

## ORIGINAL ARTICLE

**Measles Enteritis in Infants and Children**

by

INDRA TAMBOEN, ATAN BAAS SINUHAJI and A.H. SUTANTO

*(From The Department of Child Health, School of Medicine, University of North Sumatera/Dr. Pirngadi Hospital, Medan)***Abstract**

*The incidence, mortality and clinical features of measles enteritis were reported among 6484 infants and children admitted to the Pediatric Ward Dr. Pirngadi General Hospital Medan from 1st January 1987 until 31st December 1988. Of these 6484 children, 2685 suffered from gastroenteritis and 82 from measles. There were 31 cases of measles enteritis (1.2% of all gastroenteritis cases or 37.8% of measles cases). Most of measles enteritis cases (74.2%) were in the age group of 6-24 months and no case was found under six months old. The mortality of measles enteritis with bronchopneumonia and encephalitis was 25.0% while the mortality of measles enteritis with bronchopneumonia was 13.3%. There were no deaths in children just with measles enteritis alone. The overall mortality of measles enteritis with or without accompanying disease was 12.9%. The age specific death rate of measles enteritis was highest (23.1%) in the 13-24 month age group.*

Received : November 6, 1990

**Introduction**

Measles is an acute infectious disease usually affecting preschool children. This disease is spread all over the world with great variations in prevalence, severity and mortality rate. These differences are due to the nutritional status and density of population; the immunization program will interfere with the clinical manifestations of measles. In developed countries, this disease is usually mild with low mortality but in developing countries measles remains a serious problem in children (Phillips, 1983). The main lesions of measles are seen in the skin, nasopharyngeal mucosa, bronchi, gastrointestinal tract and conjunctiva (Phillips, 1983). In developed

countries, serious complications in the respiratory tract and central nervous system are found in a small number of children. In infants, the diarrhea may be accompanied by anorexia and malaise (Kurgman et al., 1977). This diarrhea may also be accompanied by protein losing enteropathy and malabsorption (Dossetor et al., 1977).

The purpose of this study is to report the incidence, mortality and clinical manifestations of measles associated with gastroenteritis in hospitalized infants and children at the Pediatric ward of Dr. Pirngadi Hospital, Medan.

**Materials and methods**

This study was done retrospectively by collecting and reviewing the data obtained from the medical records of patients diagnosed as measles with gastroenteritis, either with or without other accompanying disease. The diagnosis of measles was based on the presence of cough, fever, coryza, accompanied by rash in face, trunk and extremities. Gastroenteritis was diagnosed when the frequency of defecation was three times per day, watery stools, with or without vomiting. The nutritional status were assessed according to the criteria of Seano and Latham (1971);

a. Well-nourished when body weight for age is normal, height for age is normal, and weight for height is normal.

b. Acute malnutrition when weight for age is low, height for age is normal, and weight for height is low.

c. Chronic malnutrition when weight for age is low, height for age is low, and weight for height is low.

d. Past chronic malnutrition when weight for age is low, height for age is low, and weight for height is normal.

Body weight and height was confirmed using charts as recommended by the National Center for Health Statistics (NCHS). It was defined normal when the weight or height was at more than the 50th percentile of NCHS's table. The evaluation of body weight was done after rehydration.

**Results**

From 1 January 1987 to 31 December 1988, 6484 infants and children were admitted to the Pediatric wards of Dr. Pir-

ngadi Hospital, Medan. Of these 6484 hospitalized infants and children, 2685 (41.4%) were with gastroenteritis and 82

(1.2%) with measles. Thirty one patients contracted measles enteritis, thus 1.2% of all gastroenteritis cases, or 37.8% of all measles cases.

The youngest case with measles was 6 months old and the oldest 8 years. In measles enteritis cases the youngest was 10 months, and the oldest 6 years. The predominant age group of cases with measles was 13-24 months (27 cases) followed by the age group of 6-12 months (18 cases). So in other words, 45 (54.9%) patients with measles were found in the age group of

6-24 months, whereas most of patients who had measles enteritis were in the age group of 13-24 months (13 cases) and 6-12 months (10 cases). Thus 23 (74.2%) patients who had measles enteritis were found in the age group of 6-24 months (Table 1).

Out of the measles cases, 11 children (11.4%) had acute malnutrition 68 (82.9%) chronic malnutrition, and 3 (3.7%) past chronic malnutrition. In the cases of measles enteritis, 26 (83.9%) had chronic malnutrition (Table 2).

Table 1 : *Distribution of cases by sex and age*

Disease	Sex		Age (months)							Total
	M	F	0-6	6-12	13-24	25-36	37-48	49-60	> 60	
Measles	3	4	-	1	1	1	2	-	3	7
Measles enteritis + other accompanying diseases	16	15	-	10	13	2	4	1	1	31
Measles + non enteritis accompanying disease	21	23	-	7	13	13	6	4	1	44
<b>Total</b>	<b>40</b>	<b>42</b>	<b>-</b>	<b>18</b>	<b>27</b>	<b>17</b>	<b>10</b>	<b>5</b>	<b>5</b>	<b>82</b>

M = male

F = female

Table 2 : *Nutritional status of the cases*

Disease	Nutritional status			Total
	Acute-malnutrition	Chronic-malnutrition	Past-chronic malnutrition	
Measles enteritis	0	8	0	8
Measles enteritis + bronchopneumonia	2	11	2	15
Measles enteritis + bronchopneumonia + encephalitis	1	7	0	8
<b>Total</b>	<b>3</b>	<b>26</b>	<b>2</b>	<b>31</b>

Table 3 : *Outcome of cases*

Disease	Outcome			Total
	Recovered	Discharged	Died (%)	
Measles enteritis	4	4	0	8
Measles enteritis + bronchopneumonia	4	9	2 (13.1)	15
Measles enteritis + bronchopneumonia + encephalitis	2	4	2 (12.0)	8
<b>Total</b>	<b>10</b>	<b>17</b>	<b>4 (12.9)</b>	<b>31</b>

The accompanying diseases were bronchopneumonia in 62 cases (75.6%), and gastroenteritis in 31 cases (37.8%). Of these 31 patients with measles enteritis 4 cases died (12.9%) caused by the other accompanying diseases. The mortality of

cases accompanied by gastroenteritis and bronchopneumonia died while no death was found among measles enteritis cases without other accompanying diseases (Table 3).

The time to recover from diarrhea could not be evaluated in 21 cases, 17 cases were discharged against medical advice and 4 cases died, in whom diarrhea still existed at the time of discharge or death. Most of them recovered within 5 days of treatment (Table 4). The mean duration of hospitalization of measles enteritis was 2.5 days; for measles with gastroenteritis and bronchopneumonia 5 days; and for measles with gastroenteritis and bronchopneumonia and

encephalitis 11.5 days (Table 4).

The mortality of measles cases was 15.9%. The highest mortality rate (25.9%) was in the age group of 13 to 24 months while no case died in the age group of older than 4 years (Table 5). In measles enteritis cases, the highest mortality was found in the same age group, namely 23.1% and no cases died in the age group of older than 2 years (Table 5).

Table 4 : *Duration of hospitalization*

Duration (day)	Disease			Total
	Measles enteritis	Measles enteritis + bronchopneumonia	Measles enteritis + bronchopneumonia + encephalitis	
- 1	1	-	-	1
- 2	1	-	-	1
- 3	2	2	-	4
- 4	-	1	-	1
- 5	-	-	-	-
- 6	-	-	-	-
- 7	-	-	-	-
-14	-	1	1	2
15	-	-	1	1
Mean (day)	2.25 (4 cases)	5 (4 cases)	11.5 (2 cases)	5.2 (10 cases)

Table 5 : *Mortality of cases by age*

Age months	Measles enteritis		All cases of measles	
	N	Died (%)	N	Died (%)
0 - 6	1	-	-	-
7 - 12	10	1 (10.0)	18	3 (16.7)
13 - 24	13	3 (23.1)	27	7 (25.9)
25 - 36	2	-	17	2 (11.8)
37 - 48	4	-	10	1 (10.0)
49 - 60	1	-	5	-
60	1	-	5	-
Total	31	4 (12.9)	82	13 (15.9)

### Discussion

Thirty one of 82 patients with measles had measles enteritis. This was much lower than that reported by Nasution, 1982 (52.1%) and Hamid, 1984 (62.7%). Most of the patients (74.2%) were in the age group of 6-24 months, and none was younger than 6 months. Hamid (1984) reported the age group of 2-3 years as predominant, and the youngest was 5 months old. Phillips (1983) stated that gastrointestinal symptoms such as diarrhea and vomiting might be more frequently found in infants and younger children. In our study all those patients with measles had malnutrition, mostly chronic malnutrition (82.9%). It differed from that reported by Hamid (1984), who found 67.1% of measles patients and 72.7% of measles enteritis patients with protein calorie malnutrition. This might be due to the differences in the criteria used to assess the nutritional status. In a recent report, the mortality of patients with measles and measles enteritis seemed to decrease. The

mortality of measles at Dr. Pirngadi Hospital Medan was 26.1% in 1980 (Rangkuti et al., 1980); 26.6% in 1982 (Nasution et al., 1982) and 20.0% in 1984 (Hamid et al., 1984). In Manado the mortality was 13.8% (Munir et al., 1982). The mortality of measles with gastroenteritis at Dr. Pirngadi Hospital Medan was 28.6% in 1982 (Nasution et al., 1982) and 20.5% in 1984 (Hamid et al., 1984). In this study they were 15.9% and 12.9% respectively. Measles enteritis associated with other diseases such as bronchopneumonia, and encephalitis tends to have a greater mortality than just measles enteritis alone. The period of hospitalization was also longer in measles cases accompanied by more than one disease. Out of 82 cases with measles, the highest mortality (age specific death rate) was in patients of 13-24 months old. Whereas, Daulay et al., (1983) reported that the highest mortality (age specific death rate) was 39.3% in the age group of 1 year.