

## ORIGINAL ARTICLE

## Measles Enteritis in Gunung Wenang General Hospital Manado

by

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### Abstract

*The incidence and mortality rate of 48 measles enteritis cases has been evaluated retrospectively, during the period of January 1986 to December 1989.*

*Children under 2 years old were 21 cases (43.8%), between 2-5 years old 16 cases (33.3%) and more than 5 years old 11 cases (22.9%).*

*Nutritional status based on the classification of Wellcome Trust Working Party revealed normal 33 (68.8%), moderate malnutrition 12 (25%) and severe malnutrition 3 cases (6.3%).*

*Diarrhea and mild dehydration was found in 36 (75%), moderate dehydration 10 (20.83%) and severe dehydration 2 cases (4.2%)*

*Six (12.5%) out of 48 cases had had measles vaccination. Twenty four cases (50%) of measles enteritis had other complications. The mortality rate was 2.1% comprising one patient, who suffered from measles enteritis with severe dehydration, bronchopneumonia, encephalitis and severe malnutrition.*

### Introduction

Measles is a R.N.A. virus classified in the paramixo-viridae family. The character is acute, highly contagious and has a world wide distribution with a great variety of prevalence and mortality rate.

In developed countries, the disease usually runs in mild forms with a low mortality rate, but on the other hand, measles is still one of the main child health problems with a high case fatality rate in developing countries (Nasution et al, 1984).

Diarrhea, often associated with measles maybe a predisposition to the infection in the epithelial tissue of the bowel. Measles and diarrhea by themselves have a mortality of their own. But, if they exist simultaneously, the mortality rate is 4 times greater than the additive effect of each one (Koster et al, 1981; Kumate and Isibasi, 1986).

In Bangladesh, Koster et al (1981) observed that diarrhea was the most impor-

tant complicating factor associated with death in measles of children under 5 years old.

The mortality rate of measles enteritis was reported variedly, in Bangladesh 4% (Shahid et al., 1983), Medan 17.6% (Nasution et al., 1984), Surabaya 14.7% (Zaeni et al., 1986) and Manado 5.8% (Rampengan, 1989).

Some stated that the high case fatality rate of measles enteritis is influenced by the nutritional status, especially severe malnutrition (P.E.M.). The children with measles associated with diarrhea, showed the nutritional loss greater than those without diarrhea (Kumate and Isibasi, 1986).

The purpose of this study is to evaluate the mortality and morbidity rate of measles enteritis and other influencing factors, such as nutritional status and coincidental diseases.

### Materials and methods

This study was carried out amongst the children hospitalized in the Department of Child Health Gunung Wenang General Hospital, from January 1986 until Desember 1989. In this retrospective study, all the recording cards of cases suffering from measles were evaluated. The diagnosis of measles was based on fever, conjunctivitis, coryzae, Koplik spot and confluent rash over the face and body during two days. Diarrhea was defined if the

patient has passed more than three times of watery stools/day.

The nutritional status was assessed based on the Wellcome Trust Working Party:

- Normal : body weight of 80% or more of standard
- Moderate malnutrition : body weight of 60-80% of standard without edema.
- Severe malnutrition : body weight less than 60% of standard or 60-80% standard with edema.

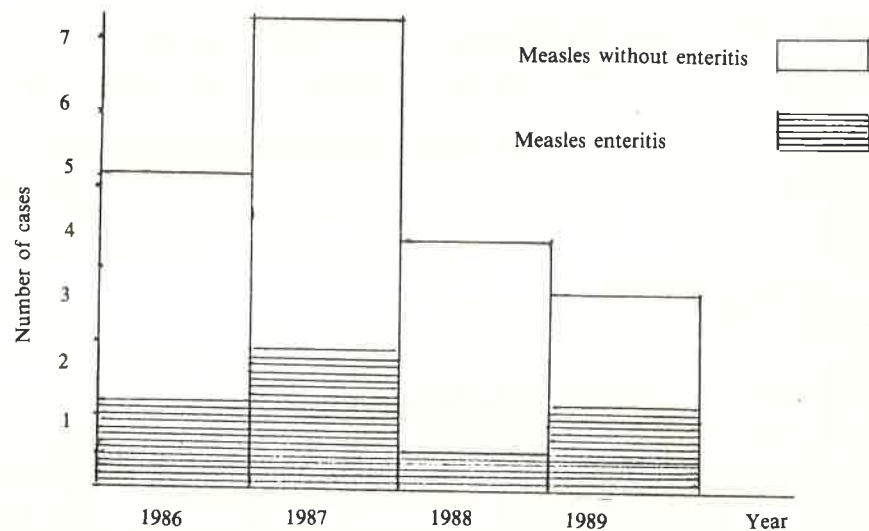
### Result

In this four-year-period, 176 cases of measles had been hospitalized. Of these, 48 cases (27.27%) was diagnosed as measles enteritis (Figure 1).

Table 1 shows that the age of measles enteritis ranged from 5 months to 11 years and 10 months. Predominantly occurred in children less than 2 years of age i.e. 21 cases (43.8%), while children of 2-5 years were 16 cases (33.3%) and children of more than 5 years were 11 cases (22.9%). Nor-

mal nutritional status were found in 33 cases (68.8%), moderate malnutrition in 12 cases (25%) and severe malnutrition in only 3 cases (6.8%).

Table 1 also represents that the gradation of dehydration of measles enteritis in this study varied but most of these patients were assessed as having mild dehydration; 10 cases (20.8%) with moderate dehydration and 2 cases (4.8%) with severe dehydration.



1986 : 12 cases measles enteritis of 42 measles patients.  
 1987 : 19 cases measles enteritis of 73 measles patients.  
 1988 : 5 cases measles enteritis of 34 measles patients.  
 1989 : 12 cases measles enteritis of 27 measles patients.

Figure 1 : Number of measles and measles enteritis cases from 1986 - 1989

Table 1 : Distribution of cases by age, degree of dehydration, nutritional status and other complication of measles enteritis

Age	Dehydration	Nutritional status						de a t h	Total %
		measles enteritis			measles enteritis + other complication				
		Normal	Moderate	Severe	Normal	Moderate	Severe		
< 6 month	mild	1							1 (2.1)
	moderate	1							1 (2.1)
	severe								
6-12 month	mild	3	1		4		1		9 (18.1)
	moderate	2							2 (4.2)
	severe								
1- 2 year	mild	2			1	1			4 (8.3)
	moderate		1		2	1			4 (8.3)
	severe								
2- 5 years	mild	6			4	2			12 (25.0)
	moderate	1	2				1		3 (6.3)
	severe								1 (2.1)
5-10 years	mild	4			2	3			9 (18.7)
	moderate								
	severe						1	1	1 (2.1)
10-15 years	mild					1			1 (2.1)
	moderate								1 (2.1)
	severe								
T o t a l		20 41.7%	4 8.3%		13 27.1	8 16.7%	3 6.3%	1	48 100%

From five cases (10.4%) who had had measles vaccination, one suffered from measles enteritis + bronchopneumonia, while from 43 cases (89.6%) who never had vaccination, 23 (47.9%) of non

immunized cases had measles enteritis with other complications (Table 2). The mortality of measles enteritis with or without other complication is seen in table 3.

Table 2 : *Distribution of cases by age, immunization status and other complications in measles enteritis*

Age	Measles enteritis		Measles enteritis + Other complication		Total
	Non vaccination	Vaccination	Non vaccination	Vaccination	
< 6 month	2				2
6 - 12 month	6		5		11
1 - 2 years	1	1	6	1	8
2 - 5 years	8	1	6	1	16
5 - 10 years	8	1	6		10
10 - 13 years			1		1
Total	20	4	23	1	48

Table 3 : *The mortality of measles enteritis with or without other complications*

Diagnosis	Total	Mortality
Measles enteritis	24	—
Measles enteritis + bronchopneumonia	18	—
Measles enteritis + bronchopneumonia + P.E.M.	1	—
Measles enteritis + pleural effusion	1	—
Measles enteritis + bronchopneumonia + encephalitis	2	—
Measles enteritis + bronchopneumonia + encephalitis + P.E.M.	2	1 (50%)
<b>T o t a l</b>	<b>48</b>	<b>1 (2.08%)</b>

## Discussion

Measles endemic over most of the world. The morbidity rate decreased in recent decades, which is exactly related to measles vaccination.

Sunoto (1989) found that measles immunization could decrease the morbidity of diarrhea. Measles immunization program in Indonesia started in 1984.

Our study showed that the number of cases increased in 1987 compared to 1986, 1988 and 1989. This finding is similar to that described by Behrman (1987), that the epidemic tended to occur irregularly, appearing in large cities at 2 to 4 years interval.

Sunoto (1989) found that measles can cause two kinds of diarrhea, enteritis occurs 1-4 weeks before and 4-26 weeks after rash. As seen in our study that all of the cases developed diarrhea within one week before and after rash.

Some authors reported that measles often attacked infants and young children (Behrman, 1987; Nasution, 1989). In this study, measles enteritis occurred predominantly in cases of less than 2 years old. It was due to the fact that the children younger than 2 years had poor immunologic factors, especially S Ig A. In infants, the acquired immunity transplacentally from mothers who had measles, is usually complete for the first 4 to 6 months of life and disappears at a variable rate (Behrman et al., 1987).

Five patients in our study had been vaccinated previously and then suffered from

measles enteritis. Many factors might influence this condition, such as inadequate dose of vaccine, miscarried of the cold chain, immunologic factors etc.

Body weight loss usually occurred in the acute phase of measles and might have also direct action on the intestinal mucosa. A common finding of a measles episode complicated with diarrhea, is a 10% loss of weight (Kumate and Isibasi, 1986).

Impairment of the intestinal mucosa during the acute phase of measles can aggravate protein loss and intolerance to lactose in malnourished children (Axton, 1971); Dossetor and Whittle, 1975). Interaction between nutrition and infection can increase the morbidity and mortality rate. Measles infection was also known reducing the systemic immune defence (Koster et al, 1981). Malnourished children usually have humoral and cellular immunologic damage.

The mortality rate of measles enteritis with bronchopneumonia + malnutrition + encephalitis is still high. Nasution et al (1984) reported the mortality rate of 66.7%; Zaeni et al. (1986) found 83.3%. While in this study was 50%. The overall mortality in this study was only 2,1%. This lower mortality rate might be due to the fact that the number of our patients who had severe malnutrition and dehydration was smaller.

Therapy of diarrhea in measles is not different with the management of single diarrhea.

## REFERENCES

1. AXTON, J.H.: Measles a protein loosing enteropathy. *Br. med. J.* 3: 79-80 (1975).
2. BEHRMAN, R.E.; VAUGHN, V.C. : Nelson W.E.: *Nelson Textbook of pediatrics*; 13th ed, pp. 655-658 (W.B. Saunders, Philadelphia 1987).
3. DOSSETOR, J.F.E.; WHITTLE, H.C.: Protein Loosing Enteropathy and Malabsorption in Acute Measles Enteritis. *Br. med. J.* pp. 592-593 (1975).
4. KOSTER, F.T.; CURLIN, G.C.; AZIZ, K.M.A.; HAQUE, A.: Synergistic impact of measles and diarrhea on nutrition and mortality in Bangladesh. *Bull. Wld. Hlth. Org.* 99 (6), pp 901-908 (1981).
5. KUMATE, J.; ISIBASI, A.: Pediatric diarrheal diseases. A global perspective. *Pediat. infect. Dis.* 521-528 (1986).
6. NASUTION, I.K.; SUFRIAN, B.; SIREGAR, H.; SUSANTO, A.H.: Diarrheal disease associated with measles in infants and children. *Pediatr. Indones.* 24 : 104-109 (1984).
7. RAMPENGAN, T.H.: Diare pada morbili. *Medika* 8 (15): 743-747 (1989).
8. SHAHID, N.S.; RAHMAN, As. M.M.; AZIZ, K.M.A.; FARUGUE, A.S.G.: Beliefs and treatment related to diarrheal episodes reported in association with measles. *Trop. Geogr. Med.*, 35 (2): 151-156 (1983).
9. SUNOTO : Upaya menurunkan morbiditas diare. Naskah Lengkap Pertemuan Ilmiah Berkala Badan Koordinasi Gastroenterologi Anak Indonesia (PIB-BkGai) ke XI, Jakarta, 29 Juni-1 Juli (1989).
10. ZAENI, I.; MOEIN, M.N.; DARMOWANDORO W.; S. SOEGENG: Gastroenteritis pada penderita campak. Naskah lengkap Pertemuan Ilmiah Berkala ke-X Badan Koordinasi Gastroenterologi Anak Indonesia tanggal 20-22 Nov. 1986, Solo.