

ORIGINAL ARTICLE

# Neonatal Meningitis At Dr Pirngadi General Hospital Medan (1972 - 1980)

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## Abstract

*A retrospective study was done on 25 cases of Neonatal Meningitis from 1972 up to 1980 at Dr. Pirngadi Hospital Medan. Their age variation was from one day to one month. The early prominent symptoms were refusal of feeding in 23 cases (92%), decrease of consciousness in 21 cases (84%), fever in 16 cases (64%), convulsion in 15 cases (60%) and vomiting/diarrhoea in 8 cases (32%).*

*Diagnosis was based on clinical symptoms and Cerebrospinal fluid examination.*

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### Introduction

Neonatal meningitis is a condition of inflammation of the meninges, occurring in the neonatal period. This condition is always associated with maternal factors, micro-organism in amniotic fluid, birth passage and nosocomial infection (Vaughan, 1979).

The early symptoms are always obscure, and therefore is the diagnosis always too late. It is important to consider lumbar

puncture if the baby does not look well so that early diagnosis can be done.

The most common etiological agents are *Escherichia coli* and group Beta *Streptococcus haemolyticus*, though, recently *Salmonella* species has been found frequently as the cause in developing countries (Samsu-widayat, 1980). The mortality rate is still high (see table 1).

Table 1 : *Mortality rate of Neonatal Meningitis.*

No.	Author	Year	Place	%
1.	Woon (1980)	1971 - 1978	Singapore	79
2.	Syamsu-widayat (1980)	1976 - 1977	Jakarta	58
3.	Tri Ruspandji (1980)	1976 - 1977	Jakarta	48
4.	Vaughan (1979)	1979	Philadelphia	30-60

The purpose of this study is to find out the prominent clinical manifestation of Neonatal

Meningitis at Dr. Pirngadi General Hospital Medan.

### Materials and methods.

We did a retrospective study on baby's aged one day to one month, who were hospitalized from 1972 to 1980 in the Pediatric Ward of Dr. Pirngadi General Hospital Medan.

The diagnosis was based on clinical symptoms and CSF examination. The early prominent symptoms were : refusal of feeding, decrease of consciousness, fever and convulsion. While less frequent features were : vomiting/diarrhoea, jaundice, respi-

ratory distress, abdominal distention, bulging of fontanel, and neck stiffness.

Changes of CSF, varying from xanthochromic cloudy to purulent, and the number of cells of more than 100/mm<sup>3</sup> with neutrophile predominance, confirm the diagnosis of Neonatal Meningitis. We did not perform either the gram stain smear examination or culture of the CSF. The policy of treatment of Neonatal Meningitis was to give broad spectrum antibiotics, namely the combination of either Ampicillin and Chloramphenicol or Ampicillin and Gentamycin.

### Results

During the period 1972 - 1980 we found 33,111 babies hospitalized with the age ranging from one day up to 1 month, 25 of which were suffering from Neonatal Méni-

ngitis. The youngest case was one day old and the oldest one month. The distribution of cases according to incidence per year is seen in Table 2.

Table 2 : *Distribution of Cases per Year*

Year	Total of patients	Number of cases	%
1972	5033	2	0,039
1973	3985	2	0,05
1974	3537	2	0,05
1975	3186	4	0,12
1976	3233	1	0,03
1977	3403	—	—
1978	3349	1	0,029
1979	3639	1	0,02
1980	3746	12	0,3
	33111	25	0,638

In table 3 we can see the early prominent symptoms of the patients.

Table 3 : *Early Prominent Symptoms*

Clinical Findings	Number of cases	%
Refusal of feeding	23	92
Decrease of consciousness	21	84
Fever	16	64
Convulsion	15	60

Less frequent features, is listed in Table 4.

Table 4 : *Less Frequent Features*

Clinical Finding	Number of cases	%
Vomiting / diarrhoea	8	32
Jaundice	8	32
Respiratory distress	6	24
Abdominal distention	5	20
Bulging of fontanel	4	16
Neck stiffness	3	12

According to the age group we found that most cases were in the group of 0 – 7 days (44%) followed by those in the age of 16 – 23 days (Table 5). Twenty one cases were male and 4 were female neonates.

Table 5 : *Age and Sex Incidence.*

Age	Female	Male	Total	%
0 – 7 days	2	9	11	44
8 – 15 days	1	5	6	24
16 – 23 days	–	2	2	8
24 – 30 days	1	5	6	24
	4	21	25	100

Out of the 25 cases, 7 were low birth weights (Table 6).

Table 6 : *Distribution of Birth Weight.*

Birth weight / Gram	Number of cases	%
1500 – 2500	7	28
2501 – 3500	14	56
More than 3500	4	16

The colour of CSF was xanthochromic 10.000/mm<sup>3</sup> with a predominance in the cloudy up to purulent, and the number of 100 – 5000/mm<sup>3</sup> group (Table 7). cells ranged between 100 to more than

Table 7 : *Number of Cells in CSF.*

Number of cells	Number of cases	%
100 – 5000	20	80
5000 – 10000	3	12
More than 10000	2	8

The mortality rate in this study was 64% (Table 8).

Table 8 : *Mortality*

Results of treatment	Number of cases	%
Recovery	9	36
Dead	16	64
Total	25	100

### Discussion

In our study we found that the prevalence of Neonatal Meningitis was 25 in eight years. In Kandang Kerbau Hospital Singapore, the prevalence was 39 in seven years (Woon, 1980).

We found that the prevalence was the highest in 1980. What could be the cause? Did the cases not come to hospital or were we unable to detect the diagnosis?

The early prominent symptoms were refusal of feeding (92%), decrease of consciousness (84%), convulsion (60%) and fever (64%). Other less frequent features were: jaundice (32%), vomiting/diarrhoea (32%) respiratory distress (24%), abdominal distention (20%), bulging of fontanel (16%) and neck stiffness (12%).

All the features were also found by other investigators in Kandang Kerbau Hospital Singapore (Woon, 1980). According to them the early prominent symptom was respiratory distress (66,7%). They found 23 cases with low birth weight out of 39 babies who were hospitalized. We know that in low birth weight infants the respiratory centre is not fully developed yet.

In our study 7 cases were of low birth weight (Table 6) and 5 of them were suffer-

ing from respiratory distress. Most of our cases were in the group of 0 - 7 days. We found 21 (84%) males (Table 5), while in Kandang Kerbau Hospital there were 22 males (56,4%) (Woon, 1980).

The mortality in our cases was 64% (Table 8), Woon (1980) found a mortality rate of 79%, Vaughan (1979) 30 - 60%, Syamsuwidayat (1980) 58% and Tri Ruspan-dji (1980) 48% (Table 1). Woon (1980) found a high mortality rate because in his study almost all of the cases were low birth weight infants. In our study the mortality was associated with dehydration, abdominal distention, low birth weight and respiratory distress.

According to the literature mortality depends on: 1. onset and manner of disease; 2. etiologic agent; 3. degree of prematurity of the infant; 4. presence and severity of associated disease; 5. particular nursery of newborn intensive care unit;

Nine of our cases recovered. Our criteria for recovery were decrease number of cells in the CSF (less than 50/mm<sup>3</sup>) with no polymorph nuclear cells and absence of clinical manifestation.

### CONCLUSION

1. We found 25 cases of Neonatal Meningitis in eight years.
2. The prominent clinical manifestation were refusal of feeding, decrease of consciousness, convulsion and fever.
3. The mortality is still high (64%).
4. Most of the cases were in the age group of 0 - 7 days.

### REFERENCES :

1. Syamsuwidayat : Salmonella species sebagai penyebab utama Meningitis Purulenta pada anak dan bayi muda usia di bagian Ilmu Kesehatan Anak RS Cipto Mangunkusumo, Jakarta. Medika 6 : 13 (1980).
2. Tri Ruspan-dji : Acute Purulent Meningitis in infant and children. Modern Med. Asia 17 : 35 - 37 (1980).
3. Vaughan V.C. : Sepsis and Meningitis. Nelson Textbook of Paediatric, 11th ed. pp. 473-475 (Igaku Shoin, Japan 1979).
4. Woon, K.Y. : Neonatal Meningitis in Neonatal unit Kandang Kerbau Hospital, Singapore. Singapore Paediat. Soc. 21 : 74 - 76 (1980).