WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 5, May., 2022

EVALUATION AND PROGNOSIS OF COMMUNITY-ACQUIRED PNEUMONIA WITH PROLONGED COURSE IN CHILDREN

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Annotation

Based on the revealed history data, clinical, functional and biochemical parameters, a comprehensive analysis of the characteristics of the course of community-acquired pneumonia in children was carried out, which allowed us to identify a certain number of modifiable and unmodifiable factors. Identified factors may indicate a high risk of developing severe pneumonia, complications, an unfavorable outcome, which must be taken into account when conducting diagnostic measures and differentiated selection of optimal treatment regimens.

Keywords: community-acquired pneumonia, prolonged course, prognosis, children.

Relevance

Community-acquired pneumonia (CAP) is the leading cause of morbidity and mortality worldwide. Community-acquired pneumonia (CAP) in children is one of the most important problems of modern pulmonology and pediatrics. Reducing mortality, changing the course of the disease and reducing the number of severe forms of disease are achievements in the treatment and diagnosis of pneumonia in children (2,5,6). This problem is as urgent as before, because despite the fact that CAP is a managed disease, it is widespread and lethal cases are registered every year. CAP in children is becoming more and more nonspecific, due to changes in clinical manifestations (1,7). This process is based on an imbalance between the volume and nature of lung tissue lesions and the body's non-specific response to inflammatory processes of bacterial or viral origin in the lungs. It is also worth noting the increase in the number of recurrent forms not only of CAP in children, but also of all respiratory diseases in general (3,6). The incidence of CAP in children under 15 is more than twice as high as in the general population. According to WHO, pneumonia is the main cause of child mortality, accounting for 17.5% of children aged under 5 years, or about 1.1 million deaths annually worldwide (8).

Aim of the research is development of methods for predicting the severity and outcome of community-acquired pneumonia in children, taking into account the degree of influence of modifiable and unmodifiable factors.

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Research Materials and Methods

To achieve this goal, 75 children from 6 months to 17 years of age diagnosed with community-acquired pneumonia were examined and treated. The diagnosis was verified on the basis of classification of the main clinical forms of bronchopulmonary diseases in children approved at a special meeting of the XVIII National congress on Respiratory diseases (2009). In 100% of cases, the diagnosis of community-acquired pneumonia was verified by chest X-ray.

The control group consisted of 30 practically healthy children of the 1st and 2nd health groups who did not bear bronchopulmonary diseases. Groups were comparable by sex and age.

A retrospective analysis of primary medical records (form 112u) was carried out on 109 children aged 15-17 who never had pneumonia. Criteria for inclusion: age from 6 months to 17 years; informed contest; clinically and radiologically confirmed confirmed community-acquired pneumonia, absence of accompanying bacterial infections.

Criteria for exclusion:

- Non-compliance with the inclusion criteria;
- Presence of chronic respiratory diseases (bronchial asthma);
- Presence of secondary pneumonia cases in the anamnesis,
- Malformations of the bronchopulmonary system development,
- Antibacterial therapy at the prehospital stage (for a group of children with conditionally hyporeactive course of disease).

The average age of the examined co-medical patients was 6.3±3.2 years. Among the studied children the greatest share are children in the age from 6 months to 5 years, with a peak of morbidity from 2 to 4 years, which does not contradict the literature data. Children from 5 to 17 years old made up 49,3%. Boys get sick more often - 58,7%, with a prevalence in the age group from 6 months to 5 years old (Table 1).

Table 1. Characteristics of children surveyed by gender and age

Nosological forms	Age						Sex	
	6 month – 5 years		5-10 years		11-17 years		Total	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%
CAP (n=75)	38	50,7	21	28	16	21,3	75	100
Boys	26	34,7	11	14,7	7	9,3	44	58,7
Girls	12	16	10	13,3	9	12	31	41,3

In the process of complex clinical and laboratory examination of children, biochemical and microbiological methods of research were used. Results of the carried out researches were processed on IBM with use of package of applied programs EXCEL7,0 by generally accepted statistical methods, defined significance of distinctions of average sizes with the help of Student criterion (t), differences of dispersion of samples of random sizes were estimated on F - Fisher criterion. To evaluate statistical reliability of the calculated criteria, we used indicators and tables of critical values for acceptable significance levels (P). Four main significance levels were taken as statistically significant changes: high - $P<0.001$, average - $P<0.01$, low (marginal) - $P<0.05$, insignificant (unreliable) - $P>0.05$.

The Results of the Research

The analysis of antenatal and postnatal period data was conducted (Table 2).

The analysis found that in 70% of cases children were not born after first pregnancy. In 35.7% of cases there was a threat of abortion; in 30% of cases there were viral-bacterial infections and preeclampsia. Complicated obstetric history and intrauterine fetal hypoxia were recorded in 21.4% of cases; in 20% of cases mothers had somatic and gynecological pathologies. Pathology of the CNS (47.1%), frequent SARS and pathology of ENT organs (42.8% and 40%, respectively) were registered with the highest frequency. The structure of ENT-pathologies is dominated by otitis, sinusitis, adenoiditis at approximately the same frequency. The structure of other associated diseases is presented as follows: pathology of the gastrointestinal tract (17%), bronchial asthma and allergic conditions (14%), diseases of the genitourinary system (8.1%), heart diseases (1.3%). Natural feeding was recorded in 1/3 of children (31%). In most cases, children were artificially fed (66%).

We have not found statistically significant differences in the main and control groups for most of the identified adverse factors.

The content of CRP increases in serum in case of inflammation (infectious diseases). Normally, the serum CRP concentration does not exceed 8 mg/l. In the course of the prospective study of 35 examined CAP patients in the initial period of the disease in 28,6% (10) of children the serum content of CRP was increased, in 71,4% (25) children - was within the norm.

The conducted researches have shown, that the level of serum CRP in children with CAP in the initial period of disease was considerably higher (by 7 times), in comparison with the control group - 31,9±7,6 mg/l (Fig. 1).

We found more significant changes in the blood content of CRP in CAP in older children, while in younger children in the acute period of the disease they were less pronounced ($P<0.05$).

According to literature data, this is explained by the physiological immaturity of protein-synthetic function of the liver in children of early age and functional failure of monocytes, which are producers of inducers for the synthesis of acute phase proteins.

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