Original Research Article

A study of factors associated and complications of measles infection in children at a tertiary health care centre

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Abstract

Background: Measles is an important cause of childhood morbidity and mortality. Various sociocultural and physical factors play an important role in measles infection. **Aim and objective:** To study the incidence, factors associated and complications of measles infection in children at a tertiary health care centre **Methodology:** Total 200 patients clinically diagnosed as measles during the study period were enrolled. Data was collected with pre tested questionnaire. Data included sociodemographic profile, detailed history and clinical examination. Patients were investigated for Measles IgM ELISA. **Results:** Mean age of the patient was 2.1 ± 0.9 years. Majority of the patients were in the age group of 1-5 years (57.65%). Male to female ratio was 1.26:1. Among all patients majority of the patients were from SES IV (55.88%). Vaccination coverage was 53.33%. Diarrhea was most common complication contributing 35.88%.
Key Word: measles infection.

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Received Date: 01/02/2019 Revised Date: 10/03/2019 Accepted Date: 14/05/2019
DOI: https://doi.org/10.26611/1061024

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 21 May 2019

INTRODUCTION

Measles is an infectious disease caused by Morbillivirus. It usually affects children1. The disease is characterized by the presence of fever, cough, and coryza, followed by the appearance of a typical rash.[1,2] The disease is generally transmitted by the airborne route. Globally, developing countries show more incidence of measles as compared to developed one. Every year in India, nearly 2.7 million children get measles. Those, who survive, suffer from serious complications including diarrhea, pneumonia, and malnutrition.[3,4] In a systematic review of studies in 12 Indian states published over four decades revealed that the median case fatality ratio was 1.63%.[5] Furthermore, the higher case fatality ratio was reported among under-five children and children from the backward class.[6] In order to reduce the incidence of measles and associated deaths, the Government of India has adopted various strategies like catch-up measles vaccination campaigns for children aged 9 months to 10 years, introduction of second dose of measles. Recently the health ministry has initiated a Measles-Rubella (MR) vaccination campaign in the nation. still we have not achieved the target of at least 90% of children with measles first dose.[7,8] In India, measles continues to remain a major cause of morbidity and mortality in under five children so this study was carried out to find the factors associated and complications in measles infection in children.

AIM AND OBJECTIVE

To study the incidence, factors associated and complications of measles infection in children at a tertiary health care centre

METHODOLOGY

Present study was a prospective study carried out in paediatric department of a tertiary health care centre.

How to cite this article: Sushant Kumar, Vinod Kumar Mishra, Sunil Kumar. A study of factors associated and complications of measles infection in children at a tertiary health care centre. *MedPulse International Journal of Pediatrics.* May 2019; 10(2): 56-58.
http://medpulse.in/Pediatrics/index.php

Inclusion criteria: 1. Children clinically diagnosed as measles (fever with rash lasting for more than 3 days and presence of cough/ coryza and redness of eyes) 2. Children below 12 years.

Exclusion criteria: 1. Children above 12 years 2. Children and parents not willing to participate in the study. Study was approved by ethical committee. A valid written consent was taken from parents of the patient after explaining study to them. Total 200 patients clinically diagnosed as measles during the study period were enrolled. Data was collected with pre tested questionnaire. Data included sociodemographic profile like age, sex, socioeconomic status. Detailed history of the patient was taken from parents. Through clinical examination was done. Patients were investigated for Measles IgM ELISA. It was carried using a commercially available measles IgM ELISA kit. Test results were interpreted as IgM ELISA reactive, non-reactive, or borderline. All the patients were treated symptomatically. Data was analysed with appropriate statistical tests.

RESULTS

Total 200 cases were enrolled for the study. Out of 200 patients 170 patients were reactive for IgM ELISA 4 patients were borderline and remaining 26 were non reactive. We studied 170 reactive patients. Table 1 shows distribution of patients according to various sociodemographic parameters. Mean age of the patient was 2.1 ± 0.9 years. Majority of the patients were in the age group of 1-5 years (57.65%) followed by <1 year (24.71%). Patients of more than 10 year were 1.33%. out of total 170 patients 95 (55.88%) were male and 75 (44.12%) were females. Male to female ratio was 1.26:1. Among all patients majority of the patients were from SES IV (55.88%) followed by SES III (35.29%). Patients from SES I were only 0.59%. Out of total 170 patients 35 (20.59%) patients were below 9 months. Eligible patients for vaccination were 135. Out of these 135 patients 72 (53.33%) were vaccinated and 63 (46.67%) were not vaccinated. Among the not vaccinated patients 37 (58.73%) were male and 26 (41.27%) were female. Among the patients 75 (44.12%) were undernourished. Patients with complications were seen with severe malnutrition. Out of 170 patients 52 were having no complications. Remaining patients had complications. Table 2 shows complications in measles patients at tertiary health care centre. Diarrhea was most common complication contributing 35.88%. Other complications were pneumonitis (35.88%), weight loss (10%) and weakness (11.81%). One death was observed among all patients. This patient was a young infant with severe malnutrition, pneumonitis and sepsis. Many patients presented with more than one complication. (table 2)

Table 1: Distribution of the patients according to sociodemographic parameters in measles patients

Parameters	No of patients	Percentage
Age group		
< 1 year	42	24.71
1-5 year	98	57.65
6-10 years	27	15.87
>10 years	03	1.77
Sex		
Male	95	55.88
Female	75	44.12
Socioeconomic status		
SES I	01	0.59
SES II	07	4.12
SES III	60	35.29
SES IV	95	55.88
SES V	07	4.12

Table 2: Distribution of the patients according to complications in measles patients

Complication	No of patients	Percentage
Diarrhea	61	35.88%
Pneumonitis	45	26.47%
Weight loss	17	10%
Weakness	19	11.18%
Death	01	0.59%

DISCUSSION

Mean age of the patient was 2.1±0.9 years. Majority of the patients were in the age group of 1-5 years (57.65%) followed by <1 year (24.71%). Previous studies also showed similar results.[9-11] They observed increased incidence in younger age group. Various studies showed different incidence rates according to age. In our study Male to female ratio was 1.26:1. Among all patients majority of the patients were from SES IV (55.88%) followed by SES III (35.29%). Similar results were seen in previous studies where they found lower socioeconomic status is commonly associated with measles infection.[12-16] In our study 72 (53.33%) were vaccinated and 63 (46.67%) were not vaccinated. Among the not vaccinated patients majority were males 37 (58.73%). Similarly, in a study by Lawrence *et al.*, 54.3% of cases of measles were unimmunized[9] In our study we found that 75 (44.12%) were undernourished. Patients with complications were seen with severe malnutrition. Similar association was seen in study by Mahamud A *et al*[17] and Metcalf CJ *et al*[18]. Diarrhea was most common complication (35.88%) in our study. Other complications were pneumonitis (35.88%), weight loss (10%) and weakness (11.81%). Contrary to our study Metcalf CJ *et al*[18] found pneumonia as the most commonly observed complications (76.5%). One death was observed among all patients. This patient was a young infant with severe malnutrition, pneumonitis and sepsis. Similarily Indwar P *et al*[19] found pneumonia to be most common cause of mortality in measles

CONCLUSION

Younger age group, lower socioeconomic status, malnutrition and poor vaccination coverage are important factors for measles infection in children. high level of immunization coverage and reduction of malnutrition in children are important strategies for measles elimination.

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Source of Support: None Declared
Conflict of Interest: None Declared