D deficiency was associated with obesity irrespective of age, latitude, cut-offs to define vitamin D deficiency and the Human Development Index of the study location. However, Saneei Pet al. included 34 studies in the meta- analysis, and their results support a significant inverse weak correlation between serum 25(OH) D levels and BMI in adult population. Our study showed that there are now consistent evidence of an association betweenthe vitamins. [20].

Conclusion

In conclusion, our results designate positive association between vitamin D deficiency and obesity was found. The theory of maintaining an increased vitamin D status for decreasing adiposity also deserves extra evaluation. In this study, there was no significant difference in vitamin D levels according to education, age and sun shine.

The relationship was found between obese women and vitamin D, that is, BMI level increased as vitamin D levels decreased. However, the association was not significant because of the low number of samples.

Recommendations

Patients should follow the following instructions:

1. Get daily dose of sun.
2. Consuming Vitamin D levels tested regularly
3. Take a supplement especially during winter.
4. Maintain a healthy weight by encourage the patients to physically active and educate them about vitamin D as food source.
5. Educate the patients about vitamin D deficiency complications at risk.

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Congenital Ingrown Toenails: Series of 5 Cases

(Case Report)

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Abstract

Congenital onychocryptosis is an uncommon abnormality affecting the periungual soft tissue of the great toe. It has only occasionally been discussed in the medical literature. It is widely believed to be due to an intrauterine trauma or hereditary transmission, a genetic predisposition has been noted and familial cases have been reported .Several types of ingrown toenails have been identified during infantile period which include: congenital mal-alignment of the great toenails, distal-lateral nail embedding, hypertrophy of the lateral nail folds and over-curvature of the nail plate.

Keywords: Congenital, Ingrown Toenail, Anomaly of the Hallux, Surgery.

Introduction

Despite the fact that ingrown toenail in the infant is a rare entity. It causes a considerable degree of morbidity in children present with bilateral ingrown hallux toenails. Infants present with tenderness, pain, erythema, purulence, and hypertrophy of the skin and fat of the distal end of the great toes extending over the dorsum of the nail plates. Inflammatory and infectious granulation tissue develops with time.

Methods

In this case report, we present 5 cases of a 2 weeks- 2 months old males presenting with bilateral congenitally ingrown hallux toenails (mean: 24 days). All cases were identified at birth or shortly thereafter. Although it is widely accepted that most of the cases will be spontaneously resolve in most cases. However, in this report all the cases required surgical treatment. 5 of 5 patients undergoing wedge resection of the hypertrophic soft tissues of both great toenails (Figures 1 A, B, C and D**).** Clinical exam revealed swelling, erythema and purulence in the nail fold in all the cases. Systemic antibiotics were administrated prior to surgery.
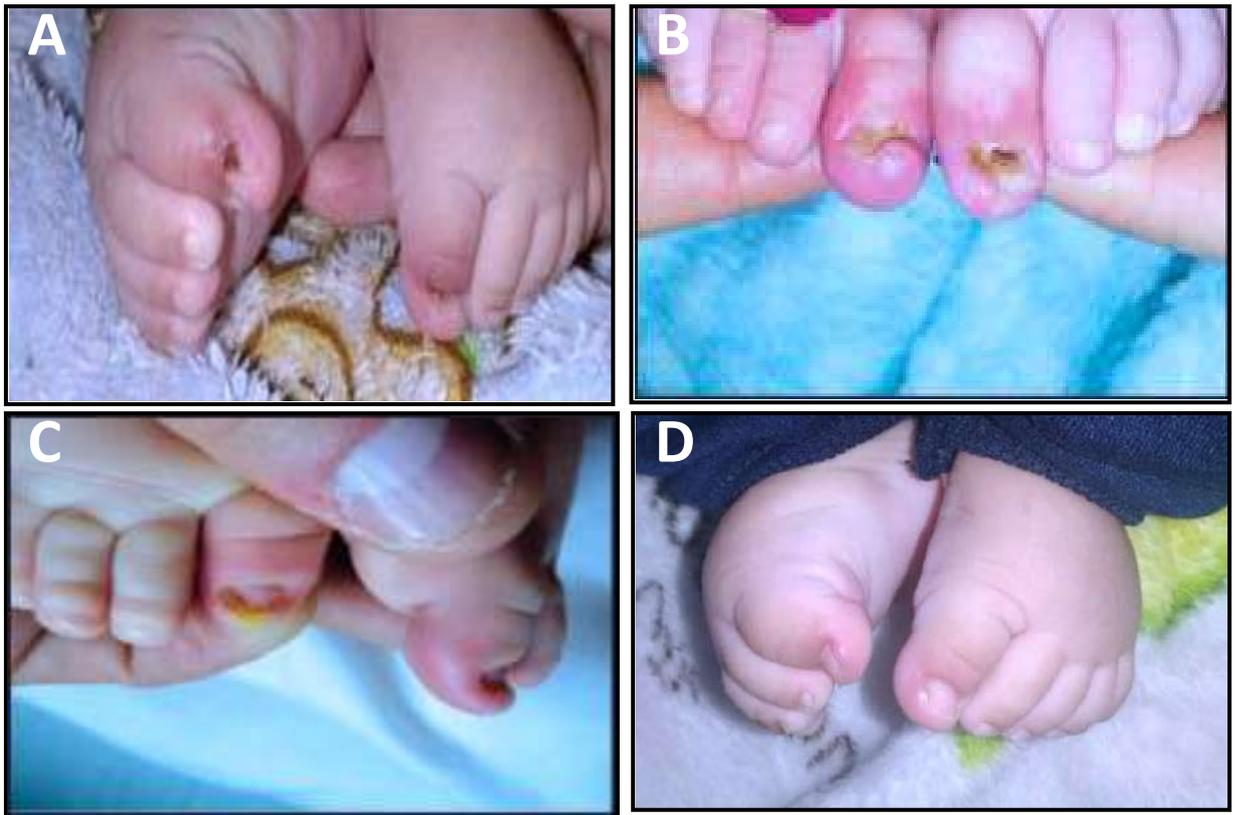
Figure 1A-D: Hypertrophy of the Nail Folds of both Great Toes.

Results and Discussion

The results were excellent in both feet of all patients with complete resolution of the condition. The results suggest that, a simple wedge resection operation corrects the deformity and prevents subsequent ingrowing; specifically the hemionychogryphosis; which is often the long-term problem in untreated cases. No recurrences detected in any patient after 12 months of follow-up. All had essentially normal appearing nails by six months of age. In this case report series, all the cases were presented during winter season, which may reflect the effect of tight cloths and socks as a possible cause. Clinical photos are provided for all patients. The changes noted were variations in the normal development of the great toenail.

We recommend that treatment should be conservative in the first instance and that surgical intervention should be reserved for cases in which the conservative measures failed to show response, if there is a dense soft tissue condensation across the nail surface, or a significant hypertrophy that failed to resolve after 1 year of age.

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Six Months Survey Study on Wrong Eating and Living Routine of Patients with Food Related Malignancy

(Original Research Article)

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Abstract:

This work considers as a part of food related malignancy studies. The present study offers an indication of degree of bowel malignancy prevalence in Ttipoli and Misurata, Libya from 2004 to 2014 to spot the part of wrong dietary routine and living way in developing bowel malignancy. 265 males and 203 females aged (25-85) years were diagnosed with bowel malignancy. A Face-to-face survey study was performed on 100 Libyan patients (51 men and 49 women) from 1 January to 30 June 2015. The data proves that incidence of bowel tumour is increasing over the time. Men are almost 13.2 % more likely than women to develop bowel tumour. There was a statistically significant association between males and females for getting bowel tumour (*P*= 0.039). This indicates that bowel tumour can affect both gender, but men are more likely to develop bowel malignancy than women. The results showed that the disease mostly occurs in men above 50 years old and in women above 30 years old. A six months survey study gets that 24% cases had family history. Women had family history to develop tumour than men. Moreover, results provide that more than half of patients are likely to drink 1 litter of water per day. Also, men tend to drink more water and consume red meat than women. All patients did not do exercise and had irregular sleeping time and all interviewed men were frequently smokers. Well nutrition with sports may encourage health strength of patients with bowel tumour.

Key Words: Food Related Malignancy, Bowel Tumour, Wrong Dietary Routine, Living Way, Misurata, Tripoli.

Introduction

No living and eating way faithfully are capable to defend from getting food related tumors, but several foodstuffs aid promoting health, maintaining the immune system and keeping the danger of tumor as little as possible (Dyer, 2014). Well nourishment is a course in which a correct food is consumed for expansion and replaces tissues (Varmus, 2013). Consequently, having a quantity of fruits, vegetables, fibers and antioxidants may remain a healthy body and diminish malignancy danger (Tantamango-Bartley at el, 2013). Theses food constitutes assist patients diagnosed with tumor acquire the true diet to fight the disease (Varmus, 2013).

Also, fruits and vegetables contain great quantity of vitamins, minerals and antioxidants, which supply a healthy weight and may reduce the danger of bowel tumor (Better Health Chanel, 2014; Tantamango-Bartley at el, 2013), particularly in the start of the disease. Generally, the healing options include surgery, radiation and chemotherapy (El Mistiri at el, 2013). This disease regards as a significant sickness in Libya (El Mistiri at el, 2013) and may stand for the second cause of fatality (Singh and Al-Sudani, 2001).

World Health Organization (WHO) reported that unwell nutrition may in charge for several malignancies linked to intestine and digestive system disorders such as colon, stomach, liver, mouth and pharynx tumors. Also, they noticed an affiliation between tumor dangers and other factors such as terrible diet customs, smoking, and proportion of animal to plant food consumed, nutrition quality, cooking techniques and living way (Tantamango-Bartley at el, 2013). Patients diagnosed with Digestive system malignancy at prior stages had a well again probability to survive from the tumor (Canadian Brest Cancer Foundation, 2013).

But, the poor dealing with medical and nutritional care in North Africa develops the death speeds (Ermiah at el, 2012). This work is to offer a general idea about bowel malignancy size in Tripoli and Misurata, Libya from 2004 to 2014, and to spot the role of wrong dietary customs in developing bowel malignancy.

Methodology

Face-to-Face Survey Study

A face-to-face interview was carried out on 100 Libyan patients aged 25-85 years (51 males and 49 females) at National cancer Institute in Misurata and Central Tripoli Hospital from 1 January to 30 June 2015. Data was collected on a form (questionnaire) during the interview with each patient.

A structured-administered questionnaire form was used to obtain information about living way and dietary program. The time of interview was 15 minutes. Each patient individually

interviewed. All patients with bowel malignancy were informed about the research aim. No patient refused our aim for this study. Participant's confidentiality and secrecy were insured by using codes instead of names for any personal identifier of the participants. Participants were asked to report their dietary customs and living routine through one year prior to getting hurt bowel malignancy.

The inquiries were just focused on family history, living ways such as consuming red meat, fast foods (restaurant foods, fried potato and junk foods), and drinking water and consuming fruits and vegetables; and exercise, walking , sports , activities , sleeping time, number of meals, and smoking status.

Statistical Analysis

Bowel tumour statistics were recorded from Misurata National Cancer Institute Registry and collected from Tripoli and Misurata, Libya . Approximately, 265 men and 203 women were diagnosed with bowel malignancy throughout 2004 to 2014. Descriptive statistics was analyzed using IBM SPSS Statistics Software (version 20.0, SPSS, Inc., Chicago, Illinois, USA).

The Pearson Chi-square test was used to evaluate the significance of the association between men and women being diagnosed with bowel tumour. In all tests, α <0.05 was regarded statistically significant. All confidence intervals (CIs) were calculated at the 95% level of statistical significance. Statistical analyses, percentage formulas of bowel tumour patients and graphs were produced by 2020 Microsoft Excel program.

Results and Discussion

Bowel Malignancy Patient Gender

The present study gives details about distribution of 265 males and 203 females diagnosed with bowel tumour in Triopli and Misurata, Libya over ten years. The approximate percentage of men and women diagnosed with bowel malignancy was 56.6% and 43.4%, respectively.

The outcomes show that men are about 13.2 % more likely than women to develop tumour through the period from 2004 to 2014. Our finding specified that there was a statistically significant association between males and females for getting bowel tumour (P= 0.039). This implied that bowel tumour can affect both gender, but men are likely to develop malignancy than women.

This may designate to dissimilarity in some cultural status including smoking, drinking manners and job exposures (McCann, 2000). The total percentage of patients with bowel tumour in Tripoli and Misurata, Libya from 2004 to 2014 is shown in Fig.1.
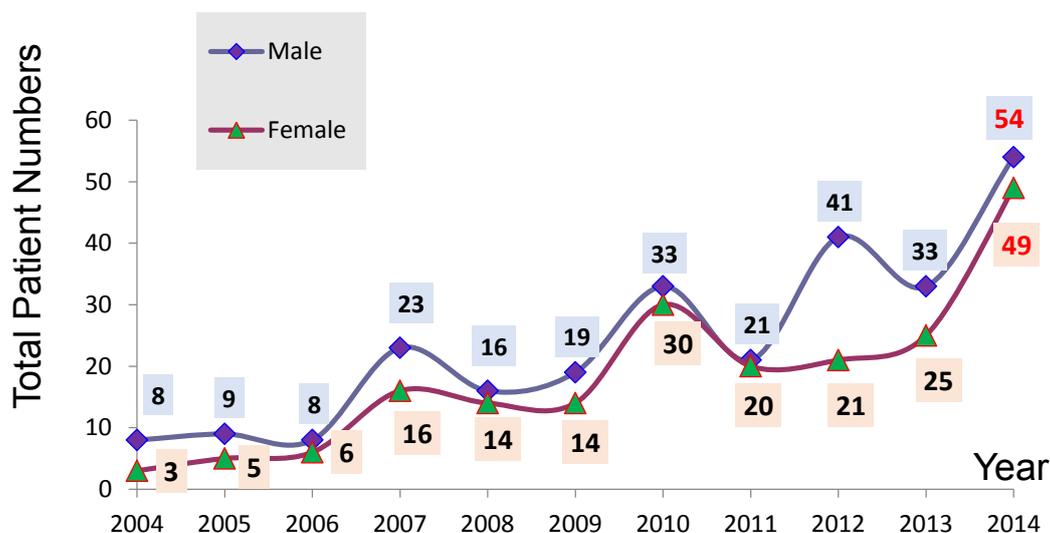
Fig. 1- Bowel Malignancy in Ttipoli and Misurata, Libya through Ten Years.

One of the significant finding in this study is the percentage of intestine malignancy had been increased overall ten years in Ttipoli and Misurata, mainly in the year 2014. The increase in tumor occurrence speeds may propose that there has been no advance made in malignancy manages in Western Libya. Surroundings may affect intestine malignancy and perhaps associated with various reasons, including huge stress (Singh and Al-Sudani, 2001), cigarette smoking and nutritional customs (Tantamango-Bartley at el, 2013). As well, wrong Living way and unwell diet routine represent as a threat factors for bowel malignancy (El Mistiri at el, 2013). Tumor prevention system should reduce the supposed number of new cases and build up the quality of living for those diagnosed with bowel malignancy (Canadian Brest Cancer Foundation, 2013).
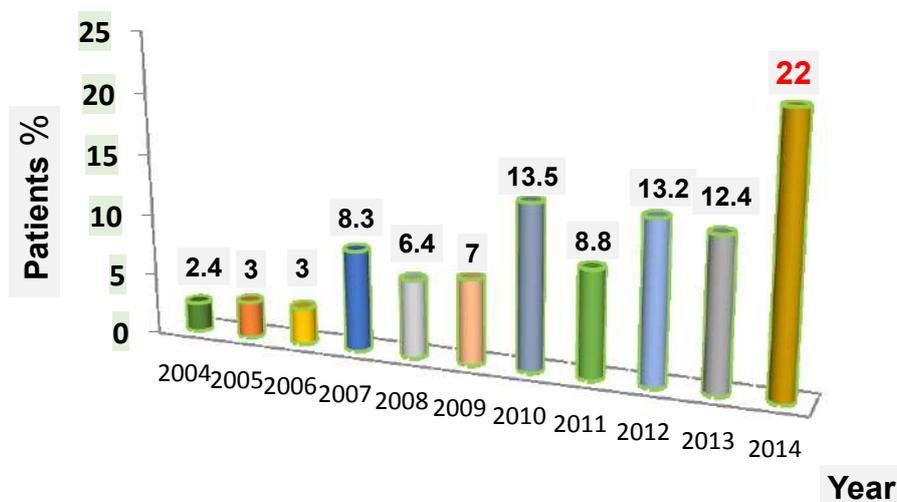

Fig.2- Percentage of Bowel Tumor in Ttipoli and Misurata, Libya during Ten Years.

Nutritional Customs and Bowel Malignancy

The face-to-face survey study was achieved on about 100 interviewed patients diagnosed with intestine tumor (51 males and 49 females) aged 25 to 85 years (Fig. 3). The weight of interviewed patients was from 45 to 71 Kg.

Data showed that bowel tumor typically taking places in men over 50 years old and in women on top of 30 years old. The most affected age was in men in the age group of 50-69 years and in females aged 30-59 years.
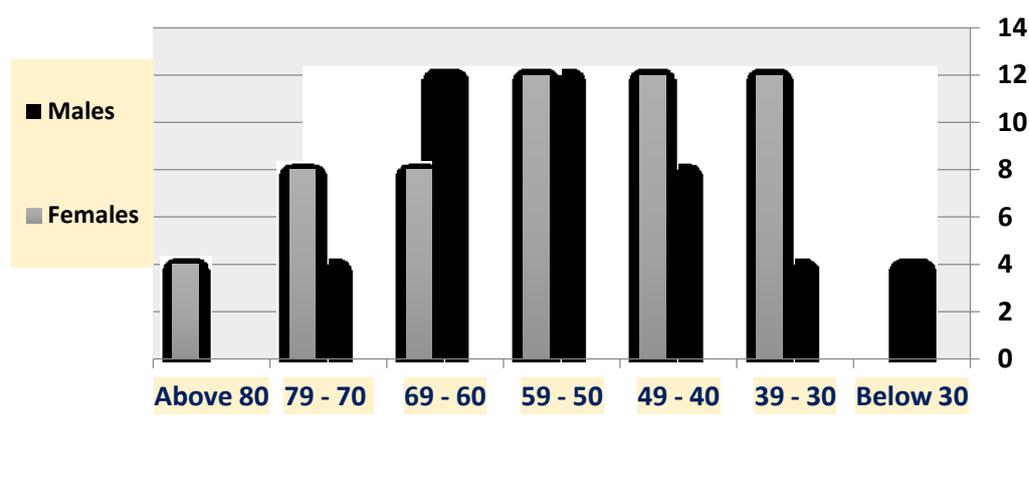

Fig. 3- The Age Groups of Interviewed Patients Diagnosed with Bowel Malignancy at National cancer Institute in Misurata and Central Tripoli Hospital, Tripoli, Libya (n= 100).

Along with 100 interviewed patients with bowel tumor, 35 % of men were eating loads of red meat, fast foods and fried potatoes. And 22% of women rarely consumed fruits and vegetables whilst, 19% had family history (Fig. 4).

Data provided that women had more family history to develop tumor than men. Researchers in the past reported that diet may influence on one third of all malignancy patients (Tantamango-Bartley at el, 2013). Moreover, there is an apparent involvement between living way, dietary customs and tumor hurt (Philips, 1975).

The continuous use of red meats (in particular fast foods) such as beef and lamb, processed meats and saturated fats may raise the danger of bowel malignancy. On the other hand, foods containing high-fibers such as whole grains, raw vegetables and fruits may guard from malignancy harm because they are logically low in fat and rich in antioxidants and anti-cancer constitutes (Pippin, 2014). This specified that vegan foodstuffs may preserve against bowel malignancy.
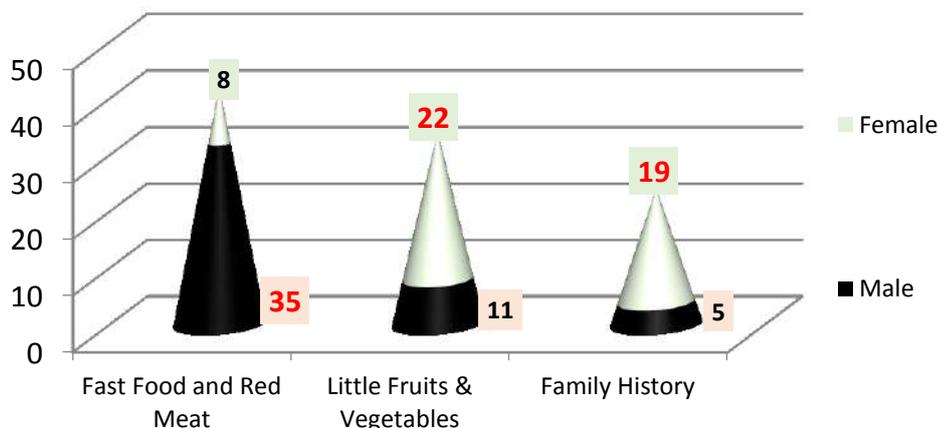
Fig. 4- Several Reasons of Bowel Malignancy

Besides, this work illustrated that more than half of patients were likely to drink 1 liter of water per day. Also, 12% of patients drink 2 liter of water every day (Fig. 5). Also, 3% of women drink one cup of water daily and another 3% of women drink 2 liter per day. This indicates that during the day, men tend to drink more water than women. Patients with bowel tumor in the early stage should drink 1 to 2 liters of water every day and consume various fresh vegetables and fruits without peel such as carrots, tomatoes, citrus fruits, apples, grapes and strawberries (ASCO, 2015; Campbell and Media, 2015; Dyer, 2014; Jaret, 2015). Also, this study sets that all interviewed men were frequently smokers. An earlier work documented that most Libyan men were cigarette smokers (Tantamango-Bartley at el, 2013). Also, all the interviewed cases did not do exercise and had irregular sleeping.
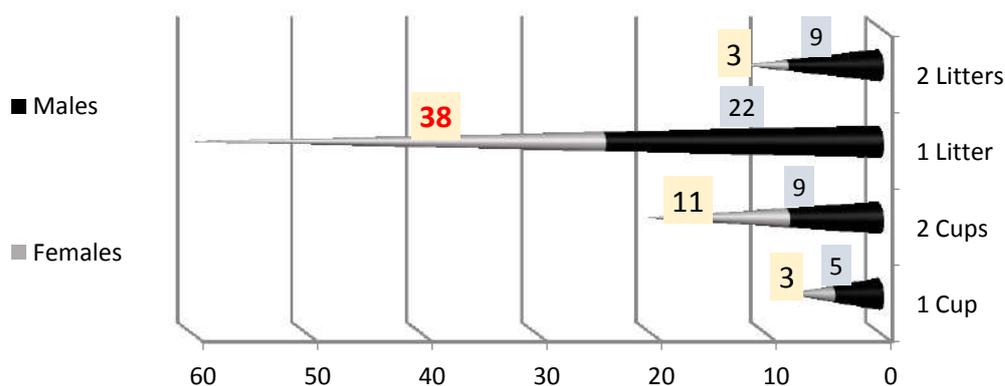

Fig. 5- Numbers of Water Intake Every Day

A number of vital guidelines including doing exercise with a well diet program, keep away from cigarette smoking (especially after food), pass up alcohol consumption and having breakfast may defend from bowel malignancy (Ghalaita at el, 2014). Also, medical treatment instructions must pay more attention in the beginning of bowel tumors (Ermiah at el, 2012). Additionally, patients with bowel malignancy should stop eating high fat diet including fried foods, margarine; and processed meats such as curing, salting, smoking meats, some sausages and burgers. They should frequently eat cooked vegetables, poultry (without skin) and fish. Also, patients should live away from community stress (ASCO, 2015; Campbell and Media, 2015; Dyer, 2014; Jaret, 2015).

Conclusion

Bowel malignancy disease affects more men than women due to the dissimilarity in several civilizing and dietary customs including smoking, number of times of drinking water every day, type of diet and nature of job. The incidence of bowel tumor is increasing over the time in Misurata and Tripoli, Libya. Men are about 13.2 % more likely than women to develop bowel malignancy. The most affected age was in males above 50 years old and in women above 30 years old. Among 100 interviewed patients, 35 % of men were eating a lot of red meat, fast foods and fried potatoes, and only 5% of them had family history. In comparison, 22 % of women rarely ate fruits and vegetables and 19% of them had family history. Also, men tend to drink water daily more than women. Our proof proposes that terrible diet routine and wrong living way including eating less amount of fruits and vegetables, eating high calorie fat /meat diet, eating high levels of fast foods; and smoking, job hazards and big stress may accountable for bowel malignancy occurrence. But, drinking a valuable amount of water, continuous eating of fresh fruits and vegetables without peel, cooked vegetables, whole grains, healthy fat such as avocado, olive oil and nuts may stop tumor. Additional works required for improving early discovery to reduce bowel tumor dangers.

Acknowledgment

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Effect of Mulligan Concept Lumbar (SNAG) on Neuro Radiculopathy In the Patients With Lumbar Disc Herniation (LDH)

(Original Research Article)

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Abstract: This study is to shed light on lumbar disc herniation (LDH) with radiculopathy that is considered one of the most common diagnoses encountered in orthopedic clinical practice and it is believed to be a major contributor to the estimated 60-80% lifetime incidence of low back pain. The effectiveness of Sustained Natural Apophyseal Glides (SNAG) technique of Mulligan on Neuroradiculopathy in the patients with lumbar disc herniation (LDH). The researchers were used the experimental method due to its suitability to the nature of the research with the one experimental group system. Tribal, interlayer, and dimensional measurements were made for the variables. The measurement of the variables under study was applied from the tribal, interlayer, and dimensional measurements of the anthropometric and physiological variables. the muscle strength, the range of motion, the degree of pain perception. The study sample was subjected to the (SNAG) technique for Mulligan for a period of (2) months, at a rate of (24) sessions in order to achieve the objectives of the study. Ten patients were participated in this study with lumbar disc herniation (LDH)L4-L5-S1. The research sample included (n=10men,) patients with slipped lumbar cartilage men are between (25-45) years old. Lumbar Disc Herniation (LDH) were randomly one experimental group system. The study group (aged 25- 45, 10 men) received a conventional physical therapy program consisted of stretching and strengthening exercises plus (SNAG) (based on the Mulligan concept) on the affected lumbar levels,   (SNAG) (3) times per week for (2) month . Outcome measures were repositioning error (the primary

outcome), pain, and function measured by an kinetic dynamometer, visual analog scale(VAS), and the Oswestry Disability Index(ODI). Measurements were recorded before and after the end of the treatment period. The result showed that the qualification program and the use of (SNAG) technology for Mulligan had a clear effect. Which led to improvement in all research variables in the measurements (VAS) and (ODI) of people with a lumber herniated disc, through the application of the motor rehabilitation program and the use of (SNAG) technique of Mulligan in the sample to which the program was applied. The study concluded that preliminary study indicated improvement in group Adding (SNAG) to conventional programs in the treatment of chronic nonspecific (LDH) may result in greater improvement of repositioning error, pain reduction, and improved function.

Keywords: Pain; Lumbar disc herniation; Neural tissue mobilization; Facet joint immobilization; Disability**.**

Abbreviations:

SNAG: Sustained Natural Apophyseal Glides.
LDH: lumbar disc herniation.
ODI: Oswestry Disability Index.
VAS: visual analog scale.
ROM: range of motion.

Introduction

The Lumbar disc herniation (LDH) is a common condition which frequently affects the spine in young and middle-aged patients (1-3). It is one of the most common diagnoses encountered in orthopedic clinical practice [4] with peak incidence usually occurring between 25 and 55 years of age (5). Lumbar disc herniation can be defined as localized displacement of disc material beyond the normal margins of the intervertebral disc space leading to pain, weakness, or numbness in a myotomal or dermatomal distribution (6).   The Cost of treatment of low back pain due to lumbar disc herniation in United States is estimated to be approximately 31 billion dollars per year (7). Most herniated discs occur in a posterolateral direction, compressing the ipsilateral nerve root as it exits from the dural sac chiefly affecting the L4-L5, L5-S1 nerve roots. It usually presents with low back ache with or without radicular pain (8). Many studies have demonstrated that lumbar disc herniation, protrusions, and annular tears are present even in asymptomatic individuals and only 50% of patients feel the radicular symptoms (9).

Herniation of the intervertebral disc usually causes impingement of neural structures and various spinal structures like the paravertebral muscles, ligaments, facet joints, annulus fibrosus and spinal nerve roots have been suggested as the cause of pain (10). Some researchers believe that neural compression due to herniation of intervertebral disc is the main generator of pain and it has been suggested that if nociceptive input continues over time

it may lead to functional, chemical and structural alterations in peripheral system and at various levels within the central nervous system (11), so the pain associated with lumbar radiculopathy occurs due to a combination of nerve root ischemia and inflammation resulting from local pressure and also the neurochemical inflammatory factors present within the disc material (2,3,12,13). It is also worthy to mention that the size of the disc herniation has not been found to be related to the severity of the patient's pain (11).

Socioeconomic impact is a major cause for seeking medical help, deterioration of functional ability, limitations in occupational activities, and work absence (14). Manual therapy is a common therapeutic approach used in the treatment of back problems. A recent systematic review reported medium to high evidence regarding the efficacy of manual therapies in the treatment of chronic LBP (15) . Different manual therapies, such as passive Maitland mobilization and Mulligan mobilization with movement, are used routinely in physical therapy practice (16). There is a gap in research concerning the efficacy of different manual techniques and their different physiological effects (17). This is true regarding lumbar (SNAG), which is commonly used in the treatment of (LBP) .(18)(SNAG) is one of the Mulligan concept techniques performed from a weight-bearing position, with the mobilizing force applied over the affected spinous process while the patient is enacting the painful or limited movement. (SNAG) when indicated, can provide immediate pain relief and improvement in range of motion (ROM) as it corrects the positional fault in facet joint (16).

Most of the research is concerned with (SNAG) techniques has concentrated on the study of peripheral joints (19-20) and the cervical region (21-22). Few studies have been concerned with the effects of (SNAG) on the lumbar spine. (17,23,24) The rest of the available research was in the form of case reports or case series (25,26) .Only 5 trials have investigated different effects of the (SNAG) technique when applied to the lumbar region. None of them concerned with its effects on proprioception. Range of motion was investigated in 4 out of the 5 studies. It was improved in 3 of them (17,27); no change was reported in the fourth trial by Moutzouri et al (22). The increase in ROM was reported only in the studies performed on (LBP) patients, and no improvement was reported when applied on healthy participants. Pain was investigated in 3 studies (17,27). It improved in 2 of them (27). although in the third study, Konstantinou et al failed to report any significant change (17) . Pain was measured with a visual analog scale (VAS) in all studies and in the present study. The controversy in the available literature regarding effects of lumbar (SNAG) on pain measure necessitates further investigation, as we did in the present study.

Functional disability level was recorded in 2 studies using 2 different tools (27). The Oswestry Disability Index (ODI) was used by Hidalgo et al, (24) whereas the back performance scale was used by Heggannavar et al (25). On both occasions patients reported better improvement in the level of function in response to (SNAG). New explanations for the effects of the lumbar (SNAG) were investigated in one study. Moutzouri et al have investigated the changes in the sympathetic activity of the lower limbs in healthy participants after the application of (SNAG) on the lumbar spine. Their results did not indicate any

significant effect (24). The present work is to shed light on lumbar disc herniation (LDH) with radiculopathy as a one of the most common diagnoses encountered in orthopedic clinical practice and it is to estimate 60-80% lifetime incidence of low back pain.

Materials and Methods

The researcher used the experimental method using one of the experimental approaches known as the pre, intermediate and post measurement on one experimental group and due to its suitability to the nature of the research problem, which characterized this study by developing a rehabilitation program and technique of continuous natural sliding of the vertebral joints in the lumbar region (SNAG) Sustained Natural Apophyseal Glides for Mulligan and conducting the measurement (pre-intermediate-first-intermediate-second-post) of the variables under study and to know the extent of its effect on people with a lumbar herniated disc in the vertebrae (L4 - L5 - S1) and its effect on the function of the back muscles, the intensity of pain, and the range of motion of the lumbar region for the study group.

Research fields

Spatial Domain

It is performed in the following centers and clinics of Physical medicine and rheumatology and rehabilitation. Conducting the first, second and third exploratory experiments:

- Some of the pre-, inter- and dimensional measurements of the anthropometric and physical variables of the experimental group under investigation. - The qualifying program was applied to the experimental group.

- Physiological measurements were performed for the experimental group under investigation.

The Human Domain

Conducting the study on individuals with a lumbar herniated disc (L4, L5, S1) among men attending the Physical medicine and rheumatology and rehabilitation Clinics and the Physical Therapy Department.

Total Sample Size

The final number of the sample to which the qualification program and (SNAG) technique were applied and the measurements made (pre-intermediate-first-intermediate-second-post) ten infected persons in one experimental group, after excluding non-conforming with the conditions of the sample and non-observers.

Work outline
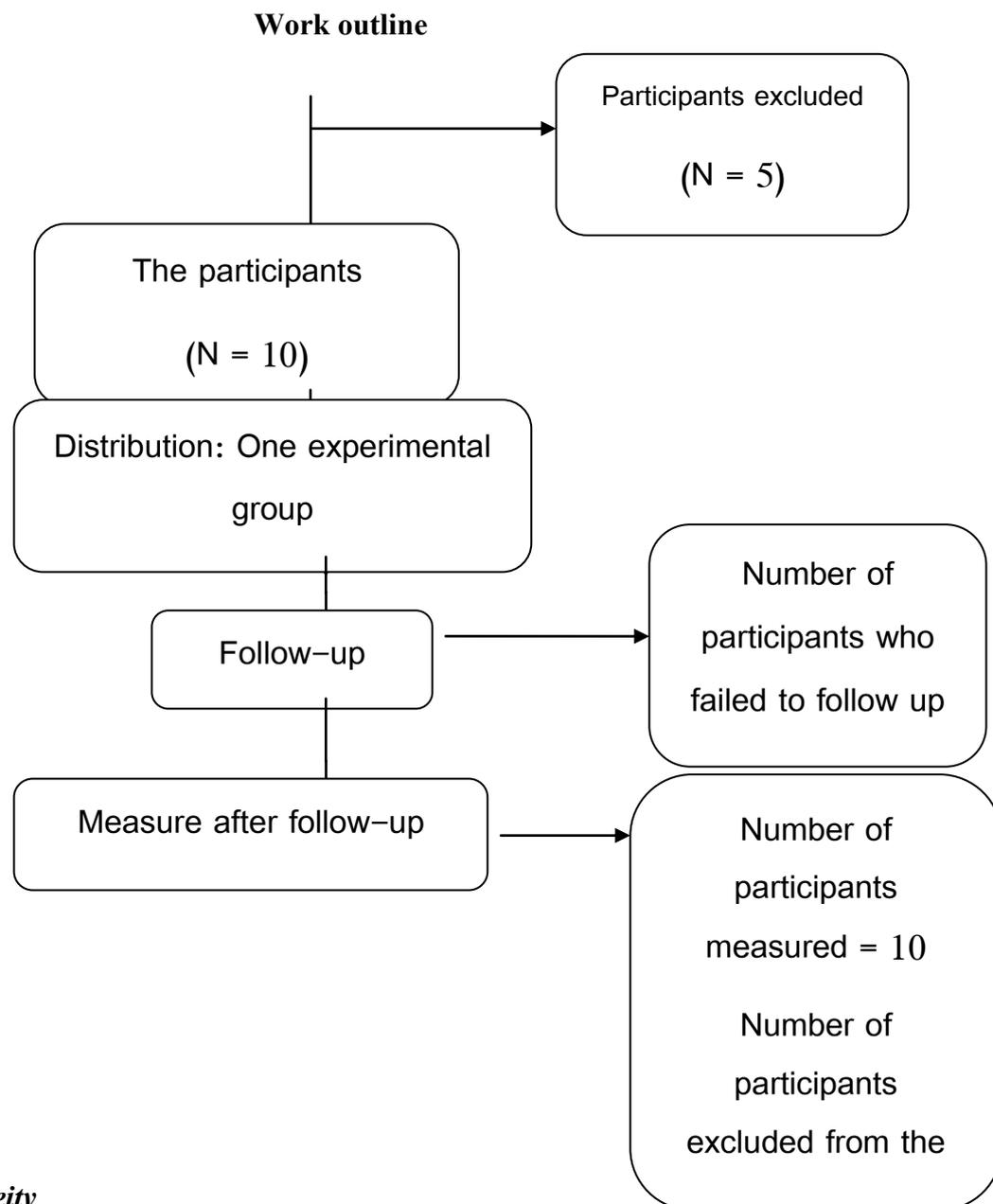
Sample Homogeneity

Homogeneity was performed between the experimental group in all measurements before the program.The study sample consisted of (10) herniated disc patients who were deliberately selected from among those attending the Physical medicine and rheumatology and rehabilitation and Physical therapy department .

Measurements

By referring to the reference studies conducted in the field of injuries and rehabilitation programs for the spine, such as the study of SebhanYounis Sultan (2017), Hisham Muhammad Hussein (2017), Nabila Ibrahim (2015), Ayman Abdel Razek (2013), the researchers were able to determine the appropriate measurements for the nature of the study This is to determine the extent to which the qualifying program has achieved the goal set for it.

Study Methodology

The use of the experimental method due to its suitability to the nature of the research, using an experimental design from one group on which the technique of (SNAG) is applied to Mulligan, and conducting a test (pre-intermediate - first-intermediate - second-post) of the variables under study.

Conditions for Selecting the Sample

1. He should be one of the individuals suffering from a lumbar disc herniated (L4-L5 and L5-S1) according to the medical diagnosis by the attending physician.

2. A lumbar herniated disc is associated with radiculopathy.

3. Cases are determined according to magnetic resonance imaging (MRI) and the diagnosis of the treating physician.

4. That one of the symptoms is the presence of pain in the lumbar region accompanied by the leg pain (right - left).

5. The age should be chosen between (25-45) years for men.

Total sample Size

The total size of the sample to be applied to the motor rehabilitation program,(SNAG) technique, and the measurement procedure (pre-intermediate, first intermediate, second and post intermediate) (10).

Measurements

The researchers made the following measurements on the study sample:

Anthropometric Measurements

- Height measurement: The measuring tape was used to measure the total height of the body to the nearest centimeter.

Weight: The medical scale is used to measure the body weight to the nearest kilogram.

Chronological age: The chronological age of the nearest month was calculated upon pre-measurement for the research.

Body Mass Index: (BMI) is measured by dividing the weight in kilograms by the square of height in meters.

(Body mass index = weight (kg) ÷ height (m) 2(m) (BMI) = W (kg) / H^2

Measuring the Degree of Pain

The degree of pain (NUMERICAL PAIN SCALE) on the sufferers of a lumbar herniated disc is determined by the Visual Analogies Scales (VAS) by determining the degree of pain from (0-10) The patient is asked to choose a score of (10) By using (NUMERICAL PAIN SCALE).
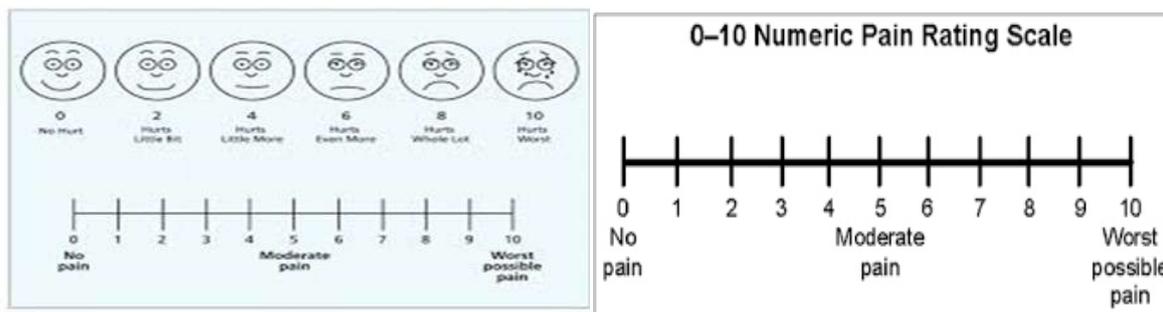
Measuring the Percentage of Function Disability

The Disability Index Questionnaire, also known as the Oswestry Disability Index (ODI) questionnaire for lower back pain, is a very important tool used by researchers and disability assessors to measure the permanent functional disability of a patient. The test is considered the "gold standard" for determining functional outcomes for the lower back.

Numerical Pain Scale is determined by determining the degree of pain (0-10), asking the patient, looking at the expression of the patient's face, giving him a degree of (10 cm) and measuring the degree of pain (VAS).

The degree of pain (NUMERICAL PAIN SCALE) was determined on the sufferers of a lumbar herniated disc through the Visual Analogues Scales (VAS) by determining the degree of pain from (0-10) and then asking the patient and asking him to choose a degree from (10) using (NUMERICAL PAIN SCALE).

Results and Discussion

Table (1). Degrees of Measuring the Severity of Pain

	Sensation of Pain	Degrees of Measurement
1	There is no pain	0
2	Minor pain	1,2,3
3	Moderate pain	4,5,6
4	Severe pain	7,8,9,10

Functional Disability Index

Table (2). Interpretation of Degrees of Functional Disability

|	
The patient can handle most live activities. Usually there is no cure; it is indicated apart from advice on sitting elevation and exercise.	0% to 20%: minimal disability
The patient has more pain and difficulty sitting, lifting, and standing. Travel and social life are more difficult, and they may also be disabled from work. Personal care, sexual activity and sleep are not severely affected and can usually be managed by the patient by conservative means.	21%-40%: moderate disability

Pain remains the main problem in this group, but daily activities are affected by living. These patients require detailed investigation.	41%-60%: severe disability
Back pain affects all aspects of a patient's life. Positive intervention is required.	61%-80%: crippled
These patients are either bed-bound or exaggerate their symptoms.	81%-100%

Fairbank JCT &Pynsent, PB (2000 p 2940-2953) Davidson M & Keating J (2001) p8-24)

First hypothesis Related to Anthropometric Variables (Weight and Body Mass Index)

Table (3) . Analysis of Variance (ANOVA) between the Four Measurements: (pre-intermediate-intermediate-secondary-post) in weight and body mass index of patients with lumbar herniated disc.

Variables	Source Variance	degrees Freedom	Sum squares	Average squares	Fvalue	level	intangible connotation
Weight (kg)	between measurements	3	494.60	164.87	*9.26		
	inside measurements	36	641.00	17.81			
	Total	39	1135.60				
body mass index (BMI)	between measurements	36	185.20	5.14	*9.26		
	inside measurements	39	49.72	164.87			
	Total	3	494.60				
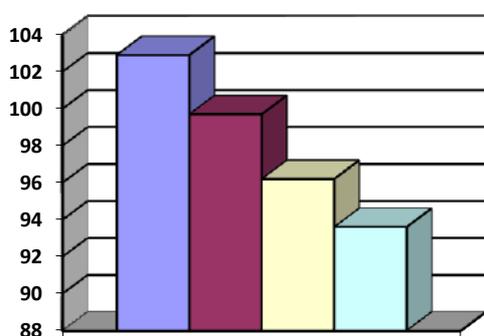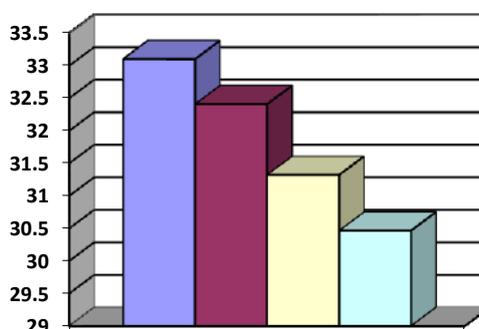
KG   BMI

Chart (1)

It is clear from the table (3) and the graph (1) of the analysis of variance (ANOVA) between the four measurements (pre-intermediate-intermediate-secondary-post) in weight and body mass index for patients with lumbar disc herniation, and there are significant differences between the measurements.

The four were in (weight - body mass index), where the value of P ranged between (3.22 to 9.26), and this value is greater than the value of the tabular (F) at the level (0.05,) and to determine the significance of the differences between the four measurements (tribal - inter-first - inter-second - dimensional) in weight and body mass index, the least significant difference test (LSD) was used in Table (4)

Table (4). Significant differences between the four measurements (pre-intermediate-intermediate-secondary-postural) of patients with lumbar disc herniation in weight and body mass index using the least significant difference test LSD.

Variables	Measurements	mean	Standard Deviation	Indication of the differences between the averages				LSD
				Tribal	first	second	After	
Weight (kg)	Tribal	102.90	5.95		3.20-	*6.70-	*9.30-	3.83
	Benny Ol	99.70	5.74			3.50-	*6.10-	
	Benny Thani	96.20	0.92				2.60-	
	after me	93.60	1.43					
body mass index (BMI)	Tribal	33.10	2.83		0.69-	1.78-	*2.64-	2.06
	Benny Ol	32.41	2.07			1.09-	1.95-	
	Benny Thani	31.32	2.13				0.86-	
	after me	30.46	1.95				*9.30-	

It is clear from Table (4) and Chart No. (1) regarding the significance of the differences between the four measurements (pre-intermediate-intermediate-secondary-postural) of patients with lumbar disc herniation in weight and body mass index using the least significant difference test LSD.

Weight (kg): The second and dimensional measurements were significantly superior to the tribal measurements, and the dimensional measurements were superior to the first intermediary measurements, and no significant differences appeared between the rests of the measurements.

Body mass index (BMI): the post measurement was significantly superior to the premeasurement, and no significant differences were found between the rests of the measurements.

Table (5). Significant differences between the Three Measurements

Variables	Measurements	Mean	% difference between the three measurements			
			Tribal	first	Second	After
Weight (kg)	Tribal	102.90		%3.11-	%6.51-	%9.04-
	Benny Ol	99.70			%3.51-	%6.12-
	Benny Thani	96.20				%2.70-
	after me	93.60				
body mass index (BMI)	Tribal	33.10		%2.08-	%5.38-	%7.98-
	Benny Ol	32.41			%3.36-	%6.02-
	Benny Thani	31.32				%2.75-
	after me	30.46				

It is clear from Table (5) and Figure (1) regarding the percentage of differences between the four measurements (pre-intermediate-first-intermediate-secondary-postural) of patients with lumbar disc herniation in weight and body mass index .

- The highest percentage of improvement was between the first inter-measurement and the post-measurement, ranging from 3.11% to 9.04% for the body weight variable .

- The highest percentage of improvement was between the first inter-measurement and the post-measurement, between 2.08% and 7.98% for the BMI variable.

The First Hypothesis of Anthropometric Variables

The result of the current study agrees with the results of the study of "SabhanYunis Sultan (2017) Naseem Hassan" Bushra Abdel Rahman (2009) "IzzatQassemLutfi (2005) "Amal Hussein Al Sayed (2003)" Rasha Mustafa Muhammad Farid (2002) "Hassan Ezzedine (2001) "ManalTalaat Muhammad (2000)" Pedersen Hoffmann (2000) "Rhind et al (2000), where the results of these studies confirmed that physical exercise works to reduce weight and thus reduce body mass index, and that this remarkable progress is due to the effectiveness of the proposed rehabilitation exercises. The researcher attributes the improvement in reducing the body mass index to the effectiveness of the proposed motor rehabilitation program, which included a group of static (isometric) and mobile (isotonic) exercises and PNF elongation exercises.

In addition, Mulligan's kinetic rehabilitation program (SNAG) is a way to reduce pressure on the nerve roots and thus increase motor activity, which led to a reduction in body mass index. It is known that the increase in BMI represents an excess burden on the vital organs of the body and that there is an inverse relationship between the increase in BMI and the speed of movement of the individual. The spine, especially the lumbar region, in addition to affecting the efficiency of some muscles, and obese people are more susceptible to stress.Through the previous presentation and discussion of the results, it becomes clear that the first hypothesis is correct, which states: There are statistically significant differences between the four

measurements (pre-, inter- and inter-secondary- dimensional) for lumbar herniated discs in the anthropometric variables (weight - body mass index).

Table (6). (ANOVA) between the Four Measurements in the Degree of Pain (VAS)

Variables	Source variance	degrees Freedom	Sum squares	Average squares	F value	level
VAS	between measurements	3	255.28	85.09	*315.80	0.00
	inside measurements	36	9.70	0.27		
	Total	39	264.98			

Table (7). The Differences between the Averages

Variables	Measurements	mean	Stander Deviation	Indication of the differences between the averages				Variables
				Tribal	first	second	After	
VAS	Tribal	7.80	0.42		*3.20-	*5.50-	*6.60-	0.47
	First	4.60	0.70			*2.30-	*3.40-	
	Second	2.30	0.48				*1.10-	
	after	1.20	0.42					

Table (8). Difference between the Three Measurements

| Variables	Measurements	Mean	% Difference between the three measurements			
			Tribal	first	second	After
VAS	Tribal	7.80		%41.03-	%70.51-	%84.62-
	First	4.60			%50.00-	%73.91-
	Second	2.30				%47.83-
	After	1.20				

Chart (2)

VAS

Second   after   t
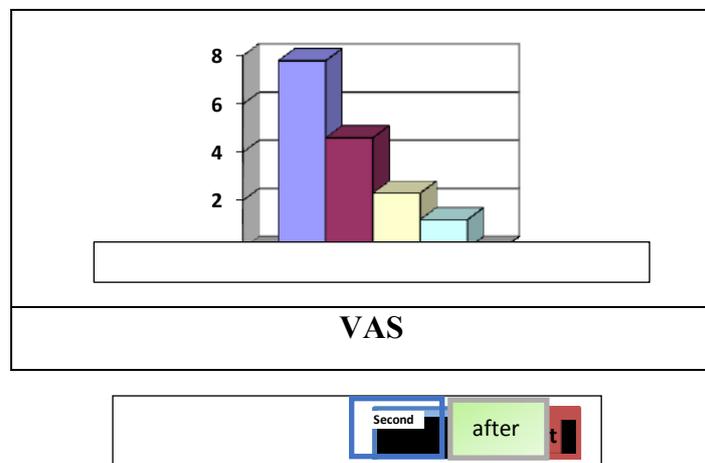
Table (9). (ANOVA) between the Four Measurements in the Degree (ODI)

Variables	Source variance	degrees Freedom	Sum squares	Average squares	F value	level	intangible connotation
ODI	between measurements	3	15146.60	5048.87	*492.57	0.00	
	inside measurements	36	369.00	10.25			
	Total	39	15515.60				

Variables	Measurements	mean	Stander Deviation	Indication of the differences between the averages				Variables
				Tribal	**first**	**Second**	**After**	
ODI	Tribal	69.60	5.62		*17.40	*38.90-	*50.50-	2.91
	First	52.20	1.62			*21.50-	*33.10-	
	Second	30.70	2.36				*11.60-	
	After	19.10	1.10					

Variables	Measurements	Mean	% difference between the three measurements			
			Tribal	**First**	**Second**	**After**
ODI	Tribal	69.60		%25.00-	%55.89-	%72.56-
	First	52.20			%41.19-	%63.41-
	Second	30.70				%37.79-
	after	19.10				

Chart (3)
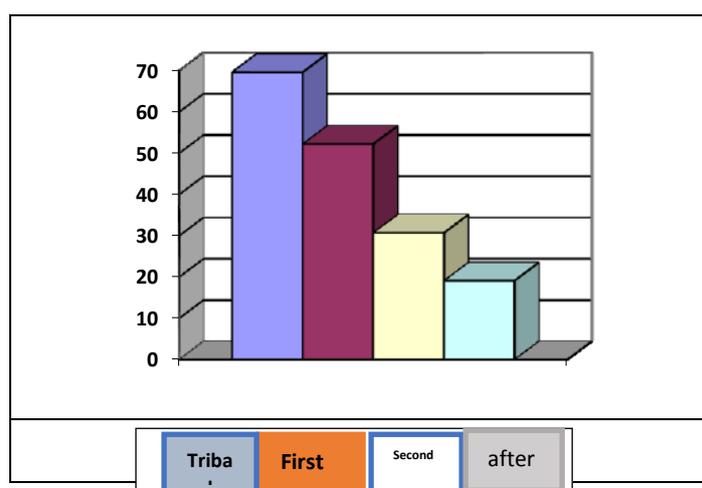
It is clear from the table (1), (2), (3) and the graph (1) of the analysis of variance, the percentage of percentage and the percentage of differences between the four measurements (pre-intermediate, first intermediary, second intermediary, dimensional) in the variables

(intensity of pain). .The percentage of improvement was in favour of the dimensional measurement, as the percentage of improvement over the first inter-measurement ranged between (41.03%) to (84.62%).

The results of the current study are in agreement with what was indicated by the studies of Vinayak Nagral et al (2012), WTrupti (2014), Moutzouri M et al (2008) and Lephart SM Riman BL (2002). Efficacy of Mulligan's (SNAG) Technique for Pain Relief Studies have shown an improvement in (VAS) measurements, and this improvement may be due to multiple factors, including relieving the mechanical imbalance of the lumbar joints, which may allow for easier and pain-free movement. Hidalgo B et al (2015) mentions Heggannavar A, Kale A (2015) This improvement may be due to the efficacy of Mulligan's (SNAG) technique. On the other hand, Constantino et al. (2007) reported a slight improvement in the degree of pain that did not reach statistical significance. However, they attributed these results to the heterogeneity of the participating sample and the use of a range of kinematics scale instead of measuring the degree of pain as a basis for calculating the sample size to participate in their study. The researchers suggested this improvement to the clear positive impact of Mulligan's (SNAG) technique and the regularity of the sample members by applying the rehabilitation program.

It is clear from the table (4), (5), (6)(7), (8), (9) and the graph (2-3) related to the analysis of variance, the percentage of percentage and the percentage of differences between the four measurements (pre-test, inter-measurement first, inter-second and dimensional) in the variables (ODI).The percentage in favour of improvement was in favour of the dimensional measurement, as the percentage of improvement from the first inter-measurement ranged from (41.03%) to (84.62%).The training program that appears in which is a dry program in the physical activity program.This is confirmed by Hidalgo B et al (2015) that the level of functional disability was recorded in 2 studies using two different tools. Hidalgo B et al (2015) used the Oswestry Disability Index (ODI), while Hijanavar et al. Heggannavar A, Kale A (2015) using the lumbar performance scale. In the two studies, there was an improvement in the level of functionality as a result of the application of Mulligan's (SNAG) technique.It is clear from the study of Aslan Telci E et al (2013) that increasing the patient's ability to move without pain increases self-confidence and reduces psychological fear factors and signs of depression that coincide with lower back pain, so that the lower back pain patient is able after the lower back pain is relieved Pain is the ability to perform more body positions and thus improve the ability to perform the required daily activities and functions. This is confirmed by the study of Vinayak Nagral (2012) that there is an improvement in the percentage of functional disability using Mulligan's (SNAG) technique.

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