ARCTIC MEDICINE

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FEATURES OF CLINICAL AND IMMUNOLOGICAL COURSE OF ACUTE PNEUMONIA IN CHILDREN

ABSTRACT

The article dwells on the study of the etiological factors of acute pneumonia in children, as well as changes in the immune status. It was revealed that the most frequent causative agent of pneumonia is Streptococci pneumonia, the second most frequent is Klebciella pneumonia, followed by a combination of C. pneumonia, Pseudomonas aureginosa, Chlamidia pneumonia. At analyzing the changes in the immune status in children with acute pneumonia, in comparison with the group of healthy children, the greatest decrease in T-cell (CD3 +, CD4 +, CD16 +), complement components C3 and C4, B-cell link of CD22 + was found.

Keywords: pneumonia, streptococcus, microbiological examination, Klebciella.

Lung inflammatory diseases dominate in the pathology of children's age forming persistent deviations in the health status of children; have a significant impact on child mortality. One of the factors of the climate of Yakutia, affecting directly or indirectly on the human body, is cold (-40, -50 C). Although, in a period of great and prolonged cold weather, our children most of their time spend in artificially heated rooms, due to large temperature difference inside and outside the building they are exposed to sudden temperature changes [1, 2, 3, 4].

Objective: to study the features of immunological system at children of early age with acute pneumonia.

Materials and methods. We analyzed 320 case histories of children from 6 months up to 8 years at the Children's infectious hospital of Yakutsk. Among the patients were 126 girls and 194 boys. All patients underwent clinical, laboratory and radiological examinations. The results of microbiological studies of sputum in 64 children with acute pneumonia, hospitalized at Children's city clinical hospital №2, Yakutsk in the period from January 2012 to March 2013 were analyzed. The analysis was carried out using computer program software WHONET version 5.6. The isolation and identification of pathogens were carried out by conventional microbiological methods.

Determination of subpopulations of T - and B - lymphocytes was performed by ELISA using monoclonal antibodies.

Determination of antibodies was carried out turbodimetrically by means of the intention of the speed of light in the formation of immune complexes in the kinetic measurement at multiscan.

The level of IL-1, IL-13, FNO, IFN in serum was determined using ELISA method according to instructions attached to sets of antibodies.

Material processing included calculation of arithmetic units (M), error medium (m), the frequency of occurrence of abnormal variant, expressed in percent, assessment of reliability of Student ($p<0.05$)

Results and discussion. Initially, we thought it appropriate to describe the group of examined children according to clinical variants of acute pneumatic self-harmony.

As it can be seen from Table1, the highest percentage of morbidity in children of early age falls on the focal and interstitial bronchopneumonia.

64 examined children older than 6 years are taken sputum flora. Patients rinse the mouth with a weak antiseptic solution (furacillin), and then with boiled with water.

A positive result is obtained in 30 cases, the overall structure was dominated by gram-positive bacteria -41,4%. 41 conditionally pathogenic microorganisms were allocated.

As it can be seen from table 2, the most frequent causative agent of pneumonia – pneumonia Streptococci, the second place on frequency is Klebciella pneumonia, then a combination of Klebciella pneumonia,Ps.aureginosa, Chlamidia pneumonia.

In the analysis of changes of immune status in children with acute pneumonia in comparison with healthy children we revealed the largest decline in T-cell levels (CD3+, CD4+, CD16+), components of complement C3 and C4, the decline In-cell link CD22+ (Table 3). These changes indicate antigenic stimulation and decrease immune resistance in children with acute pneumonia. The number of investigators indicated the decrease in the content of b-lymphocytes in acute pneumonia [1], which coincides with the results of this study.

CONCLUSIONS:

1. Focal bronchopneumonia predominates of clinical variants of acute pneumonia in all age groups.

2. At the analysis of sputum cultures in children with acute pneumonia, it was found that the most frequent causative agent of pneumonia is pneumonia of streptococcus, second place in frequency is occupied by Klebsiella pneumonia, then a combination of Klebsiella pneumonia, Ps. aureginosa, Chlamydia pneumonia.

3. At analyzing the changes in the immune status in children with acute pneumonia, in comparison with the group of healthy children, the greatest decrease in the T-cell level (CD3 +, CD4 +, CD16 +), complement components C3 and C4,

Table 1

Clinical variants of acute pneumonia

Clinical variants	Focal	Focal confluent	Segmental	Interstice
The frequency of occurrence	270(75%)	8(2,5%)	8(2,5%)	46(20%)

Table 2

Etiological factors of acute pneumonia in children

Pathogen	Absolute number	Relative number
Streptococc pneumonia	60	70 %
Klebciella pneumonia	15	20%
Klebciella pneumonia, Ps.aureginosa, Chlamidia pneumonia.	7	5 %

Table 3

Indicators of immune status in children of Sakha (Yakutia) with acute pneumonia

Indicators	Standards indicators for children(n = 100), M ± m	Children with acute pneumonia((n = 106), M ± m
CD3+	52,6 ± 1,7	20,1 ± 1,02*
CD4+	26,3 ± 0,7	11,2 ± 0,7*
CD8+	22,5 ± 0,23	16,2 ± 1,0
CD16+	23,2 ± 0,54	4,6 ± 1,1*
ИРИ	1,18 ± 0,64	0,7 ± 0,02
IgA	2,34 ± 0,69	1,3 ± 0,3*
IgG	13,3 ± 0,16	9,2 ± 0,7
IgM	1,6 ± 0,03	0,9 ± 0,09
CD22+	19,8 ± 0,16	9,9 ± 1,9
C3	0,67 ± 0,12	0,20 ± 0,02*
C4	0,34 ± 0,05	0,11 ± 0,02*
ЦИК	96,8 ± 0,132	194,2 ± 1,5*

*p < 0,05 между нормативами и полученными показателями в каждой группе.

and decrease in the B-cell link of CD22 + was revealed.

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ANALYSIS OF THE RESULTS OF NEONATAL SCREENING FOR CONGENITAL HYPOTHYROIDISM IN THE REPUBLIC SAKHA (YAKUTIA)

ABSTRACT

Congenital hypothyroidism (CH) is a disease characterized by insufficiency of thyroid hormones produced by the thyroid gland. CH leads to delay of development of all organs and systems, primarily from a lack of thyroid hormones Central nervous system suffers. Neonatal screening for congenital hypothyroidism is an effective method of early diagnosis and treatment of disease to prevent the development of disabling complications. With timely treatment of CH rate of physical and mental development of the child conforms to the norm. Currently, the optimal age of initiation of therapy drugs levothyroxineis considered the first 2 weeks of life.

The article analyzes the data of neonatal screening for congenital hypothyroidism in the Republic Sakha (Yakutia) from 1996 to 2016. The study revealed that prevalence of congenital hypothyroidism in the Republic Sakha (Yakutia) for reported twenty years was lower than in other regions of the Russian Federation. Congenital hypothyroidism is three times more prevalent in girls, than in boys and is more often observed in children from countryside. Organization of neonatal screening for congenital hypothyroidism in the Republic Sakha (Yakutia) allowed achieving a high percentage of newborn screening, reducing observation time and early initiation of replacement therapy and prevention of disability of patients.

In the period before the implementation of the PNP, there were revealed two children with mental retardation, after the introduction - one. According to the data of neonatal screening peak enhancement detection of CH as in 2006, out of 6954 newborn past research on CH, the diagnosis was confirmed in 4 of the studied (1:1739). In 2010-2011, the detection rate was lowest and amounted to 1 person per year with a frequency of 1:15877. Organization of neonatal screening on congenital hypothyroidism in the Republic of Sakha (Yakutia) allowed achieving a high percentage of newborn screening, reducing time of inspection and early replacement therapy, prevention of disability of patients.

Keywords: children, congenital hypothyroidism, neonatal screening.

INTRODUCTION

Congenital hypothyroidism (CH) is a disease characterized by insufficiency of thyroid hormones produced by the thyroid gland. CH leads to delay of development of all organs and systems, primarily from a lack of thyroid hormones suffering Central nervous system [2]. Congenital hypothyroidism occurs with a frequency of 1 in 4000-5000 newborns. In girls, the disease is detected in 2-2,5 times more often than in boys [3]. Prior to the introduction into practice of health care programmes neonatal screening of CH was one of the most frequent causes of early mental retardation. Neonatal screening for congenital hypothyroidism is an effective method for early diagnosis and timely treatment of the disease to prevent the development of disabling complications. In Russia, neonatal screening for CH is from 1993 in the Republic of Sakha (Yakutia) – till 1996; in the early years in neonatal screening