

CLINICAL OUTCOME IN MEASLES PATIENTS HOSPITALIZED WITH COMPLICATIONS

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Background: Measles is a highly communicable viral illness and is common cause of childhood mortality and morbidity. Keeping in view the high prevalence of measles in the developing world, we carried out this study to look into the complicated measles cases and clinical outcome in patients admitted in children ward of Ayub Teaching Hospital. **Methods:** Detailed history and physical examination of all the hospitalized patients with complication of measles were recorded in a proforma. Immunization and nutritional status of each admitted patient was assessed and the clinical outcome of measles was compared with demographic profile. **Result:** one hundred thirty six hospitalized patients with complications of measles were studied. There was 60.3% male and 57.3% of patients were vaccinated against measles. Malnourished patients were 71.35% and had longer hospital stay (>5 days). Pneumonia (39.7%) and diarrhoea (38.2%) were the commonest complications. Seven children died and encephalitis (57.1%) was the commonest cause of death.

Conclusion: the most common complications of measles are pneumonia and diarrhoea with dehydration requiring admission. Malnutrition results in more complications and longer hospital stay. Mortality is significantly associated with encephalitis.

Key words: Diarrhoea, Measles, Encephalitis

INTRODUCTION

Measles is a communicable viral illness.¹ Its incidence in childhood varies from 58% in epidemic to 10–15% in endemic form.² Globally about 40 million cases of measles occur every year out of which 7.77×10^5 death occur due to measles, including Pakistan account for 66% of these death.³ Measles is a common cause of immunosuppression which leads to complications.⁴ One out of 20 children with measles gets Pneumonia⁵ and 1 out of 1000 gets encephalitis.¹ out of these 15% die and 25–35% are left with permanent neurological sequelae.¹ Children are at increased risk of dying for 9 year after their measles due to impaired immunity.¹ The world summit of children has set a goal of 90% reduction of measles cases and 95% reduction of measles deaths. Compared to pre-vaccine era⁶ Pakistan has single dose of Measles vaccination (at 9 months age) coverage of 57% from 2001⁷ to 2002⁸. Some countries like Iran, Syria, and U.A.E have started second routine dose of measles at 15 months of age with high coverage of 90% or more.⁹ Low vaccines coverage rate with low vaccine efficacy leads to higher rate of complications, some leading to hospitalization which causes financial burden.¹⁰ Therefore children hospitalized with complications of measles can provide the magnitude of problem and its future preventive strategies.

PATIENTS AND METHODS

This cross sectional analytical study was conducted at children department of Ayub Teaching Hospital from April 2003 to December 2005. Six months to 12 years old children presenting with measles and its

complications were hospitalized. Children under 6 months of age were excluded because they were considered to be protected from measles because of maternal antibodies.⁴ Clinical measles was diagnosed in patients with generalized maculopapular rash, fever of 101 °F or more and having cough, coryza and conjunctivitis. Pneumonia was defined according to WHO criteria of respiratory rate¹¹ or presence of pulmonary infiltrate on chest radiograph. Central nervous system was considered to be involved if there was lethargy, irritability, headache, fits, disorientation or other neurological deficit. The detailed history, physical examination and measles complications including diarrhoea, otitis media, pneumonia and encephalitis were filled in case report form.

Immunization status was assessed by examining the immunization card or parental enquiry on this regard. Weight for age was plotted on national centre for health statistics (NCHS) charts classified as well nourished mild, moderate and severe malnutrition. All patients were given vitamin A orally at admission or on discharge when they were taking and tolerating feed orally. Clinical outcome was compared between males and females, as well as different age groups.

RESULTS

Results are shown in Tables 1–3. A total of 136 hospitalized patients with measles and its complications were studied. As much as 82 (60.3%) patients were male with male to female ratio 1.5:1 (Table-1). Regarding age, 85 (62.5%) patients were less than 5 years of age and 28 (20.5%) patients

were in age range less than 1 year. Vaccination against measles was present in 78 (57.3%) patients. Malnutrition was seen in 97 (71.3%) patients, out of which 56.7% were severely malnourished (Table-1). Fever (100%), rash (100%), cough (95%) and coryza (80%) were the most common presentations. Conjunctivitis and koplik spots were present in 65% and 10% of patients respectively. The most common complications were pneumonia, diarrhoea with dehydration, pneumonia with dehydration and encephalitis in 39.7%, 37.5%, 13.9%, and 8.8% of cases respectively (Table-1). Out of 136 patients, 7 (5.8%) died in hospital, with an overall mortality of 5.14%. Most of the expired patients (80%) were malnourished. Encephalitis (57%) was the leading cause of mortality followed by Pneumonia, diarrhoea with dehydration and Pneumonia with dehydration, 14.2% each (Table-2). Higher mortality was observed in males and age group 1-5 years, 58% each (Table-3).

Table-1: Demographic profile of measles patients (n=136)

Demographic profile	Number	%
Age Categories		
<1 Year	28	20.5
1-5 years	57	41.9
>5<10 years	45	33.0
10-12 years	06	04.4
Sex		
Male	82	60.3
Female	54	39.7
Nutritional Status*		
Well-nourished	39	28.6
Mildly malnourished	10	07.3
Moderately malnourished	32	23.5
Severely malnourished	55	40.4
Vaccination Status (vaccinated)		
< 1 year (n=28)	07	25.0
1-5 years (n=57)	35	61.0
>5 <10 years (n=45)	32	71.0
10-12 years (n=6)	04	66.6
History of Contact		
Yes	85	62.5
No	51	37.5
Hospital Stay		
Upto 5 days	81	59.5
More than 5 days	45	33.0

*Nutritional status (NCHS)

Well-nourished children= 50th and above 50th percentile

Mild malnourished= more than 25th but less than 50th percentile

Moderately malnourished= more than 5th but less than 25th percentile

Severely malnourished= less than 5th percentile.

Table-2: Complications and outcome in Measles Patients (n=136)

Complications	No.	%	Expired (%)	Discharged (%)
Pneumonia without dehydration	54	39.7	1 (14.2)	53 (38.9)
Pneumonia with Dehydration	19	13.9	1 (14.2)	18 (13.2)
Diarrhoea with Dehydration	51	37.5	1 (14.2)	50 (36.7)
Encephalitis	12	8.8	4 (57.1)	8 (5.8)
Total	136		7 (5.14)	129

Table-3: Demographic profile and mortality (n=7)

Parameter		Number of Deaths
Sex	Male	4
	Female	3
Age Group (Years)	<1	2
	1-5	4
	>5<10	1
	10-12	0

DISCUSSION

These results show that a significant number of patients with measles develop complications and require admissions. The majority of patients are six months to 4 years old and this is similar to the studies from Chandigarh¹², West Bengal¹³ and Pakistan¹⁴. Twenty Percent of patients were 6-11 months of age. This is similar to reported 11.5%-40%¹⁴⁻¹⁶ of cases in developing countries, whereas in contrast with the data from developed countries, the incidence is higher in second decade.^{17,18} The males have more incidence of measles as compared to females as reported by Satpathy *et al*¹³ and higher rate of vaccination as compared to females, which is similar to reported by Desai *et al*¹⁶.

In this study the malnutrition rate is high and 71.3% of the children were malnourished and hospital stay of these children were longer as reported by Aurangzeb *et al*.¹⁴ The malnourished children experience more severe measles infection at a greater frequency due to their altered immune response.¹⁹⁻²¹ The incidence of measles in vaccinated patient increase with increasing age, may be due to low efficacy of vaccine, waning immunity with age, improper cold chain maintenance and inadequate vaccination schedule.¹²⁻¹⁸ In our study 57% of patients were vaccinated against measles which is similar to other studies from Islamabad¹⁴, Rawalpindi¹⁵ and Lahore¹⁹. Pneumonia is most common complication in measles which occurs in 16-77% of hospitalized patients⁵⁻¹⁹. It is most common complication similar to reported from south east Asia and Europe.^{13-15,19,22} Diarrhoea is second common complication in contrast to Indian studies^{12,13,16,23} where diarrhoea was the most common complication. Encephalitis is also common complication of measles resulting in mortality (57.1%) among measles patient and results are similar to that reported from Islamabad¹⁴ and Rawalpindi¹⁵. Measles with its complications runs a severe course and can lead to death and one of the important causes of childhood mortality. The reported mortality figures were 1-2% in endemic and 3-3.7% in epidemic situation.²⁴ The case fatality in this study is similar to Islamabad¹⁴ and lower than the other cities of Pakistan^{15,19}. In this study about 57.3% of children had measles vaccination which is similar percentage to study from Islamabad¹⁴ and there is

need to improve measles vaccination coverage at national level. Studies comparing the impact of measles vaccine in one area with similar mortality rate find 40–50% reduction in mortality.²⁵ This indicates the urgency to improve vaccination coverage to protect unvaccinated children and introduce two doses measles vaccination schedule to boost the immunity of vaccinated children.

CONCLUSION

Pneumonia, diarrhoea with dehydration and encephalitis are common complications of measles. Higher mortality is associated with younger age and malnutrition. Encephalitis is the leading cause of mortality.

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