

The Bacteriological Spectrum of Neonatal Sepsis: Retrieval of Culturable Bacteria.

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ABSTRACT

Background: Neonatal sepsis is a foremost cause of mortality and morbidity. The common factors leading to vulnerability of neonates to infections are low birth weight, duration of time spent in hospital, invasive procedures, surgery and colonization of bacteria from hospital environment.

Method: The present study was conducted in the department of Microbiology of Maharishi Markandeshwar institute of medical science and research, Mullana, intended to characterize the microbial spectrum involved in sepsis. Out of total 325 cases 110(33.85%) were culture positive.

Result: Out of 110 samples 105(95.45%) were bacterial isolates. Incidence of Gram positive and Gram negative isolates were 38(35.51%) and 69(64.49%) respectively. Acinetobacter spp 26(37.68%) remained predominant isolate followed by Staphylococcus aureus 23(60.53%).

Conclusion: neonatal septicemia is major cause of mortality and morbidity and has to be dealt with utmost care.

Keywords: sepsis, bacterial isolates, gram positive, gram negative.

INTRODUCTION

Septicemia continues to be a major threat for neonates globally. According to WHO every year there are about 5 million neonatal deaths due to neonatal infections and 98% of them occur in developing countries¹. The understanding of bacteriological profile is of immense help in saving the life of neonates with septicemia.

METHOD

The current study was conducted on 325 blood samples of clinically suspected neonatal septicemic cases, in the department of Microbiology, MMIMSR, Mullana, Ambala. Ethical clearance was taken from ethical committee. Isolation and identification was done by standard microbiological method.

RESULT

Out of total 325 cases of neonatal septicemia the culture positive cases were 110 (Table I), predominance was of bacterial isolates 105(95.45%) as compared to fungal isolates 5(4.55%)(Table II). Incidence of gram negative was 69(64.49%) and gram positive was 38(35.51%). Acinetobacter spp (37.68%) was found to be the predominant pathogen followed by Staphylococcus aureus 23(60.53%) (Table III).

DISCUSSION

Neonatal septicemia is a clinical syndrome characterized by systemic signs of infection and accompanied by bacteremia in the first month of life. According to WHO, in 2015 about 45% of deaths among children under five were newborns, in a year neonatal deaths were about 5 million, developing countries reported 98%. The

current study revealed amongst a total of 325 clinically suspected cases of neonatal septicemia cases, blood cultures from 110(33.85%) (Table I) were positive, which was in accordance with Roy I et al² and Kayange.N et al³.The range of organisms causing neonatal sepsis changes over time and varies from place to place even within the same hospital. Aetiological agents for neonatal septicemia can be bacterial and fungal .The data of the present study (Table II) showed bacterial isolates (95.45%) were more than fungal isolates(4.55%) similar to A. Bhattacharjee et al⁴, Arora.U et al⁵.(Table III) Demonstrates the predominance of gram negative (64.49%) over gram positive isolates(35.51%). In gram positive isolates majority was staph. aureus 60.53% followed by staph. epidermidis 21.05% , Enterococcus18.42%. Similarly,in gram negative organism leading organism was Acenitobacter sp (37.68%)followed by Klebsiella pneumoniae(28.98%), Escherichia coli(14.49%), Citrobacter sp(10.14%), Pseudomonas sp(8.69%), Enterobacter(2.89%) and Alcaligenes faecalis (1.44%) .The correct and timely identification of infectious means and their sensitivity pattern of antibiotics are essential to guide the clinicians regarding both the empirical and definitive treatment.

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TABLE I: Rate of Culture positive cases in clinically suspected cases of neonatal septicemia:

Total no. Clinically suspected neonatal septicemia cases	Total no. Of culture positive cases
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325	110(33.85%)
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TABLE II: Distribution of Bacterial and Fungal isolates:

TOTAL NO. OF CULTURE POSITIVE	BACTERIAL GROWTH	FUNGAL GROWTH
110	105(95.45%)	5(4.55%)

Table III- Distribution of bacterial isolates

Total number of bacterial isolates	Gram positive isolates		Gram negative isolates	
	Organism	N=38(35.51%)	Organism	N=69(64.49%)
107	Staphylococcus aureus	23(60.53%)	Acenitobacter sp	26(37.68%)
	Staphylococcus epidermidis	8(21.05%)	Klebsiella sp	20(28.98%)
	Enterococcus	7(18.42%)	Escherichia coli	10(14.49%)
			Pseudomonas sp	6(8.69%)
			Citrobacter sp	4(5.8%)
			Enterobacter	2(2.89%)
			Alcaligenes faecalis	1(1.45%)