Original Article

Meningitis in Newborns

Frequency of Meningitis in Newborns Presenting with Sepsis to Nishtar Hospital, Multan

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ABSTRACT

Objective: To determine the frequency of meningitis in newborns presenting with neonatal sepsis to Nishtar Hospital, Multan.

Study Design: Descriptive study

Place and Duration of Study: This was carried out in the Department of Paediatric Medicine, Nishtar Hospital, Multan from January 2012 to December 2012.

Materials and Methods: A total of 73 newborns were included in the study conducted at Nishtar Hospital, Multan.

Results: Out of 73 newborns with sepsis, 20 (27.4%) were diagnosed to have meningitis. Majority of the neonates with sepsis (52.1%) were between 1-7 days of their life, however, mean age of all cases was 10.49 $\pm$ 7.79 days (range 2-25 days). There were 39 (53%) male, 34 (47%) female babies. 36 (39.3%) neonates having low birth weight (1.5-2.5 kg) however mean weight was 2.55 $\pm$ 0.39 kg (range 1.8-3.6 kg).

Conclusion: Higher rate of meningitis (27.4%) diagnosed in present study shows better diagnostic facilities and on the other hand alarm us to take prompt measures to prevent it.

Key Words: Neonatal sepsis, Meningitis, lumbar puncture

INTRODUCTION

Infections are a frequent and important cause of neonatal and infant morbidity and mortality. As many as 2% of fetuses are infected in utero and upto 10% of infants have infections in the 1st month of life[1]. Newborns infants are less capable of responding to infection because of or more immunologic deficiencies. Co-existing conditions often complicate the diagnosis and management of neonatal infections[2].

Sepsis is the commonest cause of neonatal mortality. It is responsible for about 30-50% of the total neonatal deaths in developing countries. It is estimated that upto 20% of neonates develop sepsis and approximately 1% die of sepsis related causes[3].

Neonatal sepsis, also termed as sepsis neonatorum, refers to a group of physical and laboratory findings that occur in response to invasive infection within the first 30 days of life[4]. Neonatal infections currently cause 1.6 million deaths in developing countries. Resistance to commonly used drug is emerging as the most important problem globally. Therefore normal use of antibiotic is a priority to reduce the burden of treatment failure[5].

World Health Organization estimates that globally there are about 5 million neonatal deaths a year[6]. Ninety eight per cent of them are occurring in developing countries between 11-88/1000 live birth in Asia, Africa and Latin America. It is generally assumed that neonatal mortality in developing countries is under reported by at least 20%[7]. The most common causes of death in neonatal period are infections (32%) including septicemia, meningitis, pneumonia, diarrhea and neonatal tetanus followed by birth asphyxia (29%) and prematurity (24%)[8]. Neonatal meningitis has poor prognosis with case fatality rate of 15-25% and morbidity rates of 25% or more.

MATERIALS AND METHODS

This descriptive study was carried out in the Department of Paediatric Medicine, Nishtar Hospital, Multan from January 2012 to December 2012. A total of 73 newborns were included in the study.

RESULTS

In present study, 73 neonates with sepsis were included, of which 20 (27.4%) neonates were diagnosed to have meningitis. There were 39 (53%) male and 34 (47%) female babies. Out of 20 neonates who developed meningitis, 11 (55%) were male and 9 (45%) were female. There were 11 (55%) delivered vaginally and 9 (45%) neonates were delivered by caesarean section. Other results are shown in following tables.

Table No.1: Age distribution (n=73)

Ade (days)	No. of children	%age
1-7	38	52.1
8-14	08	11.0
15-21	17	23.23
22-28	10	13.7

Table No.2: Weight distribution (n=73)

Weight (kg)	No. of children	%age
1.5-2.5	36	49.3
2.6-3.5	35	47-9
> 3.5	02	02.8

Table No.3: Age distribution in relation to meningitis (n=20)

Ade (days)	No. of children	%age
1-7	0	0
8-14	02	10.0
15-21	10	50.0
22-28	08	40.0

Table No.4: Persons conducting delivery in relation to meningitis (n=20).

Person	No. of newborns with meningitis	%age
Dai	04	20.0
LHV	01	05.0
Doctor	15	75.0

Table No.5: Weight distribution in relation to meningitis (n=20)

Weight (kg)	No. of children	%age
1.5-2.5	06	30
2.6-3.5	12	60.0
> 3.502	10.0	50.0

DISCUSSION

Neonatal sepsis is one of the commonest causes of neonatal mortality in the developing world[9]. The incidence of meningitis is usually a fraction of the number of infants with sepsis, varying in different settings from 1/4th to 1/3rd. the mortality rate is high, varying in some series from 15-50%[10].

Present study was conducted to determine the frequency of meningitis in newborns presenting with neonatal sepsis to Nishtar Hospital, Multan. Majority of neonates 38 (52% were in their first week of life. Male were 39 (53%) while females were 34 (47%). Almost half (49.3%) of the neonates had birth weight < 2.5 kg. our study results coincide with local and international literature. Waheed et al in a study reported the male to female ratio 2.1:1. Low birth weight babies were (62.6%). There were 62.3% cases of early onset (< 7 days) sepsis and 37.7% cases of late onset (> 7 days)[11]. It was reported in a study that out of 109 episodes of blood culture proven sepsis 68 presented as early onset and 41 as late onset sepsis in their study[12].

In present study, frequency of meningitis was 27.4%, slightly higher than that of results from international studies. However, different studies have reported variable rates of meningitis. Our study results coincide most of the study results in international literature. Rasul et al have reported 6-3% incidence of meningitis in the study[5]. The incidence of meningitis was reported to be 3/1000 liver births[13]. In an Indian study it is reported that among babies with suspected clinical sepsis, 3.3% were diagnosed to have meningitis[14]. Fida et al have reported that among 35 full term neonates with suspected sepsis, meningitis was diagnosed to have 20%[15]. Davies and Rudd have reported that the incidence of bacterial meningitis is approximately 0.3/1000 live births in industrialized countries[16].

The incidence of neonatal meningitis is difficult to accurately determine because of testing limitations. However, a recent study reported estimated incidence of neonatal meningitis from 0.48/1000 to 2.4/1000 live births[17]. The reported incidence of neonatal sepsis varies from 7.1-38/1000 live births in Asia[18]. Another recent publication that looked at neonatal infections in Africa and South Asia found an incidence of neonatal meningitis ranging from 0.8-6.1/1000 live births[19]. Jiang et al have reported that meningitis developed in 11.8% of patients in early onset and 5.2% in late onset group[20]. Caserta has concluded that meningitis occurs in about 15% of neonates with sepsis and occasionally occurs in isolation[21].

It is revealed that near 25% of the risks are associated with development of meningitis in sepsis patients[22]. Phiri et al reported that of the 784 suspected cases of sepsis, 202 were diagnosed to have meningitis[23]. Ray et al revealed that the statistically estimated maximum risk of meningitis in suspected early sepsis in only 1.1% and that in blood culture proved sepsis is 0-16.3%[24]. Visser and Hall suggested that neonatal septicaemia can coexist with meningitis in up to 30% of patients[25]. Wiswell eta al have reported that the incidence of meningitis in the first 72 hours of life was 0.25/1000 live births[26]

CONCLUSION

Higher rate of meningitis (27.4%) diagnosed in present study shows better diagnostic facilities and on the other hand alarm us to take prompt measures to prevent it.

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