DOI: 10.14260/jemds/2015/1162

ORIGINAL ARTICLE

CLINICAL PROFILE OF MEASLES IN CHILDREN ADMITTED TO A RURAL TERTIARY CARE HOSPITAL

Deepa K. S[1]

HOW TO CITE THIS ARTICLE:
Deepa K. S. "Clinical Profile of Measles in Children Admitted to a Rural Tertiary Care Hospital". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 46, June 08; Page: 7995-7999, DOI:10.14260/jemds/2015/1162

ABSTRACT: Measles affects about 20 million people a year. Even with greater than 80% immunization cover, the number of children with measles has registered a steep rise. A retrospective chart review was carried out on all cases of measles admitted to the paediatric wards of a tertiary care medical college hospital in a rural area in north Kerala. A total of 31 cases of measles (n=31) were admitted to the paediatric ward. Age at admission of 67.8% of the patients was above 6 years. The average age of the sample was 7.52 years (S. D = 3.19). Amongst the clinical features, fever and rash were seen in 100%, coryza in 83.8% and conjunctivitis in 67.7%. Koplik spots, pathognomonic of measles were seen only in 32.3%. About 61.3% of those with measles were previously immunized. Regarding the vitamin A supplementation status, only 19.4% of the children were administered vitamin A. The fact that 61% of children who developed measles had actually received measles vaccination during infancy, and that majority (67%) of them were >6 years at the time of presentation, points to the drop in the protective immunity, after a single dose of measles vaccine, as age advances. To conclude, Measles is now a re-emerging infectious disease and a second dose of measles vaccine to boost up the existing immunity would turn out to be a corner stone in subsequent measles elimination.

KEYWORDS: Measles, Immunization, Vitamin A Prophylaxis, PEM.

INTRODUCTION: Measles, also known asmorbilli, rubeola is a highly contagious infection caused by themeasles virus. Measles affects about 20 million people a year, primarily in the developing areas of Africa and Asia.[1] It causes the most vaccine-preventable deaths of any disease. Most of those who are infected and who die are less than five years old. The risk of death among those infected is usually 0.2%, but it may be up to 10% in those who have malnutrition. A recent vaccination coverage survey in India showed overall 71% coverage for measles vaccine (Given during 9 to 12 months of age). Even in a state like Kerala with greater than 80% immunization cover, the number of children with measles has registered a steep rise, there by posing a major public health concern.[2] Further there is little literature if any of the profile of measles during this period which registered a steep rise. The current study was planned on the clinic epidemiological profile of measles in children with emphasis on their immunization status.

METHODS: This study has an observational design and was done during the period from January 1st 2013 to December 31st 2014. A retrospective chart review was carried out on all cases of measles (Occurring in children up to 12 years) admitted to the paediatric wards of a tertiary care medical college hospital in a rural area in north Kerala. All patients with measles (Inclusion criteria defined as any person in whom the clinician suspects measles infection or any person with fever and maculopapular rash with cough/coryza or/and conjunctivitis) [3] were taken for the study. Those

DOI: 10.14260/jemds/2015/1162

children in whom a proper history regarding the symptoms could not be obtained or those children with short duration of fever (<3 days) with rash but without preceding coryza/conjunctivitis were excluded from the study. Relevant socio-demographic data including immunization and vitamin A supplementation status was collected. The data was analyzed to determine the percentage of cases and the associations with different variables were assessed using chi square and independent sample t test. The analysis was carried out using the statistical package of social services version 15 (SPSS 15).

RESULTS: A total of 31 cases of measles (n=31) were admitted to the paediatric ward during the study period. This was around 0.3 % of the total paediatic admissions (N= 10,334 patients) during the period. Of the cases admitted with measles 54.8% were males (17 out of 31). The age at)admission of 67.8% of the patients was above 6 years of age with preschoolers constituting 9.7% and the rest 22.6% were children between 3 and 6 years. The average age of the sample was 7.52 years (S.D. = 3.19). There was no significance difference between the age of appearance of measles among boys and girls. (7.59 Vs. 7.43, t=0.13, p=0.89) Protein energy malnutrition (PEM) in some form was seen in 77.4% patients, with 16.2 % of them falling under Grade 3/ Grade 4 PEM. Vast majority (58.1%) of the patients belonged to lower socioeconomic status which is in keeping with the general admission pattern to the hospital and all cases admitted with measles had a rural background. (Table 1)

Amongst the clinical features, fever and rash were seen in 100%, coryza in 83.8% and conjunctivitis in 67.7%. Koplik spots, pathognomonic of measles were seen only in 32.3%. Leucopenia (total WBC count<4000 cells/mm3) was seen in 54.8%. Clustering of cases was seen between the months of February to June with around 64.5 % cases reporting during this period. With regards to measles related complications, 22.5% had acute diarrhea and 12.9% had evidence of bronchopneumonia radiologically and one child developed Bitot's spots and conjunctivalxerosis. All cases were brought under measles surveillance system and managed conservatively. There was no mortality in the study population. (Table 2)

About 61.3 % of those with measles were previously immunized against the disease while 38.7% had not received the vaccination. Regarding the vitamin A status only 19.4% of the children were administered vitamin A (5 doses at 6 monthly interval from 9months onwards) while majority of them (80.6%) had not received the complete vitamin supplementation as per national immunization programme. (Table 1)

The chi square test for association of gender with other variables in measles showed that there was a significant association between female gender and PEM seen in this study. ($\chi 2 = 11.16$; p= 0.025). There were significantly more girls with measles who had PEM than boys. (85.71% Vs. 64.7%) So also it was observed that significantly more girls in the low socioeconomic status (LSES) developed measles than boys. (85.71% vs. 35.29%; $\chi 2 = 8.24$; p=0.016). There was however no significant association between sex and other variables like age of illness, immunization status and vitamin A prophylaxis.

The immunization status was significantly associated with age groups with more immunized children developing measles than non-immunized (61.29% vs. 38.71%; $\chi 2=8.24$; p=0.016), all children developing measles in the 10-12 age group having received measles immunization. There was also a significant association between immunization status with vitamin A prophylaxis with all

DOI: 10.14260/jemds/2015/1162

cases receiving vitamin A having an immunized status. $\chi 2 = 4.69$; p= 0.03) So also those received vitamin A were of a higher age group than those not received vitamin A which was also statistically significant. (11.00 years vs. 6.68 years, t= 3.49, p= 0.002)

DISCUSSION: The rate of admission of measles in the present study was 0.3%, this is in accordance with the earlier audit of measles admission in a tertiary care Centre from South India which reported an admission rate of 0.3%.[4] The sex ratio in the present study was 54.8% for boys to 45.2% for girls, this also echoes the trend in an earlier study which showed that more boys (51%) were admitted with measles than girls (49%).[4] The age at admission of 67.8% of the patients was above 6 years of age with preschoolers constituting 9.7% and the rest 22.6% were children between 3 and 6 years. An earlier study had shown a slightly differing pattern with 56% of the population being age of 5 years or less.[4]

The clinical profile reported in our study also matches earlier studies which show fever and rash as the most common symptoms followed by coryza.[4, 5] The complications reported in our study are also in concordance with earlier reports showing acute diarrhea and bronchopneumonia as the major complications.[5]

The more proportion of girls developing PEM in our study points to the inherent failure to cater to the needs of the girl child and the report echoes the findings of earlier studies.[4,5] So is the finding that lower socioeconomic status girls are at a greater risk of PEM and measles.[5]

There were a relatively higher proportion of immunized children developing measles in our study. The fact that 61% of children who developed measles had actually received measles vaccination during infancy, and that majority of them were >6 years at the time of presentation, points to the drop in the protective immunity with a single dose of measles vaccine as age advances. This is a trend seen across other studies as well.[4-6] A recent vaccination coverage survey in India showed overall 71% coverage for measles vaccine (given during 9 to 12 months of age). Accepting 85% vaccine effectiveness for vaccination at 9 months, actual protection was offered to only 60% of annual birth cohorts (71% × 85% =60%) this again points to the waning immunity in measles with time as discussed previously. The fact the unimmunized amounted to 38% of the study subjects is a pointer to the poor immunization coverage in remote rural areas, further studies are required in this direction to discover the pitfalls in implementation of immunization programmes and improve the same.

The mean age of those who received vitamin A supplementation was 7.1.Recent scarcity in the supply of vitamin A through government health facility could be a reason for the huge majority of children not given vitamin A. The average age of our sample was also high at 7.52 years.

This shift in the epidemiological pattern with respect to age, deserves a special mention. One possible explanation could be the drop in the protective immunity with time after a single dose of vaccine. In a study by Sharma, et al, it was found that the proportion of children attacked by measles even after immunisation went on increasing with the increasing age, suggesting the waning of immunity with increasing age.[5]

Hence larger studies in future are needed to stress the importance of including second dose of measles in universal immunization schedule so that measles elimination becomes a reality soon. The targets should be attained through the following methods: (a) by achieving and maintaining high coverage (>90%) with the first dose of measles vaccine in every district, delivered through regular

DOI: 10.14260/jemds/2015/1162

immunization services;(b) by ensuring that all children receive a second dose of measles vaccine delivered either through periodic supplementary immunization activities (SIAs) and/or routine services; (c) by effective laboratory-backed surveillance (of disease and outbreaks) and monitoring of immunization coverage; and (d) by appropriate clinical measles case-management, including the provision of vitamin A.

To conclude, measles is re-emerging with lot of children affected despite their previous immunization status though our findings represent only the tip of the iceberg. After polio eradication, focus should now be shifted to measles elimination using a second dose of measles vaccine and ensuring adequate immunization cover in the susceptible population[6, 7]

LIMITATION OF THE STUDY: Main limitation of the study is that of Selection bias, since the inclusion criteria of the study subjects were purely based on clinical findings.

Variable	Classification	Number
AGE	<3 years	3 (9.7%)
	3-6 years	7 (22.6%)
	7-9 years	11 (35.5%)
	10-12 years	10 (32.3%)
SEX	MALE	17 (54.8%)
	FEMALE	14 (45.2%)
SOCIO-ECONOMIC STATUS (SES)	LSES	18 (58.1%)
	MSES	11 (35.5%)
	HSES	2 (6.5%)
PROTEIN ENERGY MALNUTRITION	NO PEM	7 (22.6%)
	GRADE 1	11 (35.5%)
	GRADE 2	8 (25.8%)
	GRADE 3	3 (9.7%)
	GRADE 4	2 (6.5%)
IMMUNIZATION STATUS	IMMUNIZED	19 (61.3%)
	NOT IMMUNIZED	12 (38.7%)
VITAMIN A PROPHYLAXIS	GIVEN	6 (19.4%)
	NOT GIVEN	25 (80.6%)

Table 1: Sociodemographic Factors

VARIABLE	CLASSIFICATION	NUMBER
SYMPTOMS	FEVER AND RASH	31 (100%)
	CORYZA	26 (83.8%)
	CONJUNCTIVITIS	21 (67.7%)
	KOPLIK SPOTS	10 (32.3%)
	LEUCOPENIA	17 (54.8%)
COMPLICATIONS	ACUTE DIARRHOEA	7 (22.5%)
	BRONCHOPNEUMONIA	4 (12.9%)

Table 2: Clinical Profile

DOI: 10.14260/jemds/2015/1162

REFERENCES:

1. CDC. Global measles control and regional elimination1998-1999. MMWR 1999; 48:1124-1130.
2. Coverage Evaluation Survey 2005, All India: a Report. New Delhi: Unicef; 2006.
3. Measles Surveillance and Outbreak Investigation Field Guide. New Delhi: Government of India, Department of Family Welfare, 2005.
4. Ganesh R, Vasanthi TR. Audit of Measles Infection in Children from a Tertiary Hospital. Indian Pediatr. 2009; 46: 81-82.
5. Sharma MK, Bhatia V, Swami HM. Outbreak of measles amongst vaccinated children among slums of Chandigarh. Ind J Med Scie. 2004; 58 (2): 47-53.
6. World Health Organization. Meeting of the Immunization Strategic Advisory Group of Experts, November 2008 – conclusions and recommendations. Wkly Epidemiol Rec 2009; 84: 1-16.
7. World Health Organization. Weekly Meeting of the immunization Strategic Advisory Group of Experts, April 2009 – Conclusions and Recommendations. Wkly Epidemiol Rec 2009; 84: 220-236.

AUTHORS:

1. Deepa K. S.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Paediatrics, KMCT Medical College, Calicut.

FINANCIAL OR OTHER COMPETING INTERESTS: None

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Deepa K. S,
7B, Kingswood Apartment,
Eranjipalam P. O, Calicut-6.
E-mail: deeparajesh099@gmail.com

Date of Submission: 02/06/2015.
Date of Peer Review: 03/06/2015.
Date of Acceptance: 05/06/2015.
Date of Publishing: 06/06/2015.