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Original Research Article.

Clinical Outcome of Neonatal Septicemia in Bangladesh

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ABSTRACT

Objective: In this study our main goal is to evaluate clinical outcome of neonatal septicemia in Bangladesh.

Methods: This cross-sectional study is conducted at Neonatal unit of the department of paediatrics, Sir Salimullah Medical College and Mitford Hospital, Dhaka, From July 2005 to June 2006. Among 90 clinically diagnosed septicemic neonates, 30 were blood culture positive.

Results: During the study, where low birth weight (60%), prematurity (53%), prolonged rupture of membrane was documented in 17% of cases. 70% delivery occurred by normal vaginal route, among them 50% occurred at home and 20% occurred at hospital. 30% were delivered by LUCS. 13% cases had H/O fever in last trimester. Lethargic and reluctant to feed, 83% had respiratory distress. Jaundice was present in 60% cases, fever was present in 40% cases. Other presentations were apnea, convulsion, abdominal distension, sclerema, vomiting, hypothermia and diarrhoea.

Conclusion: From our result, we can conclude that, the pattern of organisms are changing and high incidence of multidrug resistance remains a major challenge to manage neonatal septicemia.

Keywords: Clinical Outcome, Neonatal Septicemia, Bacteria.

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INTRODUCTION

Neonatal septicemia refers to generalized bacterial infection documented by a positive blood culture in the first 4 weeks of life.[1] The incidence of neonatal septicemia varies from one to ten per 1000 live births.[1] It is a life threatening emergency and delay in diagnosis and treatment with appropriate antibiotics may have devastating consequences.[2] The new born is very susceptible to infectious disease because of the immaturity of immune system. Despite considerable progress in hygiene, antimicrobial therapy and supportive treatment, septicemia remains an important cause of morbidity and mortality in neonatal period.

The pattern of bacterial organism for neonatal sepsis are constantly changing with time and place. In developed countries group B Streptococcus is the commonest cause of neonatal sepsis followed by E.coli and listeria monocytogens[3-5] but there is preponderance of gram negative organisms in tropical and developing countries.[6]

In this study our main goal is to evaluate clinical outcome of neonatal septicemia in Bangladesh.

OBJECTIVES

General Objective

- To evaluate clinical outcome of neonatal septicemia in Bangladesh.

Specific Objectives

- To find out the association between perinatal risks factors and neonatal septicemia
- To identify the clinical presentation of the neonatal septicemia
- To find out the hospital outcome of this patients

METHODOLOGY

Type of Study: Cross sectional study.

Place of study: Neonatal unit of the department of paediatrics, Sir Salimullah Medical College and Mitford Hospital, Dhaka.

Study Period: From July 2005 to June 2006.

Study Population: All admitted neonates suspected clinically with neonatal septicemia.

Sample: Among 90 clinically diagnosed septicemic neonates, 30 were blood culture positive.

Sampling Technique: Purposive.

Method

During the study, detailed history of mother and baby including antenatal, natal and postnatal regarding ruptured membrane with its duration, prolonged labour, meconium stained or foul-smelling liquor, maternal fever in last trimester, place and mode of delivery, gestational age, baby's resuscitation required or not and clinical examination of the neonates.

Inclusion Criteria

- Clinical diagnosis of septicemia within the first 28 days of life.
- Clinical diagnosis was based on the presence of 2 or more of the following features present at the time of admission.
  - Poor feeding Lethargy
  - Fever (>37.2°C) or hypothermia (<36°C)
  - Respiratory distress, Cyanosis, Apnoea, Seizures

Data Analysis

After collection, data were entered into a personal computer and were edited, analyzed, plotted in graphs and tables. Data were analyzed by chi square test, Mann Whitney U tests, using the statistical package for social sciences (SPSS) version 20.

RESULTS

Table-1 shows age distribution of the patients where 40% neonates presented in the first week of life and 60% neonates presented between 8-28 days. In figure-1 shows gender distribution of the patients where most of the patients were male, 60%.

Table 1: Age distribution of neonates with septicemia (n= 30)

Age	n	%
0-7 days	12	40
8-28 days	18	60

Table 2: Perinatal risk factors for septicemia (n= 30)

Risk factors	n	%
Low birth weight (<2.5kg)	18	60
Preterm (<37 completed wks)	16	53
Prolonged rupture of membrane>18 hrs	5	17
Mode of delivery -		
NVD - (i) At home	15	50
(ii) At hospital	6	20
LUCS-	9	30
H/O fever in last trimester	4	13

Table 3: Clinical presentation of neonatal septicemia (n= 30)

Presentation	n	%
Lethargy	28	93
Reluctant to feed	28	93
Respiratory distress	25	83 .
Jaundice	18	60
Fever	12	40
Apnea	10	33
Convulsion	05	17
Abdominal distension	05	17
Sclerema	05	17
Vomiting	04	13
Hypothermia	04	13
Umbilical discharge	03	10
Diarrhoea	02	7

Table 4: Clinical outcome of the patient according to gestational age (n= 30)

Outcome of patient	Preterm	Term
(n=30)	(n= 16)	(n= 14)
Recovery 16(53%)	8(50%)	8(50%)
Death 14(47%)	8(57%)	6(43%)

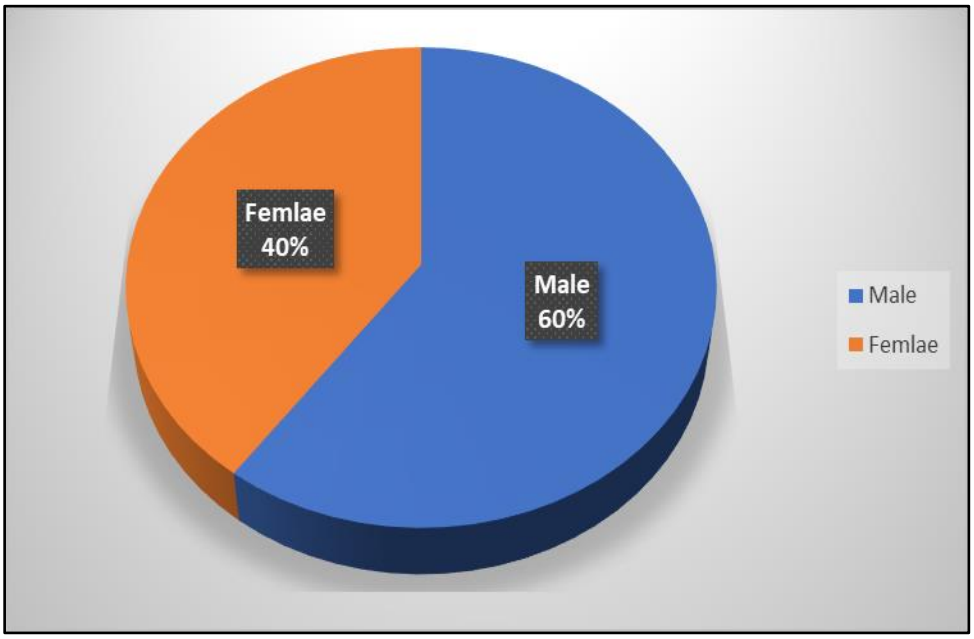

Figure 1: Gender distribution of the patients.

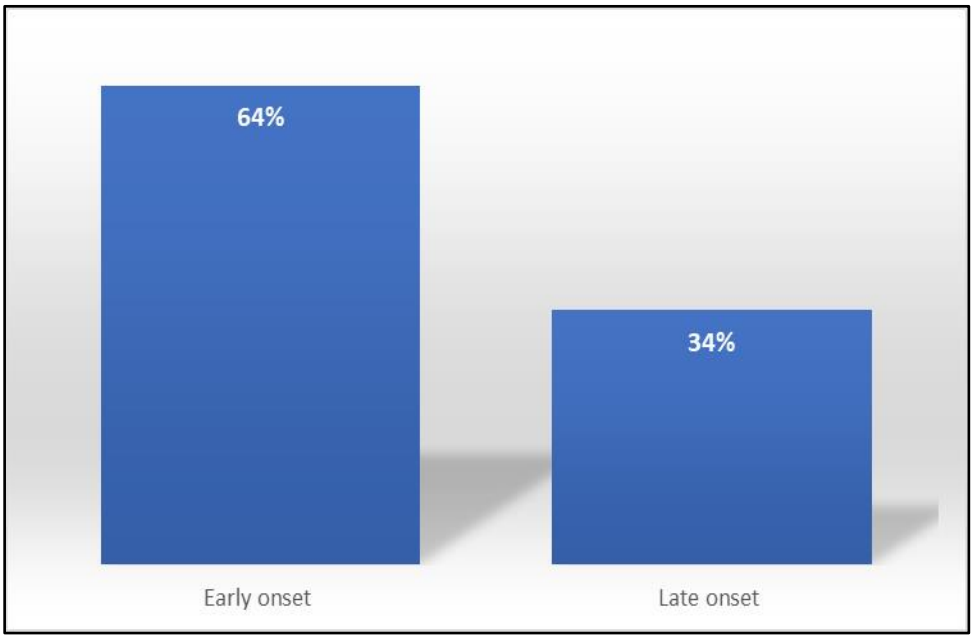

Figure 2: Type of Septicemia according to the onset of the disease.

In table-2 shows number and percentage of perinatal risks factors associated with development of septicemia – where low birth weight (60%), prematurity (53%), prolonged rupture of membrane was documented in 17% of cases. 70%delivery occurred by normal vaginal route, among them 50% occurred at*k*home and 20% occurred at hospital. 30% were delivered by LUCS. 13%cases had H/O fever in last trimester.

In table-3 shows clinical presentation of the patients where almost all patients (93%) were lethargic and reluctant to feed, 83% had respiratory distress. Jaundice was present in 60% cases, fever was present in 40% cases. Other presentations were apnea, convulsion, abdominal distension, sclerema, vomiting, hypothermia and diarrhoea.

In table-4 shows clinical outcome of neonatal septicemia – where 16(53%) neonates were discharged from hospital in good condition, among them (50%) were pre-term and (50%) were term. Among death [14(47%)] 57% were preterm and (43%) were term.

In figure-2 shows clinical outcome of the patients according to the onset of the disease out of the 30 culture positive cases 14(47%) died. The neonates who died more often had early onset (n= 9, 64%) as opposed to late onset infection (n=5, 36%).

DISCUSSION

Out of 30 culture positive cases, 12(40%) were klebsiella and 6(20%) were coagulase negative staphylococcus which is two-third of the total causative agents found in this study. This result is almost comparable with one study.[6]

Coagulase negative staphylococci are currently the most common organism associated with late onset infection in neonatal intensive care unit in the developed countries.

In this study, 40% of neonates presented early (<7 days) and 60% presented late (8-28 days), this finding is similar to one study.[7]

In this study, most patients were low birth weight (60%) and preterm (53%), which is similar to the study done in a tertiary level paediatric hospital in Bangladesh.[8] Birth weight and gestational age are the greatest risk factors for the development of neonatal sepsis. The lack of inherent defensive mechanism as well as both cellular and humoral immunity renders the preterm infants more susceptible to infection. Placental transfer of IgG to foetal circulation increases with maturity. This transport is hampered in small for date infants who were the products of placental insufficiency. In this study 50% of patients had home delivery and conducted mostly by untrained birth attendants. This is very important for late onset infection in our country, because the untrained birth attendants have minimum sense of hygiene resulting into unsafe delivery. Seventy percent of the baby were delivered through vaginal route, 30% cases were by lower uterine caesarean section.

Neonates, because of immaturity of temperature control center, may remain afebrile or become hypothermic during infection. 33% patients had apnoea, 13 percent patients had vomiting. Diarrhoea was present in two cases and five patients presented with sclerema. These findings are more or less similar to those found.[9,10] Regarding clinical outcome, 16 neonates (53%) were recovered and 14(47%) neonates died from septicemia. Preterm birth accounted for 8(57%) and term 6(43%) death and there was no difference in recovery regarding gestational age. The case fatality rate was higher in early onset (64%) than late onset (36%) infection and it is similar to study done in tertiary level paediatric hospital.[9]

CONCLUSION

The pattern of organisms is changing and high incidence of multidrug resistance remains a major challenge to manage neonatal septicemia.

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