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ORIGINAL ARTICLE

Prevalence of Pneumonia Associated with Measles among Infants and Children

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ABSTRACT

Objective: The aim of this study is to determine the prevalence of pneumonia associated with measles among children and infants.

Study Design: Cross-sectional

Place and Duration: Pediatrics department of Lady Reading Hospital, Peshawar and Sharif Medical and Dental College, Lahore for six months duration from February 2020 to July 2020.

Methods: Total 150 patients i.e children and infants of both genders were included in this study. Children were aged <5years of age. Patients' detailed demographics height and weight were recorded after taking informed written consent from the authorities. Patients' diagnosed measles were presented. Symptoms and frequency of pneumonia among all patients were assessed. Complete data was analyzed by SPSS 22.0 version.

Results: There were 90 (60%) children and 60 (40%) infants. Among 150 patients, 100 (66.7%) were males and 50 (33.3%) were females. 70 (46.7%) cases had birth weight > 3kg. 30 (20%) patients had high socioeconomic status, 50 (33.3%) had middle and 70 (46.6%) cases had poor. 85 (56.7%) patients had rural residency. According to severity of measles, 35 (23.3%) had mild,45 (30%) cases had moderate and severity was among 70 (46.7%) patients. Prevalence of pneumonia was found among 95 (63.3%) cases. 40 (26.75) cases had measles vaccination.

Conclusion: We concluded in this study that prevalence of pneumonia among children of measles were significantly high. It was due to less number of vaccination status with poor socio economic status among patients. It can be controlled by providing awareness of vaccination to the parents of children.

Keywords: Pneumonia, Measles, Children, Infants, Prevalence

INTRODUCTION

Infected individuals spread the disease by inhaling droplets or aerosols from the respiratory fluids of infected individuals [1]. Measles has an incubation period of 7–21 days. Fevers and generalized maculopapular erythematous patches, cough, coryza and conjunctivitis are symptoms of measles infection. Pneumonia (1/20 occurrences), otitis media (1/10 cases), thrombocytopenia, diarrhea (1/10 cases), and encephalitis might arise up to several weeks following the rash (1:1000 cases). It is possible that measles can cause blindness, deafness, intellectual disabilities associated with encephalitis (acute disseminated encephalomyelitis in approximately 1:000 cases; subacute sclerosing panencephalitis in approximately 1:10,000 to 1:100,000 cases), and death (1:3000) in malnourished children [1]. Every year, the number of measles cases that die ranges from less than one in 1000 to 5 percent for endemic areas of sub-Saharan Africa and Asia, to as high as 20–30 percent for refugees and internally displaced people [1].

As a MIC in Europe, Romania has recommended two doses of measles-containing vaccination (MCV) for children since 1994. Since 2002, the first dose (MCV1) is generally given at 12 months of age, and the second dose (MCV2) is normally given at 5 years of age [2. During the period 2000-2010, Romania had an MCV1 coverage rate of > 95%. After the MCV1 coverage in Romania began to decline in 2011, it dropped to about 86 percent per year from 2015 to 2017 [3] National MCV coverage declined as a result of a vociferous and powerful anti-vaccine movement as well as issues within the immunization infrastructure relating to the availability of vaccines for routine immunization and vaccine delivery [4].

Measles outbreaks continue in Romania, despite WHO European Region's goal of eliminating measles [5], with 8709 cases reported from 2004 to 2007 and 12,991 cases reported from 2010 to 2013 [6]. On July 27, 2018, Romania's Ministry of Health (MOH) confirmed 14,825 measles cases. The most current outbreak began in 2016. 24,5 percent of the total 14,825 cases were reported in 2016, 9076 percent were recorded in 2017, and 3314 (22.5 percent) have been reported till July 2018. In May of 2017, the outbreak looked to have peaked. However, in May of 2018, another surge was recorded. Fourteen hundred and twenty-five of of the fourteen thousand and twenty-five measles cases were unvaccinated, with 8259 (56 percent) of the cases occurring in infants and young children [6].

A patient's severity and complication of measles and measles-associated pneumonitis will determine their treatment. To control and reduce the severity of pneumonia and measles complications, mostly supportive therapy is required [7]. Otitis media and bacterial pneumonia are the most common consequences. It is necessary to admit patients with serious problems, such as encephalomyelitis, for supervision during the period when airborne

transmission occurs in admitted children. Children who die from measles are given vitamin A by the World Health Organization.[8] Depending on their age, the dose should be given. In typically, the measles vaccine is given along with the Mumps and Rubella vaccines (MMR). If administered within three days of exposure, the vaccination is protective.

MATERIAL AND METHODS

This cross sectional study was conducted at Pediatrics department of Lady Reading Hospital, Peshawar and Sharif Medical and Dental College, Lahore for six months duration from February 2020 to July 2020. and comprised of 150 patients. Patients' detailed demographics were recorded after taking informed written consent. Patients greater than 5 years of age and had other medical illness were excluded from this study.

Total 150 patient's i.e children and infants of both genders were included in this study. Children were aged <5years of age. Patients' detailed demographics height and weight were recorded after taking informed written consent from the authorities. Patients diagnosed measles were presented. Symptoms and frequency of pneumonia among all patients were assessed. Complete data was analyzed by SPSS 22.0 version. Categorical variables were assessed by frequencies and percentages.

RESULTS

There were 90 (60%) children and 60 (40%) infants. Among 150 patients, 100 (66.7%) were males and 50 (33.3%) were females. 70 (46.7%) cases had birth weight > 3kg. 30 (20%) patients had high socioeconomic status, 50 (33.3%) had middle and 70 (46.6%) cases had poor. 85 (56.7%) patients had rural residency. (Table 1)

Table 1: Baseline details demographics of enrolled cases

Characteristics	Frequency	%age
Children	90	60
Infants	60	40
Gender		
Male	100	66.7
Female	50	33.3
Birth Weight >3kg		
Yes	70	46.7
No	80	53.3
Socio economic status		
Poor	70	46.7
Middle	50	33.3
High	30	20
Residency		
Rural	85	56.7
Urban	65	43.3

According to severity of measles, 35 (23.3%) had mild, 45 (30%) cases had moderate and severity was among 70 (46.7%) patients.(table 2)

Table 2: Association of measles with respect to severity

Characteristics	Frequency	%age
Measles		
Mild	35	23.3
Moderate	45	30
Severe	70	46.7

Prevalence of pneumonia was found among 95 (63.3%) cases. 40 (26.75) cases had done measles vaccination.(table 3)

Table 3: Prevalence of pneumonia and vaccination status among all patients

Characteristics	Frequency	%age
Pneumonia		
Yes	95	63.3
No	55	36.7
Vaccination Status		
Yes	40	26.75
No	110	73.25

DISCUSSION

Lung infection caused by the measles posed a statistically significant risk for death. Measles can be a "second punch" for previously sick children and newborns with acute respiratory illnesses such as influenza, according to a study from Mongolia [9]. Neurologic sequelae, such as encephalitis and seizures, were also indicators of infection severity in both cases and controls. This unusual consequence only affects about 0.1% of measles cases [10]. An inflammatory process is believed to be the primary cause of postinfectious myelitis and/or encephalitis (PIE), which occurs after measles infection, usually within 2 weeks after the rash [10].

In this cross-sectional study 150 patients of both genders were enrolled. Among 150 patients, 90 (60%) were children and the rest 60 (40%) were infants. Majority of the patients 66.7% were males. Our findings were comparable to the previous study.[11] 70 (46.7%) cases had birth weight > 3kg. 30 (20%) patients had high socioeconomic status, 50 (33.3%) had middle and 70 (46.6%) cases had poor. 85 (56.7%) patients had rural residency.[12] Similar results were also presented by other authors.[13]

In our study 35 (23.3%) had mild,45 (30%) cases had moderate and severity of measles was among 70 (46.7%) patients. [14] Prevalence of pneumonia was found among 95 (63.3%) cases. This was high children and infants. A research in Peshawar found that pneumonia was the most common consequence among patients, accounting for 68 percent [15]. According to a Swedish study, 75% of infants under one year old had pneumonia. Pneumonia affects 40 percent more males than girls [16]. In our study 26.8% cases received vaccination of measles. In children with measles, the WHO recommends giving vitamin A once a day for two days in a row (50,000 international units (IU) for infants younger than six months, 100,000 IU for infants aged 6–11 months, and 200,000 IU for children more than one year old) [17]. Lower measles-specific antibody levels and greater morbidity may be linked to vitamin A deficiency Vitamin A insufficiency in a malnourished youngster can result in a lack of hepatic vitamin A reserves when infected with measles.[18]

All hospitals should employ infection prevention and control procedures to avoid nosocomial measles virus spread. Patients with known or suspected measles should be quickly identified and isolated, and health care staff should follow conventional and airborne precautions [19]. Measles deaths are "preventable tragedies that may have been averted via vaccination" [20] because there is a safe

and effective measles vaccine. Pneumonia is more common in the current study than in earlier investigations. A high immunization rate may be the most likely cause of the problem. Undernutrition is also a risk factor for death due to pneumonitis in spite of 60% of children being seriously afflicted [21].

CONCLUSION

We concluded in this study that prevalence of pneumonia among children of measles were significantly high. It was due to less number of vaccination status with poor socio economic status among patients. It can be controlled by providing awareness of vaccination to the parents of children.

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