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ORIGINAL ARTICLE

Clinical and imaging profiles of children hospitalized for complicated pneumonia

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Abstract

Most children have 4 to 6 acute respiratory infections (IRA) per year. Of these, only 2-3% progress to pneumonia. Community-acquired pneumonia (PAC) is one of the respiratory tract infections. PAC in children remains a global public health problem due to its high morbidity and mortality, being the disease that most kills children between 0 and 5 years of age in the world. Complicated PAC is defined as fever permanence or clinical instability after 48-72 h of PAC admission. The objective of this work is to describe complicated PACs, hospitalized at a pediatric hospital, between April 2006 and April 2018. This is a retrospective, observational and descriptive study with children and adolescents aged 0 to 13 years, hospitalized with complicated PAC in a pediatric hospital, from April 2006 to April 2018. Patients data were collected and a data collection form was completed. The following variables will be studied: age, gender, type of pulmonary/ extrapulmonary complication, vaccination status (pneumococcal vaccine), treatment time, daycare regulars or not. Descriptive analysis of categorical variables in frequency form and numerical variables in the form of percentage, mean and median were performed. It was concluded with this study that the clinical and radiological profile of pneumonia in one pediatric hospital is similar to that found in the world literature today.

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INTRODUCTION

Respiratory infection is one of the five main causes of death of children aged less than five years in developing countries and accounts for about three million deaths a year. Only 2-3% of the individuals with respiratory infection develop pneumonia[1]. The annual incidence of community-acquired pneumonia (CAP) amounts to 150.7 million new cases, of which 11-20 million (7-13%) require hospitalization[2].

CAP, the condition responsible for most of the deaths of children aged 0-5 years, remains a global health issue in pediatric populations due to its significant morbimortality[3].

Children with persistent fever or who are clinically unstable 48-72 hours into admission are likely to have complicated CAP[4].

OBJECTIVES AND METHODS

This observational descriptive retrospective study describes the clinical profiles of children aged 0-13 years with complicated CAP seen at a pediatric hospital between April 2006 and April 2018.

RESULTS

At first, 433 patients admitted to a pediatric hospital between April 2006 and April 2018 were selected, of which 118 had been diagnosed with complicated CAP.

The following pulmonary complications were reported: atelectasis; lung abscess; pleural effusion; and pneumatocele. The extrapulmonary complications described in 37 patients (31.3%) included sepsis; acute chest syndrome; decreased consciousness; facial burns for wearing a full face mask; seizures; and diarrhea.

Twenty children aged less than four years with complicated CAP attended daycare centers at the time of diagnosis (24.6%).

Twenty-nine children (24.5%) had comorbid conditions prior to the development of CAP.

Thirty-seven children and adolescents (63.8%) were vaccinated after 2010, the year in which the pneumococcal vaccine was added to the Ministry of Health's immunization program.

The main clinical signs and symptoms at the time of admission were coughs (48.3%), fever (46.6%), and dyspnea (38.9%).

Despite the development of complicated disease, 28 children (23%) were initially in good general condition. Eighty-six patients (72.8%) had tachypnea at the time of admission. Decreased vesicular breath sounds were the most prevalent finding in lung auscultation, seen in 74 children or 62.7% of the patients. Rales were seen in 39 (33%), wheezing in 23 (19.4%), and murmurs in two (1.7%) patients.

Blood cultures were performed for 114 patients (96.6%). Fourteen (12.2%) were positive for bacterial infection.

DISCUSSION

Most of the patients with complicated CAP in our study were aged less than five years. The World Health Organization estimated that approximately 3.257 million children aged less than five years died of infectious diseases in 2013, with CAP accounting for 14.9% of the deaths globally[5].

The vaccination coverage required to decrease the number of cases of disease was not achieved in our study, since only 63.8% of the pediatric patients with complicated CAP had been vaccinated. According to the Ministry of Health, a vaccination coverage of 95% is required for the ten-valent pneumococcal conjugate vaccine to decrease the number of cases of CAP and other invasive pneumococcal diseases[2].

Half of the patients with positive blood cultures had pneumococcal infection, while the other 50% had equal shares of infection by coagulase-negative *Staphylococcus aureus, Streptococcus hominis*, and *Haemophylus influenzae.* The literature reports positive blood cultures in less than 10% of the cases, which was close to the proportion found in our study (12.2%)[6].

The most frequently reported complication in patients with complicated CAP is pleural effusion[7].

Almost 60% of our patients developed empyema. According to Pabary et al.[8], 0.7% of the children hospitalized for CAP develop empyema.

CONCLUSION

The clinical and imaging profiles, the main pathogens, and the frequency of occurrence of each of these parameters in the patients included in our study were similar to the profiles described in the literature.

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