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MEASLES;
REVIEW OF CASES ADMITTED IN PAEDIATRIC DEPARTMENT BENAZIR BHUTTO HOSPITAL RAWALPINDI DURING EPIDEMIC 2013

Dr. Muhammad Zahoorul Haq[1], Dr. Najaf Masood[2], Dr. Muddassar Sharif[3], Prof. Rai Muhammad Asghar[4]

1. Assistant Professor of Paediatrics Benazir Bhutto Hospital, Rawalpindi
2. Associate Professor of Paediatrics Benazir Bhutto Hospital, Rawalpindi
3. Assistant Professor of Paediatrics Benazir Bhutto Hospital, Rawalpindi
4. Head of Paediatrics RMC, Benazir Bhutto Hospital,Rawalpindi

Correspondence Address:
Dr. Muhammad ZahoorulHaq
Assistant Professor of Paediatrics
Benazir Bhutto Hospital, Rawalpindi
dr.zahoor313@gmail.com

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ABSTRACT…Background: Despite efforts to promote widespread vaccination,measles still remains an important cause of morbidity and mortality in children especially in developing countries. The aim of this study was to review the pattern and outcome of measles patients admitted at Benazir Bhutto Hospital (BBH) Rawalpindi during measles epidemic 2013.**Study Design:** Cross sectional descriptive study. **Period:**Three months during measles epidemic 2013 (March - May). **Setting:**Pediatric department BBH Rawalpindi. **Materials and Methods:**Data regarding demographic profile, clinical presentation, complications and outcome of measles patients was collected and analyzed using SPSS 15.**Results:**A total of 192 patients of both sexes were included with mean age of 35.48±32.71 months. Majority of patients(71.4%) were unvaccinated and 88% had history of contact with measles patients. The common complications observed were pneumonia and pneumonia with gastroenteritis and both were found statistically significant in patients with malnutrition and low socioeconomic status.**Conclusion:**The current study concluded that improving measles immunization and nutritional status in children is essential for reducing morbidity and mortality of measles.

Key words: Measles, vaccination, complications, malnutrition, pneumonia

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INTRODUCTION

Measles also called Rubeola is a highly contagious viral disease.[1]After an incubation period of 8-12 days it is characterized by high fever, an enanthem, cough, coryza, conjunctivitis and a prominent exanthem.[2]It spreads by direct or indirect contactand droplet spray. Its period of infectivity is 4 days before and 5 days after appearance of rash.

The global incidence of measles is 39.9 million cases per year.[3]Its incidence in children is 58% in epidemics and 10-15% in endemic form.[4]Seventy percent of the measles cases occurring globally belong to Africa and South Asia.Measles accounts for 777,000 deaths annually and 66% of these deaths occur in 11 countries including Pakistan.[1]In Pakistan estimated measles deaths are 81000 annually among <5 years children.[6]The case fatality rates are 1-5% in developing countries[5]and this high rate is associated with measles occurring in younger age, overcrowding, poor health care, malnutrition and underlying immunodeficiency.[9]

Morbidity and mortality associated with measles decreased considerably following the introduction of measles vaccine in 1963.[2] The number of measles deaths, globally decreased by 71% between 2000 and 2011,but measles is still a leading cause of death among young children in developing countries.[7,8]

Despite increase in vaccination coverage over the last three decades, the measles virus continues to cause epidemics in different parts of the world.[11]Single dose measles vaccination coverage over the years has increased in Pakistan with the highest of 88% coverage in 2012 but the coverage with second dose is only 53% which is still not sufficient to prevent outbreaks as recommended by WHO.[12,13]It has been reported by WHO that Pakistan is one of the five countries whose 10 million children did not receive vaccination against measles in 2011, the outcome of which can be

seen in the form of outbreaks.[12]Malnutrition has also been identified as an important cause of high vulnerability to measles in Pakistan.[14]

In healthy children measles usually runs a benign course but there is increased mortality in malnourished children particularly under three years of age. Complications commonly associated with measles infection include diarrhea, pneumonia, otitis media, acute encephalitis, corneal ulcers and sub-acute sclerosing panencephalitis.[15]Most measles related deaths are caused by complications associated with the disease[8]and mortality may rise up to 10% in population with high level of unvaccinated children, malnutrition and lack of adequate health care.[19]

Review of measles cases admitted in paediatric department Benazir Bhutto Hospital Rawalpindi during measles epidemic 2013 was carried out to know the association of measles epidemic with demographic profile, vaccination coverage, malnutrition, and contact with measles patient, complications and their clinical outcome.

MATERIALS AND METHODS

This was a cross sectional descriptive study carried out for three months (March-May) during measles epidemic 2013 at pediatric department BBH Rawalpindi. Patients from 2 months to 12 years of age of both sexes suffering from measles (fever, cough and coryza, conjunctivitis and maculopapular rash) were included. Cases with other viral exanthem of maculopapular rash were excluded. Demographic profile (name, age, sex, and address), history regarding symptoms (fever with duration, conjunctivitis, duration of rash, cough, diarrhea, fits, ear and eye discharge, bleeding manifestations), vaccination status (after confirmation from vaccination card /parental inquiry)and socioeconomic status were noted. Children who had received one dose of measles vaccine were considered vaccinated as there was no child who had received two doses. Pertinent examination for associated complications was carried out in detail. Degree of malnutrition was assessed according to Gomez classification. Patients were also assessed for existing Vitamin A and D deficiency. Investigations like blood complete picture, X-Ray chest and wrist, cerebrospinal fluid examination were carried out in specific patients. Patients were followed up during hospital stay and immediate outcome (discharged, death, complication) was noted. All the data was recorded on performa and then analyzed on SPSS 15.

RESULTS

A total of 192 patients with measles were included in the study. There were 91 (47.4%) male and 101 (52.6 %) female patients with ratio of 1:1.1. Patients were from 2 months to 144 months (12 years) of age with mean age of 35.48$\pm$32.71 months. About two third patients 135 (70%) were 2 - 60 months of age at presentation and only 26 (13.5%) were under nine month of age. The distribution of patients according to age is depicted in table-I.

About half of patients 102 (53.1%) had fever for more than five days on presentation. More than two third 157(81.1%) had conjunctivitis on admission and about 9(4.7%) had purulent conjunctivitis. Duration of rash was less than three days in 139 (72.4%) patients. Most of the patients 137(71.4%) were unvaccinated. Lack of measles vaccination was a significant factor in all age groups (p value 0.014) shown in table-II. Most of the patients 169 (88%) had history of contact with measles in siblings or neighborhood. It was found to be significant in patients of all age groups included in the study (p value 0.001) table-III. About 121 (63%) patients were malnourished according to Gomez Classification. Thirty eight (19.8%) patients had grade I malnutrition, 58(30.2%) had grade II malnutrition while 25(13%) were grade III malnourished. Malnutrition was found statistically significant regarding complications (p value 0.000) table-IV. About 128(66.7%) patients belonged to low socioeconomic status with income less than 30,000 Rupees per month. Complications of the disease were seen more in this group (p value 0.008) delineated in table-V.

Most of the patients were admitted with measles

complications. Pneumonia was the leading cause in 84(43.8%) patients, especially in those patients who had positive history of contact (p value 0.001) and were malnourished (p value 0.000). Pneumonia with gastroenteritis was found in 33(17.2%) patients and gastroenteritis alone in 28(14.6%) patients. Illustration of other complications is given in Table-VI. Most of the patients 128(66.7%) stayed for more than 5 days in hospital and 190(99%) patients were discharged from the hospital after treatment. Only two patients expired during the study period and both were under 5 years of age and severely malnourished.

Age	Frequency	Percent	Valid Percent	Cumulative Percent
less than 9 months	26	13.5	13.5	13.5
9-18 months	54	28.1	28.1	41.7
19 - 60 months	55	28.6	28.6	70.3
more than 60 months	57	29.7	29.7	100.0
Total	192	100.0	100.0	

Table-I. Age of the patients in months

Age of the patient in months	vaccination status		Total	P-value
	unvaccinated	vaccinated		
less than 9 months	25	1	26	.014
9-18 months	38	16	54	
19 - 60 months	39	16	55	
more than 60 months	35	22	57	
Total	137	55	192	

Table-II. Age of the patients in months and vaccination status

Age of the patients in months	History of contact with measles patients		Total	P-Value
	yes	no		
less than 9 months	17	9	26	.001
9-18 months	49	5	54	
19 - 60 months	49	6	55	
more than 60 months	54	3	57	
Total	169	23	192	

Table-III. History of contact with measles patients

DISCUSSION

Measles is a highly contagious disease with significant morbidity and mortality mainly in developing countries. Measles epidemics occurring in different regions of the world may be due to low vaccination coverage, waning immunity and vaccine failure.[16,17,18]

In developing countries measles is more prevalent in children 1-5 years of age.[19, 20,21] Same has been observed in the present study while in developed countries measles incidence is much higher in children older than 10 year of age.[24,25]Measles cases under 9 months of age have been reported in previously conducted studies[33] and same has been observed in our study (13.5% cases are under 9 month of age).

In the present study males and females are almost equally involved. Regarding gender differences our study does not support the previous data where measles is much more common in boys.[19,22,26,27,28,29]

Complications	Nutritional status of patients				
	Well nourished	Grade I malnutrition	Grade II malnutrition	Grade III malnutrition	Total
Uncomplicated	11				11
Pneumonia	34	20	27	6	87
Gastroentritis	13	6	6	3	28
Encephalitis	4	2	2		8
Otitis media	1				1
Purulent conjunctivitis	1	2	5	1	9
Pneumonia and gastroenteritis	6	6	11	10	33
Pneumonia and encephalitis			5	5	10
Hemorrhagic measles	1	2	2		5
Total	71	38	58	25	192

Table-IV. Nutritional status of the patients and measles complications

P value is 0.000 which is statistically significant.

complications of measles	socioeconomic status of patients (Rupees)			Total	P-value
	less than 10,000	10,000 - 30,000	more than 30,000		
Uncomplicated	1	6	7	14	
Pneumonia	15	43	26	84	
Gastroenteritis	4	10	14	28	
Encephalitis		4	4	8	
Otitis media			1	1	0.008
Purulent conjunctivitis	6	3		9	
Pneumonia and gastroenteritis	12	14	7	33	
Pneumonia and encephalitis	1	5	4	10	
Hemorrhagic measles		4	1	5	
Total	39	89	64	192	

Table-V. Socioeconomic status of patients and measles complications

	Frequency	Percent	Valid Percent	Cumulative Percent
Uncomplicated measles	14	7.3	7.3	7.3
Pneumonia	84	43.8	43.8	51.0
Gastroenteritis	28	14.6	14.6	65.6
Encephalitis	8	4.2	4.2	69.8
Otitis media	1	0.5	0.5	70.3
Purulent conjunctivitis	9	4.7	4.7	75.0
Pneumonia and gastroenteritis	33	17.2	17.2	92.2
Pneumonia and encephalitis	10	5.2	5.2	97.4
Hemorrhagic measles	5	2.6	2.6	100.0
Total	192	100.0	100.0	

Table-VI. Complications of measles

Poor vaccination coverage is still a major factor responsible for epidemics. Most of the patients (71.4%) were unvaccinated in our study while 43 to 85% of patients were found unvaccinated in various other studies conducted previously.[19,26,30]

In the current study most of the patients (88%) had history of contact with measles in the siblings or in the neighborhood. It was found to be statistically significant in patients of all age groups.This is supported by two studies conducted in the past by Aurangzeb and Khan.[19,31]

In our study malnutrition was noted in 63% patients and about 13% of them were severely malnourished. It was found statistically significant regarding complications. The previous three studies from Pakistan by Aurangzeb et al, Khan and Ahmad and Tariq P, had shown the incidence of severe malnutrition with measles to be 57%, 53.5% and 9% respectively and these malnourished children experienced more severe measles infection and hospital stay for these malnourished children was significantly longer.[19,22,31]Low socioeconomic status is still a contributory factor in disease morbidity and mortality as in the past and this is in accordance with other studies.[19]

Regarding complications of measles in our study pneumonia (43.8%), pneumonia and diarrhea (17.2%) and diarrhea alone (14.6%) were the main complications and this is also supported by various other studies where pneumonia and diarrhea were the leadingcomplications.[19,20,22,30,31,32]

CONCLUSION

Proper vaccination is the key to prevent measles especially in under five children. Morbidity is significantly associated with younger age, unvaccination and malnutrition. The current study reported that 71.4% children are unvaccinated and malnutrition was noted in 63% patients which highlight the necessity to pursue efforts for improvement in immunization and nutritional rehabilitation programs.

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PREVIOUS RELATED STUDY

Faisal Basheer, Shakeel Ahmed, Mohammad Aatif , salman Ali. FREQUENCY OF VACCINATION IN MEASLES (Original) Prof Med Jour 13(4) 577-582 Oct, Nov, Dec, 2006

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Muhammad Zahoor ul Haq	All the authors contibuted actively	
2	Dr. Najaf Masood		
3	Dr. Muddassar Sharif		
4	Prof. Rai Muhammad Asghar		