MEASLES – DEMOGRAPHIC PROFILE AND COMPLICATIONS IN CHILDREN

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ABSTRACT

Objectives: To know commonest age group, vaccination status, nutritional status and main complications in children admitted with measles.

Material and Methods: Children admitted with measles to infectious disease unit of department of child health, Khyber Teaching Hospital, Peshawar during the year 2006-2008 were included in the study. Detail of each patient was recorded on a proforma.

Results: A total of 192 children with measles were admitted. Out of these 124 (64.6%) were males and 68(35.4%) were females. Maximum number of children who had measles was between 6 months to 3 years of age followed by 3-4 years. Seventy-eight children were between 6 months to one year of age, among them 42 children were between 6-9 months of age. Only 3 children were between 10-15 years of age. Out of 192 children only 71 (36.97%) had completed vaccination. Regarding the nutritional status of these children with measles 82(43%) children were normal, the rest had grade 1 to grade 3 malnutrition according to the modified Gomez classification.

Conclusion: Most of the children with measles were documented in the lowest age group 6-9 months. The commonest complications in these children with measles were pneumonia followed by diarrhea and stomatitis.

Key Words: Measles, vaccination status, nutritional status, complications.

INTRODUCTION

Measles is a highly contagious and vaccine preventable disease caused by the measles virus. Its incidence in children varies from 58% in areas with epidemics to 15% in endemic areas. The disease is transmitted via respiratory tract by droplet infection during the prodromal period. Each year 1.6 million deaths occur due to measles with 66% of these deaths occurring in developing countries including Pakistan. Globally about 40 million cases of measles occur each year. Acute encephalitis is rare in children with measles. Because of failure to deliver at least one dose of measles vaccine to all infants in developing countries, measles remains a common disease in certain regions of the world and accounts for 50-60% of the 1.6 million deaths each year by vaccine preventable childhood diseases. WHO estimates that measles infects 30 million persons and causes 454,000 deaths annually worldwide.

Although measles is endemic in most of the world, on going transmissions of measles was declared eliminated in the United States in 2000; an achievement attributed to high rates of vaccine coverage. On the other hand in many developing countries, infection occurred at a much lower age. Because of suboptimal immunity due to poor nutrition and a rapid loss of placentally transferred antibodies explains measles infection occurring so early and is so severe in developing countries. Crowding, leading to a high dose of the virus, may also be important. After the introduction of vaccine, the interval between epidemics was increased. When coverage increases and viral transmission decreases, even unvaccinated individuals have a reduced risk of infection. It has been estimated that the threshold for herd immunity is obtained with 93-95% coverage. Transmission of measles virus once reestablished can be difficult to interrupt. In developing countries measles vaccine is the last to be given routinely, therefore it has the lowest coverage. Pakistan has recently increased the age limit from 9 months to 12 months in order to prevent this communicable disease in children above this age group. Pakistan had a coverage of about 57% from single shot vaccination during 2001 to 2004, while other developing countries had a coverage of about 90%.

Low vaccine coverage and low vaccine efficacy has increased measles resurgence with higher rate of complications. The WHO and UNICEF with partners have now a vision for the period 2006-2015: 90% coverage in every district and 90% reduction in world wide measles mortality between 2000 and 2010. Large countries like India, Pakistan and Indonesia still have a high burden of measles cases and deaths, the activities described above have to be fully implemented.
MATERIAL AND METHODS

This study was conducted at Infectious disease unit of department of child health, Khyber Teaching Hospital, Peshawar from January, 2006 to December, 2008. Six months to 15 years old children with measles were hospitalized and enrolled in the study. Infants below 6 months were not included in the study because of protection from maternal antibodies. Measles in these children was diagnosed on the basis of fever, maculopapular eruption lasting for 3-4 days along with cough, runny nose and conjunctivitis.

Complications associated with measles in these children were documented like Pneumonia, diarrhea, stomatitis, conjunctivitis and encephalitis. Some rare complications like myocarditis, pulmonary TB and laryngitis were also documented. All these complications were diagnosed on the basis of signs, symptoms and relevant investigations available for their diagnosis like Chest-X-ray, Complete blood count, CSF examination, TB Score and myocarditis. Detailed history and examination findings along with complications of measles were documented on a proforma for final analysis of the data.

RESULTS

One hundred and ninety-two cases were enrolled during the study period. The sex and age distribution is shown in Table 1 and 2 respectively. Nutritional status is shown in Table 3. In 47(38%) male and 24(35%) females, the vaccination was complete while in 34(27%) male and 17(25%) females the vaccination was partially done and 28(22%) male and 20(29%) female were not vaccinated at all.

Complication associated with measles in these children is shown in the figure 1.

DISCUSSION

In this study the commonest age group affected by measles is between 6 months – 3 years followed by 3-4 years of age comparable to other studies performed in different countries including Pakistan20,21. Seventy-eight children (40.6%) were below 12 months of age, while 40% of children were less than 9 months of age in one of the local studies. Other studies reported 11.5% to 40% of children below 9 months. This is in contrast to developed countries where measles is more common in 2nd decade of life22,23. Measles is much more common in boys in our study, which is comparable to other studies. The reasons most probably could be due to our male dominant society in which the males are given more attention than females and medical attention is more readily sought for males. In this study males had a higher vaccination status than females.

Table 1: Sex Distribution

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of patients &amp; percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>124(64.6%)</td>
</tr>
<tr>
<td>Females</td>
<td>68(35.4%)</td>
</tr>
</tbody>
</table>

Table 2: Age Distribution

<table>
<thead>
<tr>
<th>Age group</th>
<th>Total</th>
<th>Male</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months - 3 years</td>
<td>90</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>3 years - 4 years</td>
<td>60</td>
<td>36</td>
<td>24</td>
</tr>
<tr>
<td>4 years - 6 years</td>
<td>27</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>6 years - 8 years</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>8 years - 10 years</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>10 years - 12 years</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>12 years - 15 years</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3: Nutritional Status

<table>
<thead>
<tr>
<th>Malnourished</th>
<th>No.</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade I-III</td>
<td>110</td>
<td>74</td>
<td>36</td>
</tr>
<tr>
<td>Normal</td>
<td>82</td>
<td>65</td>
<td>17</td>
</tr>
</tbody>
</table>

Fig. 1: Complications Associated with Measles

Measles is much more common in children with malnutrition because of their reduced immune responses making them vulnerable to viral infections like measles26-28. In this study 36% of children with measles had measles vaccination while the percentage is high 97% in other studies conducted in the country (Rawalpindi and Lahore)20,29. Pneumonia is one of the commonest complications of measles in hospitalized patients, which was confirmed in our study26,30. Fifty-two percent of children had pneumonia, similar results were observed in studies conducted in Pakistan, South East Asia and Europe24,26.

Diarrhoea and stomatitis were the second main complications (23% each) followed by conjunctivitis (20%) and encephalitis (8%). Pulmonary TB, laryngitis and myocarditis were reported as the least common complications associated with measles (2%) each. The mortality is low in our study only one child.
due to proper and in time intervention. Also be stressed upon the mothers. Exclusive breast feeding upto 6 months of age should gradually fades away after the age of 6 months of life. Interference with the maternal antibodies which below 6 months is not recommended because of especially in this lowest age group. Vaccination prevention of measles and its complications then between 12-15 months of age in order to help in measles twice, once between 6-9 months of age in order to help in prevention of measles and its complications especially in this lowest age group. Vaccination below 6 months is not recommended because of interference with the maternal antibodies which gradually fades away after the age of 6 months of life. Exclusive breast feeding upto 6 months of age should also be stressed upon the mothers.

CONCLUSION
Measles with its complications is more common in children with malnutrition in younger age group

Recommendations
Suggestion is to vaccinate children against measles twice, once between 6-9 months of age and then between 12-15 months of age in order to help in prevention of measles and its complications especially in this lowest age group. Vaccination below 6 months is not recommended because of interference with the maternal antibodies which gradually fades away after the age of 6 months of life. Exclusive breast feeding upto 6 months of age should also be stressed upon the mothers.

REFERENCES
1. The New Zealand immunization hand Book; NZ Ministry of Health 2001; 131-46.