

Risk Factors Associated with Complicated Measles in Children

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ABSTRACT

Aim: To determine the risk factors associated with complicated measles in children.

Study design: It was a descriptive cross sectional study.

Duration: Six months from 1st January 2013 to 30th June 2013.

Settings: Department of Pediatrics, Teaching Hospital D.G Khan Medical College.

Methods: A total of 100 cases fulfilling the inclusion/exclusion criteria were enrolled in the study.

Results: In this study out of 100 patients 54 (54%) were male cases and 46 (46%) female cases. Risk factors in complicated measles were recorded as: malnutrition (56%), nonvaccinated (78%), young age (age less than 5 years) (80%), immune deficiency (cases with history of recurrent infections) (12%) and vitamin A deficiency (cases with bitot spots on bulbar conjunctiva) (3%).

Conclusion: Younger age, poor socio economic status leading to over crowding and malnutrition, nonvaccination and immune deficiency were commonest risk factors of complicated measles.

Keywords: Measles, risk factor, complications, children.

INTRODUCTION

Measles is an acute highly communicable disease is caused by RNA Virus of the genus morbillivirus in the family paramaxoviridae. Clinically measles is characterized by prodromal stage (high grade fever, coryza, conjunctives) and eruptive stage (generalized maculopapular rash which spreads in descending pattern. It is more common in preschool age and spreads through respiratory tract by droplet spray, mostly during the prodromal period (7 days before and 7 days after rash appears)¹. Measles is endemic throughout the world and epidemics occur in spring and winter Season². The global incidence of measles is 39.9 million cases 277,000 deaths and 28 millions disability adjusted life years. In Pakistan, the estimated measles deaths are 81,000 annually among children under 5 year old⁴. Measles is highly associated with complications approximately 30% of reported measles cases have one or more complications which are more common among children <5 years and adult > 20 years old⁵. Common complications of measles are pneumonia, diarrhea, stomatitis, inability to feed, otitis media and encephalitis⁶. Pneumonia is the commonest complication of measles⁷. It is also leading cause of childhood blindness in developing countries⁸. Measles is preventable disease and effective vaccine is available. Vaccine is given subcutaneously at the age of 9-15 months. Antibodies develop in 95% of children vaccinated at the age of 12 months and 98% of children vaccinated at 15 months of age⁹. Passive

immunization with immunoglobulin's is effective for prevention of measles within 6 days of Exposure. Adequate immunization coverage results in considerable reduction of incidence, morbidity and mortality from measles¹⁰. In Pakistan measles vaccine is given at the age of 9 and 12 months. The vaccine coverage for measles in Pakistan is below 60%⁷. The main reasons for failure to vaccinate are lack of information and lack of motivation¹¹. Low coverage and poor vaccine efficiency is strongly associated with out breaks of measles and its complications and hence high morbidity and mortality¹².

MATERIAL AND METHODS

Patients fulfilling the inclusion criteria were selected and informed consent was taken. Complete history, general physical examination and systemic examination were done especially emphasizing the identification of risk factors i.e. age, sex, nutritional status, vaccination status, history of contact with measles and socio-economic status. Relevant investigation including complete blood examination and X-Ray chest were done. Data was analyzed by SPSS-13. Frequencies and percentages of risk factors were determined. As it was a descriptive study, no statistical test was applied.

RESULTS

In present study, 100 patients with measles complications were assessed for risk factors, out of these 54% were males and 46% females. Majority of the patients (66%) belonged to 1-5 years age group. 14% patients were <1 year and only 20% patients

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were more than 5 years of age. Regarding nutritional status, 64% cases had third degree malnutrition, whereas 10% and 2% cases of II and I degree malnutrition respectively were observed as shown in table 2. 78% cases were nonvaccinated while only 22% were vaccinated against measles. History of Contact with measles was present in 81% cases and 9% cases had no contact with measles (Table 4). 56% patients belonged to poor socioeconomic status. 12% cases had history of recurrent infection and 3% cases were noted to have bitot spots means they were had Vitamin A deficiency.

Table 1: Age distribution of patients with measles

Age (years)	n	%age
< 1	14	14
1 – 5	66	66
5	20	20

Fig. 1: Sex distribution of patients with measles

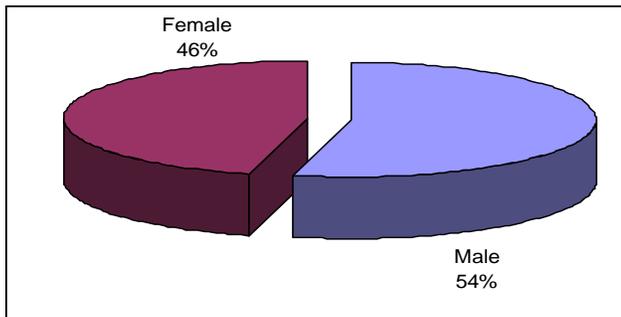


Table 2: Distribution of malnutrition (Z-Scoring system was applied)

Malnutrition	n	%age
I degree	2	2
II Degree	10	10
III Degree	64	64
No malnutrition	24	24

Table 3: Vaccination Status for Measles

Status	n	%age
Vaccinated	22	22
Non Vaccinated	78	78

Table 4: History of Contact with Measles

History	n	%age
Contact with measles	81	81
No contact	19	19

Table 5: Risk factors

Risk factors	n	%age
< 5 years age	66	66
3 rd degree malnutrition	64	64
Nonvaccinated	78	78
Poor socioeconomic status	56	56
Immunodeficiency	12	12
Vitamin A Deficiency	3	3

DISCUSSION

Most of cases of measles in developing countries occur below five years of age, peak age is two years¹³. In a survey in England, Muller, found no sex difference in the incidence of complication¹⁴. In this study most of the patients were of less than 5 years of age and no sex was predominant. Many of the patients had one or more complications. This high rate of complications seen in this study is due to the fact that hospitalized patients were enrolled.

Complications of measles are more common in malnourished children due to both humeral and cell mediated defects of immunity¹⁵. In this study, severe malnutrition was present in 64% of patients while the prevalence of severe malnutrition in the community studies in Pakistan is 33%, showing that measles complications are more common in malnourished children. In this study some of the measles cases were also seen in vaccinated children that may reflect problems in vaccine administration and maintenance of cold chain. It is also possible that single dose of vaccine is not enough for prolonged protection. 81% measles cases had close contact showing that it is an important risk factor for occurrence of measles.

CONCLUSIONS

In this study it was concluded that poor socio-economic status, younger age less than 5 years and malnutrition were important risk factors associated with complicated measles in children. So the following measures are suggested to decrease the complications.

1. Nutrition status should be improved.
2. Proper immunization with two dose regimen against measles.
3. Proper training of health care staff should be done to make an early diagnosis.

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