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Social Aspects in Management of Umbilical Stump

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ABSTRACT

background:*Omphalitis defined as either pus discharge with erythema of the abdominal skin or severe redness (>2 cm extension from the cord stump) with or without pus (1).The study is across sectional description study would be done on a neonate who presented with umbilical infection or discharge and who attained the pediatric department at tikrit teaching hospital during the period from first June to last of septemper 2017.*

Aim:

1. To clarify the prevalence of umbilical infection among study neonate.
2.To identify the age,sex,residence,maturity, among the study cases.
3.To clarify the methods of diagnosis of umbilical infection.
4.To idenfy the lines of treatment among the Study cases with it's duration.
5.To evaluate the response of treatment according to differentiate lines.
6.To assess the present practices of umbilical cord care in the newborn

Patient and Methods: *A prospective study done on neonate attained to pediatric department at Tikrit teaching hospital and neonate care unit department.*

Results: *two hundred neonates randomly selected and examined.The age of neonates ranged between*
(1-30)days.The males were (59%) and females (41%) .No significant association between neonatal sepsis and omphalitis.Only pus discharge was significantly associated with positive blood culture (2).

Conclusion: *presence of wide varieties in the methods of the umbilical cord.Keeping umbilical cord clean seemed to be effective and clean.The practices of cleaning care The main goals in every delivery and health program for the umbilical cord involving the whole country. High prevalence of omphalitis recorded in Tikrit neonatal care unit in hospital and majority of them presented with redness and the most effective substances in prevention and treatment.*

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Introduction

At birth, the umbilical cord, which provided vascular flow between the fetus and placenta, is clamped and cut. Within the **first week** of life, the remnant umbilical cord stump separates from the neonate creating the umbilicus (commonly referred to as the navel). Omphalitis refers to an infection of the belly button stump before it falls off naturally in a newborn baby.The estimated incidence of omphalitis in hospitalized newborns in the developed world is around 0.7%; while it may be as high as 6.18% in developing countries.The greatest of risk for umbilical stump colonization is the three days of life risk decreases with time as the umbilical wound heals and the stump separates (3).

predisposing factors:The Umbilical cord infection can progress to systemic infections occur primarily in the newborn because of the following predisposing factor(4):

1.Immediately following birth, the umbilicus becomes colonized with a diverse flora of microorganisms. Staphylococcal species and other gram-positive cocci are present within hours, and enteric organisms follow shortly thereafter.

2.Devitalized tissues of the umbilical cord stump provide an excellent growth medium for bacteria.

3.The thrombosed blood vessels within the umbilical cord stump provide an entry for microorganisms into the bloodstream of the neonates potentially leading to sepsis.

Risk factors:Prematurity, postmaturity,**low birth-weight**(<2500gm), preexisting sickness with other infections such as sepsis or pneumonia, immune deficiency, prolonged birth, **maternal infection** *(mother:* present with genital, urinary, digestive, infections etc. during pregnancy; ruptured membranes over 18 hours; fever over 38ºC; vaginal or digestive microbial porting of the pregnant (healthy carrier) **,** and **home birth**,chorioamnionitis, umbilical catheters.protracted labor, septic delivery , A risk factor unique for some patients includes Trisomy 21, because of possible neutrophil dysfunction despite normal neutrophil quantity in healthy newborns, the cord usually separates from the umbilicus approximately 10 days after delivery. Delay of umbilical cord separation beyond 1 month warrants immunologic evaluation because of concern for leukocyte adhesion deficiency (4).

Signs and symptoms of infection:

Signs of inflammation (Erythema "redness": “Mild” redness (or swelling) was limited to the cord stump, while “moderate” or “severe” was defined as inflammation extending to the skin at the base of the stump (i.e., <2 cm extension on to the abdominal skin) or affecting an area 2 cm or more from the cord, respectively) ,Oedema,tenderness of tissues surrounding the cord and Foul-smelling, yellow drainage from the cord support the diagnosis of omphilitis.Associated signs such as fever ,lethargy and poor feeding suggest systemic complication.In many instances ,the diagnosis of cord infection is uncertain.In normal

drying process the cord may appear unusually moist and odorous with or without discharge,but with no other signs (4).

Like many bacterial infections, omphalitis is more common in those patients who have a weakened or deficient immune system or who are hospitalized and subject to invasive procedures. Therefore, infants who are premature, sick with other infections such as blood infection (sepsis) or pneumonia, or who have immune deficiencies are at greater risk. Infants with normal immune systems are at risk if they have had a prolonged birth, birth complicated by infection of the placenta (chorioamnionitis), or have had umbilical catheters(4).Clinically, neonates with omphalitis present within the first two weeks of life with signs and symptoms of infection (cellulitis) around the umbilical stump (redness, warmth, swelling, pain), pus from the umbilical stump, fever, fast heart rate (tachycardia), low blood pressure (hypotension), somnolence, poor feeding, and yellow skin (jaundice).Omphalitis can quickly progress to sepsis and presents a potentially life-threatening infection. In fact, even in cases of omphalitis without evidence of more serious infection such as necrotizing fasciitis, mortality is high (in the 10% range)(5).

Patient and methods:

A prospective study done on neonate attained to pediatric department at Tikrit teaching hospital and neonate care unit department during the period from the first June to last of septemper 2017.Who was diagnosis of a case of umbilical infection, The diagnosis of umbilical infectin are:

1. severe redness of umbilicus (>2 cm extension from the cord stump) .
2.Incrased vein tributeries around the umbilicus.
3.with or without umbilical pus discharge.

Each patient diagnosed as umbilical infection " omphalitis" where assessed by a prepared questionnaire which include name,sex,maturity, residence, signs of umbilical infection and discharge.The patient was examined for signs of umbilical infection and systemic infection which include fever, lethargy, poor feeding,crying, moro reflex.Each patient include in study would be send for umbilical swab for Culture to prove the umbilical infection and know the type of microorganism .The neonate also send for blood culture to prove that the same microorganism that cause the umbilical infectionis the same that present in blood (to exclude the contaminated cases)

Inclusion criteria :

1.Neonate 1-30 days with or without umbilical infection (fallen or still umbilical stump),and with or without discharge.
2.Neonate with no use of antibiotic locally or systemically.
3.Neonate with proved positive culture by umbilical swab and blood culture(similar microorganism)

Exclusive criteria:

1.Neonate who was on local or systemic antibiotic.

2.Neonate with different type of microorganism on umbilical swab and blood cultures.

Neonate group in the study: The neonatal included in the study were divided in to the following groups:

1.Neonate with no umbilical infection ,who attained the hospital for other reasons.Those patients were assessed only for the type of substance used as prophylactic treatment.

2. Neonate with umbilical infection,they were divided in 3groups:

a.Omphalitis before separation of umbilical stump ,each patient assessed for signs and symptoms of umbilical infection with umbilical swab and blood cultures and type of substance used in treatment of infection.

b.Omphalitis after separation of umbilical stump ,each patient assessed same to as than in 2-a.

c.Omphilitis with discharge :those patient were assessed as 2-a and 2-b.

Follow-up of patient admitted: Patient admitted to the neonatal care unit or pediatric ward were followed for improvement by:

1. Improved signs of umbilical infection .

2.Improvment in systemic symptoms.

3.Disappearance in systemic symptoms .

Neonate with umbilical infection was followed from signs of improvement (local infection and systemic signs either those patient admitted to the hospital or neonatal care unit or who was followed as out patient.Patient who donot return back for assessment of improvement was excluded).Neonate with no umbilical infection were send for umbilical swab and blood cultures as a control case.

The types of substances used:

a.Neonate who diagnosis as umbilical infection who already used type of substance (other than antibiotic) were left using the same treatment.

b.Neonate with umbilical infection with no drug used was put on different types of local and/or systemic treatment selected randomly according to the condition of the patient.

Mathod of umbilical swab culture:

1.Used a cotton swab (disposable wooden swab) is usually the easiest way to clean the umbilical cord. This is because the cotton swab can reach further into the belly button than a cotton ball can.

2.After taking of swab ,which is cultured on **MacConkey and blood agars** by heatig the labile and streaking such as lines on agars,Then keeped in indicator for 24 hr.in ordered to growth of bacteria.Later on determine the types of growing bacteria on both agars .

Other methods used to deffrintiate between microorganism:there are many methods used in the study including:**(Mannitol Salt Agar (MSA),Catalase test,Oxidase test)**

Blood culture :1 ml of blood were collected aseptically by cleaning the area by povidine iodine then after dryness for one minute, again cleaned by alcohol solution (90%) then after dryness, aspirate venous blood and mixed with 9 ml of Brain Heart solution (broth)for blood culture(for children <5 years). Then keeped in incubator for 24 hr under 37º c for growth of micro-organisms.Then discharge and look if

there is any hemolysis ,or gases or turbidity that is to mean present of growh of micro-organisms.Then made the first culcure in MacConkey and blood agars or chochlate agar.The bottol blood culture near slightly and gently to the fire source then opened the bottol of blood culture and take by loop drop of a culcure and draw such like a lines in agars.Then keeped in incubator for 24 hr.

Results:

Table1:The distribution of neonate according to the age group in the studied group.

Age (in days)	No.	%
1-5	28	14
6-10	71	35.5
11-15	40	20
16-20	21	10.5
21-25	18	9
26-30	22	11
Total	200	100

x^2 =12.205.df=5,p value <0.05 (significant)

Table .2.. :The distribution of the sample size according to gestional age and sex and residence distribution.

Characteristics	No.	%
Gestional age		
Preterm	40	20
Fullterm	160	80
Male	118	59
female	82	41
Residance		
Rural	148	74
Urban	52	26
Total	200	100

Ratio between Male and female(M:F 1.4:1).

Table 3.The distribution of cases according to infection state and gestional age .

Gestional age	Infected		Non Infected	
	No.	%	No.	%
Preterm	9	20	31	20
Fullterm	36	80	124	80
Total	45	100	155	100

x^2=0.73,df=1,p value >0.05(not significant).

Table 4. The distribution of cases according to the gender and status infection.

Gender	Infected		Non Infected	
	No.	%	No.	%
Male	24	53.3	94	60.6
female	21	46.7	61	39.4
Total	45	100	155	100

x^2=0.77,df=1,p value >0.05(not significant).

Table 5.A.The umber of neonates with separated and non separated umbilical cord stump on examination **after birth in relation to the site and type of delivery in the studied neonate.**

Characteristics	No.	%	Normal home delivery		Normal hospital delivery		Caesarean section	
			No.	%	No.	%	No.	%
separated umbilical cord stump	134	67	76	38	36	18	22	11
non separated umbilical cord stump*	66	33	19	9.5	18	9	29	14.5
Total	200	100	95	47.5	54	27	51	25.5

x^2=20.399,df=2,p value <0.05(significant)

Table 6. :The time of umbilical cord separation (sloughing)after birth in relation to the site and type of delivery in the studied neonate *.

Days of separation of umbilical cord stump	Normal home delivery		Normal hospital delivery		Caesarean section		Total	
	No.	%	No.	%	No.	%	No.	%
1	0	0	0	0	0	0	0	0
2	1	0.5	0	0	0	0	1	0.5
3	12	6	4	2	2	1	18	9
4	9	4.5	6	3	2	1	17	8.5
5	4	2	7	3.5	2	1	13	6.5
6	15	7.5	4	2	1	0.5	20	10
7	25	12.5	7	3.5	5	2.5	37	18.5
8	2	1	2	1	4	2	8	4
9	1	0.5	0	0	2	1	3	1.5
10	6	3	1	0.5	2	1	9	4.5
11	1	0.5	5	2.5	2	1	8	4
Total	76	38	36	18	22	11	134	67

x^2=31.637,df=14,p value <0.05(significant), The mean for normal home delivery was 6(±2) days. The mean for normal hospital delivery was 6(±2.5) days,The mean for Caesarean section delivery was 7(±2.4) days.

Table 7: The methods of cord ligation in the studies neonate group.

Methods of ligation	No.	%	Infected cases	
			No.	%
Plastic clamper	182*	91*	42	٢١
Surgical silk	4	2	١	0.5
Wool cotton thread	11	5.5	3	1.5
Nylone	3	1.5	٠	0
Total	200	100	٤٥	22.5

Table 8: The methods of umbilical cord cutting in studied neonate .

Methods of umbilical cord cutting	No.	%	Infected cases	
			No.	%
Scissors	96	35.2	٢٧	13.5
Surgical blade	174	63.7	١٦	٨
Razor blade	3	1.1	٢	١
Total	273	100	٤٥	22.5

Table 9: The types discharge of infected umbilicus in studied group.

types discharge of infected umbilicus	No.	%
Blood*	27	13.5
Pus*	34	17
Feces	0	0
Urine	0	0
No discharage	139	69.5
Total	200	100

Table 10.: Signs of infection on examination before treatment for separated and non separated umbilical cord stump in studied group.

Signs of umbilical cord infection	On examination				Total	
	Separated		Non separated			
	No.	%	No.	%	No.	%
Swelling	4	3	0	0	4	2
Redness	10	7.5	29	44	39	19.5
Granuloma	2	1.4	0	0	2	1
Vein tributaries	0	0	0	0	0	0
No signs	118	88.1	37	56	155	77.5
Total	134	100	66	100	200	100

P value<0.05(significant)

Table 11. : The systemic Signs associated with umbilical cord infection in studied group .

systemic Signs of umbilical cord infection.	On examination				Total	
	Separated		Non separated			
	No.	%	No.	%	No.	%
Fever	8	4	20	10	28	14
Lethargy	4	2	6	3	10	5
Poor feeding	2	1	1	0.5	3	1.5
Crying	1	0.5	1	0.5	2	1
Moro reflex absent	1	0.5	1	0.5	2	1
Total	16	8	29	14.5	45	22.

x^2=2.3,df=4,p value >0.05(not significant)

Table 12: The types of substances used in non infected group in studied neonate.

types of substances used	Non infected group cases	
	No.	%
Spirit alcohol 70%	28	18.1
Gentian violet	20	13
Antibiotic &sulpha powder	1	0.6
Lead oxide "azargon"	0	0
Kohol	0	0
Charchol	0	0
Cetremide"cetavlone"	0	0
Tale powder	2	1.2
Chlorhexidine solution 4%	3	2
Chlorxylenol"Dettol"	0	0
Mixed	1	0.6
Non application	100	64.5
Total	155	100

Table 13: The types of substances used in infected group in studied neonate.

types of substances used	infected group cases	
	No.	%
Spirit alcohol 70%	5	2.5
Gentian violet	12	6
Antibiotic &sulpha powder	0	0
Lead oxide "azargon"	22	11
Kohol	1	0.5
Charchol	0	0
Cetremide"cetavlone"	0	0
Tale powder	4	2
Chlorhexidine solution 4%	0	0
Chlorxylenol"Dettol"	1	0.5
Mixed	0	0
Total	45	22.5

Table 14: The types of substances used in presence of discharge in studied neonate.

types of substances used	blood		Pus discharge*		No discharge	
	No.	%	No.	%	No.	%
Spirit alcohol 70%	27	26	3	8.9	23	59
Gentian violet	5	18.5	12	35.3	15	38.5
Antibiotic &sulpha powder	1	3.7	0	0	0	0
Lead oxide "azargon"	8	29.6	14	41.1	0	0
Kohol	0	0	1	3	0	0
Charchol	0	0	0	0	0	0
Cetremide"cetavlone"	0	0	0	0	0	0
Tale powder	2	7.4	4	11.7	0	0
Chlorhexidine solution 4%	3	11.1	0	0	0	0
Chlorxylenol"Dettol"	0	0	0	0	1	0.5
Mixed	1	3.7	0	0	0	0
Total	27	100	34	100	39	100

Table 15.The distribution of unbilical status according to the local signs of infection of separated and non separated umbilical cord stump.

Characters	No.	%	Separated		Infected cases		Non Separated		Infected cases	
			No.	%	No.	%	No.	%	No.	%
Redness	39	53.4	14	58.3	2	16.7	25	51	9	27.3
Pus discharge*	34	46.6	10	41.7	10	83.3	24	49	24	72.7
Total	73	100	24	100	12	100	49	100	33	100

x^2=0.34,df=1,p value >0.05(not significant)

Table 16.The distribution of unbilical status according to the severity of **Redness** of separated and non separated umbilical cord stump*.

Redness	Separated		Non separated		Total	
	No.	%	No.	%	No.	%
Mild *	12	85.7	16	64	28	71.8
Moderate*	1	7.1	1	2	2	5.1
Severe*	1	7.1	8	32	9	23.1
Total	14	100	25	100	39	100

x^2=3.16,df=2,p value >0.05(not significant)

Table 17:Distribution of microorganism isolated by umbilical swab culture from infected group (45 cases).

Positive	Culture results	No.	%
	E.Coli	25	55.6
	Staph.au.	13	28.9
	Klebsiella spp.	4	8.9
	Streptococcal spp.	2	4.4
	Proteus	1	2.2
	Total	45	100

Table 18:The relation of signs of omphalitis with studied variable.

Variables	umbilical swab culture (positive)		blood culture (positive)	
	No.	%	No.	%
Fever	14	7	14	7
pallor	3	1.5	4	2
Cyanosis	8	4	5	2.5
Dyspneas	14	7	10	5
Apnea	6	3	12	6
Total	45	22.5	45	22.5

x^2=3.502,df=4,p value >0.05(not significant).

Table 19 :Signs of improvement of symptom of infection after treatment according to redness and pus discharge of infected neonatal group study.

Type of substances used	Redness		Improved cases		Discharge		Improved cases	
	No.	%	No.	%	No.	%	No.	%
Spirit alcohol 70%	5	45.4	4	44.5	5	14.7	2	13.3
Gentian violet	4	36.4	4	44.5	12	35.3	10	66.7
Antibiotic &sulpha powder	1	9.1	1	11	0	0	0	0
Lead oxide "azargon"	1	9.1	0	0	12	35.3	1	0.5
Kohol	0	0	0	0	1	3	0	0
Charcoal	0	0	0	0	0	0	0	0
Cetremide"cetavlone"	0	0	0	0	0	0	0	0
Tale powder	0	0	0	0	4	11.7	3	20
Chlorhexidine solution 4%	0	0	0		0	0	0	0
Chlorxylenol"Dettol"	0	0	0	0	0	0	0	0
Mixed	0	0	0	5.3	0	0	0	0
Total	11	100	9	100	34	100	15	100

Discussion:

The diagnosis of omphalitis depends considerably on clinical features, and in some cases it requires a positive swab culture. Diagnosis in our community, however, must be based solely on clinical signs of infection. Mullany et al stressed that two signs for defining omphalitis are recommended for use in the community, redness and the presence of pus (12). All infected neonates(45) was admitted to the hospital and made the investigation including umbilical swab and blood cultures before and after received the topical and systemic antibiotics

treatment and at discharge from the hospital with improvement.

Rate of incidence: The study shown that a high numberof infected cases presented with redness and pus discharge. The predominance of redness is probably due to that most of cases presented early and majority of the cases were on antibiotics at the time of examination. In rural Nepal the incidence of redness extending to the skin at the base of the stump exceeded (15)cases in every (100)neonatal period observed ,and redness in combination with pus discharge persent in approximately (6%).No previous study on the prevalence of omphalitis was reported in Iraq, High rate of omphalitis is reported in this study (22.5%) while in developing countries(6.18%)(3) and in the developed world is around(0.7%) (12). These variations may be related to conduct of labour and environment conditions (3). The prevalence of neonatal infection varies with considerable fluctuation over time and geographical location and even from hospital to hospital. The current incidence in the United States is somewhere around 0.5% per year; overall, the incidence rate for developed world falls between 0.2–0.7%. In developing countries, the incidence of omphalitis varies from (2 to 7 for 100 live births).[2] There does not appear to be any racial or ethnic predilection.

In **Tanzania, Mosha et al** demonstrated that clean hands, clean perineum, clean delivery surface, clean cord, cutting and tying instruments (six cleans) had a positive effect on reducing cord infection. (16), this rule not perfectly used in our hospital. In a trial to determine the effectiveness of six cleans with use of a clean delivery kit in preventing cord infection, Winani et al reported that newborns whose mothers used the delivery kit were 13.1 times less likely to develop cord infection than infants whose mothers did not use the kit (six cleans.The study shown that most of cases of omphalitis were born in hospital (14%) and sterile plastic clamper (21%) was used in majority of them, yet the rate of omphalitis is high, this may be due to that the setting up and aseptic technique in the hospital was very poor. The study proved that one sign of omphalitis (redness) was significantly associated with means of clamping umbilical cord (only clamper). This fact is not available in other studies .The plastic clamper may cause physical irritation to the skin leading to redness(17).

Separation of umbilical cord: The umbilical cord stump separated between 4 and 13 days after birth similar to other studies .Thus ,was no statistical significance was present between different site and type of delivery while it other worker found caesarean section delivery as a factor for delay in cord separation .Delayed umbilical cord separation in association with neonatal alloimmune neutropenia is reported. Delayed umbilical cord separation has been described in association with defects in neutrophil function. The present case indicates that deficiency in neutrophil number should also be considered as a cause of delayed cord separation.The factors contributing to umbilical cord separation are not fully understood. It is, however, considered likely that this is mediated through migration of neutrophils with a subsequent inflammatory response

which results in digestion of the umbilical cord. Major support for this hypothesis comes from the observation of delayed umbilical cord separation in subjects with a deficiency of leucocyte adherence related glycoproteins in which cell migration from the vascular compartment is severely impaired.' 2 In this condition there is a marked deficiency of neutrophil infiltration into the cord. If the above hypothesis is correct, in addition to defects in neutrophil migration, it is possible that delayed cord separation may be associated with neutropenia(18).In one study by Oudesluys-Murphy AM, Eilers GA, de Groot CJ.Department of Paediatrics, Zuiderziekenhuis, Rotterdam, The Netherlands,shown The time of separation of the umbilical cord was studied in 911 neonates. The mean time of separation was 7.4 days (SD 3.3, range 1-29 days). We sought a possible relationship between the time of cord separation and various factors in the perinatal period. Cord separation was delayed when antibiotics needed to be administered to the neonate because of sepsis, when the infant was born prematurely, delivered by Caesarean section or had a low birth weight. The cord separated slightly earlier in female than in male infants. None of the infants studied suffered from omphalitis and it would appear that "delayed" separation of the cord is not always necessarily accompanied by severe leucocyte dysfunction(18).

care of umbilical cord:Azargone so powder (Lead oxide) often applied in the care of umbilical cord stump with its complication by increased lead aspiration and poisoning. **Alcohol** use on the umbilicus might be one of the causes of lead **encephalopathy** as mentioned by some workers.

The exact incidence of cord infections in unknown ,they appeare to relatively rare in developed countries ,but they are probably under reported as babies may be discharge early from hospital and not followed up at home.There is evidence that cord infections are common in developing countries. Signs of inflammation (swelling, redness, heat , tenderness) of the tissues surrounding the cord support the diagnosis of omphalitis. A1997 systemic review of randomized controlled studies comparing different methods of cord care ,was unable to conclude that application of topical antimicrobials is superior to just keeping the cord clean. There is some evidence ,however ,that the use of antibiotics in developing countries are protective against neonatal tetanus when applied to the cord stump for first few days (19).

- When used of alcohol 70% before and after separation neonates ,shown to delay of cord separation for nonseparated cord and has less drying effect.
- The gentian violet 0.5% with water solution, used shown increased cord separation time for nonseparated cord and good effectiveness for reducing the redness and pus discharge and they did not develop infection or sepsis .One study of term infants revealed the mean time of the cord detachment for antiseptic as follow :for chlorhexidine (9.2days),triple dye (11.6days),alcohol 70%(16.9days) . There were very few studies of the effect that

applying antimicrobials to the stump has on the incidence of cord infections in developing countries, either in institutions or at home .A population-based study in rural parts of Pakistan, where mothers delivered at home under unclean conditions and where living in areas were often in close proximity to animals and animal dung, found that the use of a topical antimicrobial on the cord stump at delivery and during the first few days after delivery was highly protective against neonatal tetanus as compared to applying nothing to the wound(19).

microorganism caused of omphalitis:In one study of (WHO) ,(72%)of the cord infections in babies born in hospital were due to gram-negative organisms (mostly Klebsiella and *E. coli*), whereas gram-positive infections were slightly more common in babies born at home. *S. aureus* was the single most commonly isolated bacterium both at home and in the hospital(20).

In the laboratory findings had confirmed the **microorganism isolated by umbilical swab culture from infected group (45cases).** *When mainly Escherichia coli, and Staphylococcus aureus*. In eastern Turkey, *Staphylococcus aureus* (69%) was more commonly isolated from umbilical cord (13). While in Nigeria, *Staphylococcus aureus* constituted (55%) from other bacterial agents (14). The high isolation rate of *Klebsiella spp.* in the study is most likely due to hospital acquired infection , as the routine swabs taken from incubators, labour ward usually show *Klebsiella*.The incidence and etiology of omphalitis in newborns in high neonatal mortality settings in Karachi, Pakistan.The most common pathogens were *Staphylococcus aureus,* of which 291 (95.7%) were methicillin-susceptible *Staphylococcus aureus* (MSSA) and 13 (4.2%) methicillin-resistant *S. aureus* (MRSA); *Streptococcus pyogenes* 105 (18%); Group B beta-hemolytic streptococci 59 (10 %); *Pseudomonas* spp., 52 (8.9 %); *Aeromonas* spp. 19 (3.2%); and *Klebsiella* spp. 12 (2%)(21).The laboratory findings had confirmed the **microorganism isolated by blood culture from infected group (45cases),** *Staphylococcus aureus*, *Klebsiella spp.* .These finding are consistent with that reported in the neonatal unit at Baghdad teaching hospital in Iraq(22) .

- *Staphylococcus aureus* is a type of bacteria. It stains Gram positive and is non-moving small round shaped or non-motile cocci. It is found in grape-like (staphylo-) clusters. also known as "golden staph" and Oro staphira. *Staphylococcus aureus* causes most staph infections (pronounced "staff infections"), including(Skin infections "scalded skin syndrome and abscesses , impetigo. boils (furuncles), cellulitisfolliculitis,carbuncles,Pneumonia,Food poisoning,Toxic shock syndrome,Blood poisoning (bacteremia)) , Brain infections or meningitis.

Bone infections or osteomyelitis , Heart infections or endocarditis

- The genus *Klebsiella* belongs to the tribe Klebsiellae, a member of the family Enterobacteriaceae. rod-shaped, gram-negative bacteria with a prominent polysaccharide capsule. Klebsiellae cause a variety of clinical syndromes. Common klebsiellae infections in humans include (1) community-acquired pneumonia, (2) UTI, (3) nosocomial infection, (4) rhinoscleroma and ozena, and (5) colonization.
- ***Escherichia coli*** *(E. coli*)is a gram-negative faculative anaerobic bacteria. This safe K-12 strain of *E. coli* is commonly found in your intestine and is not the kind that causes food poisoning.
- ***Streptococcus*** is a genus of spherical Gram-positive bacteria belonging to the phylum Firmicutes[2] and the lactic acid bacteria group. Cellular division occurs along a single axis in these bacteria, and thus they grow in chains or pairs, hence the name—from Greek στρεπτος *streptos*, meaning easily bent or twisted, like a chain (twisted chain).

resulting of cultures: There was no significant association of positive swab cultures and positive blood cultures was observed. The study revealed the majority of cases showed that umbilical swab and blood culture have different organism in the same patient. This finding may indicate that the route of infection in septicemia may be other than infected umbilical cord and could be hospital acquired infections (nosocomial infection).Al- Shawii et al found that neonatal sepsis was significantly associated with management procedures (cannula, IV. set, nasogastric tube, suction and O2 therapy).

Rapid and accurate detection of neonatal bacteremia is an important part of the management of the neonate with suspected sepsis.This study compared the incidence of **positive umbilical cord blood cultures (UCBCs)** to the incidence of positive peripheral venous blood cultures and determined whether a meticulous UCBC technique prevented contamination of culture specimens. **Six UCBCs** of the 200 sampled were positive. Three cultures exhibited delayed growth (more than 48 hours) and were not considered clinically significant. In 2 of the 3 remaining positive cultures were organisms considered contaminants; the third culture correlated to the infant's peripheral venous blood culture (alpha-hemolytic streptococcus), showing evidence of bacteremia. From these data the authors conclude that 1) meticulous and fastidious collection of **UCBCs p**revents contamination of culture specimens, and 2) the UCBC may prove to be a satisfactory alternative to the postnatal peripheral venous blood culture for detection of neonatal bacteremia.

- The study showed only the pus discharge was significantly associated with positive blood culture while redness was not, and both swab and blood culture (only the negative) not significantly associated with

presentation of omphalitis (redness or pus discharge).

- This study revealed that fever, pallor, cyanosis, dyspnoea and apnea were not significantly associated with positive swab or blood cultures. These findings do not agree with that of other workers.

Conclusions:

High prevalence of omphalitis (22.5%) recorded among studied group, the majority of them accompanied by redness concomitant with discharge. The gentian violet is best responsetopical substance in treatment of omphalitis.The common pathological organism isolated in umbilical swab and blood culture is E.coli.

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