

COMPLICATIONS OF MEASLES IN HOSPITALIZED CHILDREN

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ABSTRACT

Objective: The aim of this study was to determine the frequency of complications of measles in hospitalized children.

Methodology: This hospital based cross-sectional descriptive study was conducted in Paediatrics Unit, Post Graduate Medical Institute, Govt Lady Reading Hospital Peshawar from January 2012 to December 2012. All patients who presented with signs and symptoms suggestive of measles according to WHO criteria were included in the study. Information regarding patient age, sex, address, vaccination status, complications and outcome were noted in specifically designed proforma.

Results: A total of 302 hospitalized measles patients with different complications were included in this study. Out of these 302 patients, 180(60%) were males and 122(40%) were females, with male to female ratio of 1.5:1. The age range was from four and half months to thirteen years with mean age of 26.8 months. Major complications in descending order of frequency were pneumonia 170 (56.29%), diarrhea 52 (17.22%), encephalitis 22 (7.28%), febrile seizures 21 (6.95%), croup 10 (3.31%), otitis media 9 (2.98%), severe stomatitis 7 (2.34%), emphysema 4 (1.32%), dysentery 3 (0.99%), myocarditis 2 (0.66%) and pneumothorax 2 (0.66%) each. Sixteen patients expired with a mortality rate of 5.29%.

Conclusion: Measles is still a serious threat to our children. Pneumonia followed by diarrhea and encephalitis are the most serious complications of measles.

Key Words: Measles, pneumonia, encephalitis, diarrhea, post-measles complications.

This article may be cited as: Khan I, Khattak AR, Muhammad A. Complications of measles in hospitalized children. *Khyber Med Univ J* 2013;5(1): 27-30

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Date Submitted: January 18, 2013

Date Revised: March 20, 2013

Date Accepted: March 24, 2013

Measles remains one of the leading causes of childhood mortality in the world, despite the availability of a safe, effective, relatively inexpensive vaccine. It is also one of the leading causes of childhood blindness in the developing world.³

Acute measles infection at an early age is associated with more complications and increased mortality.⁴ The most important complications of measles which cause morbidity and mortality are bronchopneumonia, otitis media, diarrhea, croup and encephalitis.^{4,6} Pneumonia is the commonest complication of measles.⁷

Low coverage and poor vaccine efficiency is strongly associated with outbreaks of measles and its complications and hence high morbidity and mortality.⁸ This hospital based study was carried out to determine the frequency of complications of measles in hospitalized children.

INTRODUCTION

Measles is a serious infection characterized by high fever, an enanthem, cough, coryza, conjunctivitis, and a prominent exanthem. It is caused by a single-stranded, lipid-enveloped RNA virus in the family Paramyxoviridae and genus Morbillivirus. The portal of entry of measles virus is through the respiratory tract or conjunctivae following contact with droplet aerosols in which the virus is suspended. Patients are infectious from

3 days before to up to 4-6 days after the onset of rash. Face-to-face contact is not necessary, because viable virus may be suspended in air for as long as 1 hour after the patient with the source case leaves a room.¹

The global incidence of measles is 39.9 million cases, 777,000 deaths and 28 million disability adjusted life years². In Pakistan the estimated measles deaths are 81,000 annually among children <5 years old.³

METHODOLOGY

This hospital based cross-sectional descriptive study was conducted in Pediatrics Unit, Post Graduate Medical Institute, Govt Lady Reading Hospital, Peshawar from January 2012 to December 2012. All children who were hospitalized because of measles and its complications were included in the study. Clinically, measles was diagnosed in patients with generalized maculopapular rash, fever, cough, coryza and conjunctivitis. Pneu-

monia was diagnosed by using integrated management of childhood illness (IMCI)⁹ criteria of increased respiratory rate or infiltrates on chest x-ray.

Central nervous system was considered involved if there was lethargy, unconsciousness, fits, neurological deficit. Other problems of measles like diarrhea, stomatitis, eye complications, febrile fits and otitis media were also notified in case sheets. Immunization status was assessed by examining immunization card or parental inquiry in this regard. Nutritional status was assessed by using Modified Gomez classification, patients whose weight was above 80% of expected were considered well-nourished and weight below 80% of expected for age was considered malnourished. Investigations like chest X-ray, CSF R/E, CBC, electrolytes were done where ever required. Data regarding age, sex, immunization, nutritional status, complications and outcome is analyzed by using SPSS version 10 for windows.

RESULTS

A total of 302 hospitalized measles patients with different complications

were included in this study. 180(60%) were males and 122(40%) were females with male to female ratio of 1.5:1. The age range was from four and half months to thirteen years with mean age of 26.8 months. Majority of children 138(45.69%) were between 1-3 years age as shown in the Table I.

Major complications in descending order of frequency were pneumonia 170 (56.29), diarrhoea 52(17.22%), encephalitis 22 (7.28%), febrile fits 21(6.95%), croup 10(3.31 %), otitis media 9 (2.98%), sever stomatitis 7 (2.34%), emphysema 4(1.32%) dysentery 3(0.99%), myocarditis 2(0.66%) and pneumothorax 2(0.66%) each. Total number of deaths was 16 and mortality rate was 5.29%, pneumonia was the leading cause of death (75% of death), followed by diarrhoea (18.75% of death) and encephalitis (6.25 % of death).The mortality was more in male 11 (68.75%) as well as below 3 year 13 (81.25%) while in age group 4-10 years it was 2 (12.5%) which means that majority of deaths due to measles occur below 3 years as shown in Table II and III.

DISCUSSION

The study demonstrates that majority of cases (75.83%) are below 3 years of age. This is similar to various other studies abroad and within country.^{7,8,10-17} It means that children of this age group are still unprotected. In the present study males form predominant group (60%), coinciding with a number of other reports,^{7,8,10-17} while in other studies, the number of cases were higher among females¹⁸ or no differences between genders were observed.¹⁹

In our study pneumonia is the most common complication (56.29%). This finding is similar to other studies nationally¹⁴⁻¹⁸ and internationally¹⁹⁻²¹. However this finding is contrary to an Indian study²² in which diarrhea was the commonest complication of measles.

Diarrhea is the second most common complication in our study. Similar results were reported by Mohammad A¹⁵, Qaiser I¹⁶, and Khan A¹⁷ from inside the country and by Albahadle AKJ¹⁹ from Iraq.

Encephalitis is one of the common complications of measles. In our study 7.28% of cases presented with neurological manifestations which is closely simulating the data given by other authors^{15,17,20}. Worldwide, acute otitis media is the most common complication of measles.¹ However in our study it was seen only in 2.98% of patients. Khan A¹⁷ reported no case of otitis media in his study whereas Muhammad A¹⁵ reported it only in 1%.

TABLE I: AGE DISTRIBUTION OF MEASLES PATIENTS (n=302)

Age categories	Number	%
< 1 year	91	30.13
1-3 years	138	45.69
4-9 years	71	23.51
> 10 years	2	00.67
Total	302	100

TABLE II: DEMOGRAPHIC PROFILE AND MORTALITY OF MEASLES PATIENTS (n= 16)

Parameters		Frequency (n= 16)	%age
Sex	Male	11	68.75
	Female	5	31.25
Age group(in years)	< 1 year	6	37.50
	1-3 years	7	43.75
	4-10 years	2	12.50
	> 10 years	1	06.25

TABLE III: COMPLICATIONS AND OUTCOME IN MEASLES PATIENTS

S. No.	Complications	Frequency (n=302)	%	Improvement		Death	
				Frequency (n=286)	%	Frequency (n=16)	%
1	Pneumonia	170	56.29	158	55.25	12	75.00
2	Diarrhoea	52	17.22	49	17.14	3	18.75
3	Encephalitis	22	07.28	21	07.35	1	06.25
4	Febrile fits	21	06.95	21	07.35	—	—
5	Croup	10	03.31	10	03.49	—	—
6	Otitis media	9	02.98	9	03.15	—	—
7	Stomatitis	7	02.34	7	02.45	—	—
8	Emphysema	4	01.32	4	01.39	—	—
9	Dysentery	3	00.99	3	01.05	—	—
10	Myocarditis	2	00.66	2	00.69	—	—
11	Pneumothorax	2	00.66	2	00.69	—	—

Emphysema (1.32%), pneumothorax (0.66%) and myocarditis (0.66%) were other rare but serious complications observed in this study. Such kinds of complications have not been reported by any other author so far.

The outcome in measles patients is poor even in developed countries especially when it is associated with complications like encephalitis, sever pneumonia or diarrhea with sever de-hydration.²³ The mortality in our study is 16 (5.29%) which is almost similar to other studies done in Pakistan and abroad. The mortality reported by Khan A¹⁷ was 8.1%, Mohammad A¹⁵ reported no mortality, while in Islamabad²⁰ it was 3.4%. In India mortality figures were 1-2% in endemic and 3.37% in epidemic situation.²⁴ Albahadle AKJ¹⁹ reported 3.4% mortality from Iraq and Jahan S²⁵ reported no mortality from Saudi Arabia.

In our study mortality was mostly seen in younger age group and those with complications like pneumonia and diarrhoea and encephalitis. Almost same risk factors for mortality were found in other studies as well.^{7,17,24,25}

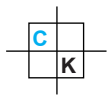
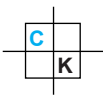
CONCLUSION

In our set up, pneumonia, diarrhoea and encephalitis are the most common

and serious complications of measles in hospitalized children.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

- IK:** Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the manuscript & final approval of the version to be published
- ARK:** Critical revision, final approval of the version to be published
- MA:** Drafting the manuscript; final approval of the version to be published

CONFLICT OF INTEREST

Author declares no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE

NIL

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