

Descriptive Study of neonatal sepsis in the Post Graduated Hospital Khost Afghanistan

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ABSTRACT

Introduction: Since neonatal Sepsis are causes a large number of neonatal hospitalizations and considered one of the most common problems of NICUs worldwide, also a large number of neonatal morbidity and mortality occurs in developing and developed countries. 1.6 million to 4 million deaths occur in the world, 40% of newborns in the first week. Diagnosis of the disease in newborns is determined by the level and equipment of the clinic and is based on the detection of antenatal and postnatal risk factors, respiratory and general symptoms, radiological signs, markers of the systemic inflammatory response syndrome / bacterial infections, and the results of etiological diagnosis. The combination of ampicillin with gentamicin is used for initial therapy of early pneumonia in newborns. In case of late neonatal pneumonia that occurred in a hospital, primary therapy must necessarily include anti pseudomonas and anti-staphylococcal antibiotics. Gram-negative antibiotics are given to treat community-acquired pneumonia in newborns.

Research Question: What is the frequency and pattern of neonatal sepsis in Khost provincial specialized hospitals?

Methodology: Our research is descriptive type that based on a case series, which took place from the first date of hamal 1400 to the last date of hoot, During this year 2311 patients were hospitalized in Khost post graduate Hospital, 821 patients were newborns, out of these 821 patients, 314 patients were diagnosed neonatal sepsis

Keywords- neonatal sepsis, early neonatal sepsis, late neonatal sepsis, complication.

I. INTRODUCTION

Systemic infections is the main cause of death in newborns and can cause of death in 20-30% of infants alone or in combination with other diseases. The incidence of sepsis is up to 10-20 per 1,000 newborns, and the prevalence of meningitis is up to 20-30% of patients and 1-2% of urinary tract infections. From the point of view of clinic and time, Neonatal Sepsis are two types, Early-onset sepsis is seen in the first 72 hours of life and usually appear in the form of dyspnea and pneumonia. Late onset sepsis occurs after 72 hours of life. Usually appear in the form of systemic infections and pneumonia from existing infections in the community or hospital. The data provided by NNPD in the year 2000 shows that Klebsiela pneumonia and

Staphylococcus aureus are the main causes of Neonatal sepsis in India. Without use of antibiotics, the death rate due to neonatal sepsis is 90%.

The symptoms and signs of neonatal sepsis are non-specific and the diagnosis is mostly made by suspecting neonatal sepsis, blood culture is golden criteria for the diagnosis of neonatal sepsis but the result report is after 24-48 hours.

Since more than 5 million babies die in developing countries every year, more than 40% of them die from infections, without proper diagnosis and treatment of infected babies. The death rate of babies are increases approximately 13-69% which do not reach at the early time for hospitalization. An idea that children's problems such as diarrhea and pneumonia can be diagnosed and treated in time, in developing countries, It

would be better if doctors, nurses and health workers should be trained so that they can understand the clinical signs and symptoms of sepsis and refers to medical center on time. Usually, in developing countries, neonatal Sepsis is diagnosed by history, clinical symptoms, and physical examination. Because the equipped laboratory and facilities are less. However, timely diagnosis and appropriate antibiotic use lowers the mortality rate of neonatal Sepsis patients, and those infants who have risk factors should be given experimental antibiotics at the time of suspect ion and later antibiotics should be changed according to the culture report and the babies who have low risk factors should be given antibiotics according to the culture report.

II. DEFINITION

Neonatal sepsis is a type of neonatal infection and specifically refers to the presence in a newborn baby of a bacterial blood stream infection (BSI) (such as meningitis, pneumonia, pyelonephritis, or gastroenteritis) in the setting of fever or neonatal Sepsis is the clinical syndrome of systemic illness resulting from metabolic and circulatory collapse from infection in the newborn, when pathogenic bacteria gain across to the blood stream they may cause an overwhelming infection without much localization (septicemia) or may localized to the lung (Pneumonia) or the meninges (Meningitis).

III. COMPLICATION

Complications are related to:

1. Complication that are belong to inflammatory process.
2. Those related to neonatal problems such as respiratory distress fluid and electrolyte abnormalities.
3. Bacterial infections related complication are including:

Endocarditis, septic emboli, abscess, septic arthritis, congenital malformations, osteomyelitis and bone fractures and recurrent bacteremia (rare). Candida infection can cause inflammation, endocarditis, lung and brain abscess.

IV. IMPORTANCE OF RESEARCH

Because of neonatal sepsis, a large number of newborns are admitted to the hospital and cause a large number of deaths worldwide, so far no research has been conducted on this issue in Khost post graduated hospital.

V. METHODOLOGY

Our research is descriptive type that based on a case series, which took place from the first date of hamal

1400 to the last date of hoot, 2311 patients were hospitalized in Khost post graduate Hospital, 821 patients were newborns, out of these 821 patients, 314 patients were diagnosed neonatal sepsis. The death rate due to neonatal sepsis should be reduced, up to now there are no any research has been done on this issue in Khost Post graduated Hospital, so the results of this research are helpful for Pediatric Department have been obtained from this research.

VI. IMPORTANCE OF THIS RESEARCH IN HEALTH SYSTEM

It is a descriptive study of neonatal sepsis in the last six months of 1400 H.S in Khost post graduated Hospital. The death rate due to neonatal sepsis should be reduced, up to now there is no research has been done on this issue in Khost post graduated Hospital, so the results that obtained from this research will be helpful for all medical workers. Also, the impact of this disease is significant in the society from the social and economic aspect, so the data should be regularly collected, analyzed and reported to the relevant authorities for next step.

Table 1: all inpatient and neonatal sepsis percentage

All inpatient	Sepsis	Other diseases
2311	314	1997
100%	13.58 %	86.41 %

In above table 314 patients out of 2311 were neonatal Sepsis. All patients were admitted in Khost post graduated Hospital during one year.

Table 2: The following table shows the number and percentage of cases of neonatal Sepsis from the point of delivery area.

Place of delivery	All patients	At home	In hospital	In clinics
Number of patients	75	39	16	20
Percentage	100 %	52 %	21.33 %	26.66 %

In above table, among 75 patients 39 (52 %) were born at home, 16 (21.33 %) patients were born in Khost post graduated hospital and 20 (26.66 %) patients were born in district clinics.

Table 3: The following table shows early and late neonatal sepsis.

All neonatal sepsis patients	All patients	Early neonatal sepsis	Late neonatal sepsis
Amount	75	31	44
Percentage	100 %	41.33 %	57.66 %

In above table, among 75 patients 31 (41.33 %) were Early neonatal sepsis, 44 (57.66 %) were Late neonatal sepsis.

Table 4: Shows the maturation of baby.

All patients	Premature	Mature	Post mature
75	39	33	3
Percentage	52%	44%	4%

In above table, the incidence of neonatal Sepsis varies with gestational age. Out of 75 patients, 39 (52%) were premature babies, 33 (44%) were mature and 3 (4%) were post mature.

Table 5: Shows the percentage of baby according to their Wight.

All patient	1000-1500 grams	1500-2500 grams	More the 2500 grams
75	31	26	18
100 %	41.33 %	42.66 %	24%

Table 6: Percentage of patient according to sex.

All patient	Male	Female
75	44	31
100 %	58.66 %	41.33 %

In above table, incidence of neonatal Sepsis was compared according to gender. 44 (58.66 %) were male and 31(41.33%) were female.

Table 7: The following table shows the signs and symptoms of neonatal Sepsis in 75 inpatients sepsis.

Different sign and symptom	All patients	No sucking	fever	Reflux weakness	Respiratory distress	Drowsness	Vomiting	Others
Amount of patients	75	43	41	38	31	29	20	19
Percentage	100 %	57.33 %	54.6%	50.66 %	41.33 %	38.66 %	26.66 %	25.33%

In above table, the different percentage of neonatal sepsis sign and symptoms are shown.

Table 8: That is the fact that the risk factors of neonatal sepsis are more, the risk factors are shown in the table below.

Risk factor	All patients	Low birth Wight	Premature	Meconium stained fluid	Fever of mother	PROM	Delivery at home
Amount	75	61	39	12	17	10	39
Percentage	100 %	81.33 %	52 %	16 %	22.66 %	13.33 %	52 %

In above table, the different risk factors of neonatal sepsis are shown.

Table 9: The number and percentage of isolated microorganisms that causes neonatal sepsis.

Isolated microorganism	Klebsila	E. Coli	Staphylococcus
Amount	1	1	1
Percentage	33.33 %	33.33 %	33.33 %

In above table the number and percentage of microorganisms that have been found after blood culture of infants, that are diagnosed neonatal sepsis.

Table 10: Resistance and sensitivity of microorganisms that cause neonatal sepsis to antibiotics.

Sensitive antibiotics		Resistant antibiotics			Name of microorganism
Meropenime	Amikacin, Ceftazidim ,cefotaxim	Gentamycin	Ampicillin	Ceftriaxone	Klebsila
Meropenime	Vancomycin	Resistant to other antibiotics			Staphylococcus
Meropenime	Ceftriaxone, Cefotaxime, Ceftazidime	Amikacin	Gentamycin	Ampicillin	E. Coli

The above table shows that Klebsila is resistant to Ceftriaxone, Ampicillin, Gentamycin, but it is sensitive to Amikacin, Ceftazidim, Cefotaxime and Meropenime. Staphylococcus is resistant to all other

antibiotics, only sensitive to Vancomycin and Meropenime. E. Coli is resistant to Ampicillin, Gentamycin, but sensitive to Ceftriaxone, Cefotaxim, Ceftazidime, Amikacin and Meropenime.

Table 11: Causes of neonatal sepsis according to treatment duration.

Days	All patients	7 – 10	5 – 7	> 10
Amount of patients	75	60	10	5
Percentage	100 %	80 %	13.33 %	6.66 %

In the above table, seen that out of 75 (100) patients, 60 (80%) patients treated in 7-10 days, 10 (13.33 %) patients treated in 5-7 days and 5 (6.66 %) patients treated >10 days.

VII. INTERNATIONAL LITERATURES REVIEW

1. Iran: this research was done at Shabih Khani Hospital in Iran, which was published in the IJN journal, over a period of two years (June 2005-July 2007). 1126 patients with suspected neonatal Sepsis were admitted in pediatric ward of Shabih Khani hospital, cultures were done for 104 (9.2%) causes. 63 (61%) cases were male and 41(39%) were female. It shows that male more than female. In this study, 56% patient were preterm, 44% were full-term and no one were post-term patient. In this study, 15.4% of the patients died. The microorganisms that were detected from the result of culture, 43.3% were Flavobacterium, 33.3% Pseudomonas, 17.3% coagulase negative Staphylococcus, 5.9% (COPS) followed by other infections.

2. India: This study was published in the Indian Journal of Pediatrics during a period of two years (Aug 2004-July 2006). The study was done in post graduated hospital in India included 120 infants with signs and symptoms of sepsis and Septic Screening (TLC count, CRP, Band cell Micro ESR, Absolute Neutrophils) two markers were positive. Out of 120 babies, blood culture was positive in 50 cases and in 70 cases were negative. The reason is a number of viruses such as: Adeno Virus, Entero V, Coxsacki V, Rubella V, and Candida Toxoplasma showed the cause of sepsis. Among the infections confirmed in the culture, gram negative infections were 82% and gram positive infections were 18%. Among Gram-negative infections, Klebsila Pneumonia was 66%, and CONS was 12%. this study compared to other studies, it was revealed that in developing countries gram-negative infections but gram-positive infections are more seen in developed countries. Also, in this article, gram-negative infections are 100% sensitive to Meropenem and 82% to Amikacin.

3. Pakistan: The research that was published in Journal of JPMC 2015 during six months (January 2008-July 2008) in the neonatal department of Pakistan Children's Hospital, Pakistan Institute of Medical Sciences, Islamabad. The culture was positive and a study was conducted. They conducted this study based on antibiotic sensitivity, resistance and causative factors. In this study, there were 28 boys, 22 girls, the ratio was 1:2:1. The prevalence of sepsis was 23. (46%) and late sepsis 27 (56%), full term was 46%, Preterm 38% and Post Term 16%. Normal BW 60%, LBW 24%, VLBW 16%. In this study, it was shown that Gram-negative infections were 84% and Gram-positive infections were

16%. In this study, the infections were more resistant to antibiotics and less sensitive. 72% with Ceftazidime, 60% with Ceftriaxone, 42% with Amikacin, 14% with Imipenem and 42% with Ofloxacin. the diagnosis of Neonatal Sepsis and A blood culture is necessary for treatment because the microorganisms change from time to time. For example, in the 1960s, gram-negative infections were more common in America and Europe, but in the 1970s, it changed to Group β Streptococcus, and in the 1980s-1990s, it became CONS changed.

VIII. RESULTS

1. According to obtained results of laboratory tests, CRP was evaluated positively in most patients (approximately 80%). In this study, the ratio of Gram-negative to Gram-positive infections was to 2:1. The result shows that the incidence of neonatal Sepsis is more in boys (58.66%) than girl.
2. The incidence of risk factors is 81.33% in underweight babies, 52% in premature babies and 52% in babies that was born at home.
3. Three positive culture cases have been found, one is Kelbsila (33.3%) and one is E Coli (33.3%) and the last one is Staphylococcus Aureus (33.3%). percent. gram-positive, especially group B streptococcus are seen in large quantities.
4. It became clear that most infections are resistant to first-line antibiotics. Therefore, the usual antibiotic policy for Khost post graduated Hospital is Ceftriaxone + Amikacin and for less number of patient Meropenime + vancomycin.
5. Depending on the duration of treatment with antibiotics, should continue for 7 – 10 days. Because more patients are prone to death (86.66% of the newborns recovered and 13.33% are died).

IX. DISCUSSION

According to the data that was taken from our research, which was done in the neonatology Department of Khost post graduated Hospital, 13.58% of all hospitalized patients were with neonatal sepsis, this shows that neonatal sepsis are more than other three country, because the main reason is the low level of knowledge, majority of delivery done at home, the presence of risk factors in mother, premature birth and underweight babies, the antiseptic conditions in the delivery room, and pregnant women not having regular antenatal medical visits.

According to the research, the incidence of disease is higher in premature babies for gestational age, i.e. 52% was in preterm, 44% in full-term babies and 4% in post-term patients. In the IJN journal, 56% of preterm infants and 44% full-term infants were present, but no one was post-term included. In Journal of Department of Neonatology, Islamabad, JRMC, this percentage as 38% were premature babies, 46% full-term and 16% were post-term babies (8).

X. CONCLUSION

From the first date of hamal 1400 to the last date of hoot, 2311 patients were hospitalized in Khost post graduate Hospital, 821 patients were newborns, out of these 821 patients, 314 patients were diagnosed neonatal sepsis. According to delivery, more patient was born at home. The incidence of neonatal Sepsis patients was more in early stage 58.66 %. according to gestational age, neonatal sepsis was more in premature babies. according to research, the incidence of the disease is directly link to birth weight, because the incidence was less in normal weight patients and more in low birth weight (less than 2500gr).

SUGGESTIONS

1. Neonatal sepsis is a common problem in newborns, neonatology ward should be established and modern equipment should be installed in this ward.
2. That more additional technical and educated personnel should be hired and trained.
3. Through public media such as television, radio, magazines, newspapers, etc. to people should be given public awareness about neonatal sepsis, and it should be taught that if your baby is not sucking well or refuse sucking, you should visit your neonate to doctor immediately.
4. Since it is clear that unnecessary antibiotic use results in resistance of microorganisms, therefore the use of third generation cephalosporins should be limited.
5. As the microbial flora in the neonatal ward changes from time to time, periodic investigations should be done in the neonatal ward, to find the causative microorganism of septicemia and sensitive antibiotics.

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