CLINICAL AND LABORATORY PECULIARITIES OF PEDIATRIC COMMUNITY-ACQUIRED PNEUMONIA OF DIFFERENT ETIOLOGY

© *Kozyrev E., Mikhailova Ya.*

Scientific supervisor: MD, professor, Babachenko I.V.
Research department of Droplet infections at the Clinical Center for Infectious Diseases
Tyumina L.M., Senior lecturer. Department of Foreign Languages
Saint Petersburg State Pediatric Medical University

Contact information: Kozyrev Evgeniy — postgraduate student of research department of Droplet infections at the Pediatric Research and Clinical Center for Infectious Diseases, St. Petersburg;
E-mail: kozyrev_zhenya@mail.ru
Mikhailova Yana — 6th year student of the pediatric faculty.
E-mail: yd10101998@mail.ru

Keywords: pediatric pneumonia, etiology of pneumonia, infectious diseases.

Introduction. according to the WHO, community-acquired pneumonia (CAP) is the second most common cause of mortality in children [1]. These causative agents are indistinguishable on clinical characteristics alone [2, 3].

Objective. To study the clinical and laboratory features of CAP in children, depending on the expected etiology of the disease.

Materials and methods. Prospective cohort study of 120 patients aged 1 month to 17 years with x-ray confirmed CAP. All cases of CAP were divided into 4 groups: 1) typical bacterial CAP (criteria: pleural empyema and/or destruction of lung tissue and/or bacteremia and/or serum C-reactive protein (CRP) > 50 mg/l); 2) viral CAP (criteria: presence of more than one respiratory virus in nasopharyngeal swabs without criteria of bacterial pneumonia); 3) atypical bacterial CAP (criteria: detection of *M. pneumoniae* or *C. pneumoniae* DNA in the nasopharynx and/or IgM to these microbes); 4) other CAP (lack of criteria of bacterial or viral CAP).

Results. The cause of CAP was established in 70% of cases. Viral CAP was significantly more common in young children (Me(25%;75%) = 2.6(1.2;4) years) and was associated with an increased risk of hospitalization in the intensive care unit (ICU, $p < 0.05$, OR = 3.6, 95% CI 1.2–11.2). Febrile fever occurred in 96% of children (95% CI 89–97). The degree and duration of fever were independent on etiology of CAP. All children had a cough, the phenotypes of which did not significantly differ in patients. Most children (83%, 95% CI 75–88) had catarrhal changes of the upper respiratory tract: nasal congestion, coryza, sore throat, otalgia. Intoxication syndrome (lethargy, poor appetite, etc.) was noted in 70% of cases (95% CI 61–77), the etiology of CAP did not affect the frequency and severity of intoxication. Respiratory failure was observed in 39% of patients (95% CI 31–48), we have revealed the important role of broncho-obstructive syndrome (BOS) in the genesis of respiratory distress (Sommer's criterion = 0.38, strength of correlation is moderate). BOS was significantly more common in viral pneumonia (65%, 95% CI 56–73). According to auscultation and percussion, local symptoms were determined in 77% (95% CI 68–84) and 48% (95% CI 39–57) of children, respectively. In 87% of CAP these techniques allowed accurately establish the lesion in the lungs. In complete blood count, an increase of absolute number of leukocytes, segmented and band neutrophils was weakly associated with a typical bacterial pneumonia. An elevated serum CRP was found in 79% (95% CI 70–85) of children. In typical bacterial cases the concentration of CRP was more than 7 times higher than in pneumonia of other etiology.

Conclusion. There were no significant clinical features of CAP depending on its etiology. Viral etiology is associated with increased risk of hospitalization in the ICU. Main parameters of complete blood count revealed insufficient diagnostic value. CRP assessment is more accurate in determining pneumonia etiology.

References:

1. Rodrigues CM. Community-Acquired Pneumonia in Children: the Challenged of Microbiological Diagnosis. Journal of Clinical Microbiology. 2018 Mar;56(3): 1317–18.

2. Roux DM, Zar HJ. Community-acquired pneumonia in children — a changing spectrum of disease. Pediatr Radiol. 2017 Oct;47(11):1392–1398.
3. Mosenifar Z. Viral Pneumonia [Internet]. University of California at Los Angeles [Updated: Mar 24, 2021]. Available from: https://emedicine.medscape.com/article/300455-overview