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FREQUENCY OF ATYPICAL MICROFLORA IN CHILDREN WITH ACUTE OBSTRUCTIVE BRONCHITIS

Zebo Erkinovna Kudratova
Assistant of the Department Clinical Laboratory Diagnostics of Samarkand State Medical Institute. 140100, Uzbekistan, Samarkand, 18 Amir Temur str. (+99893) 3305454. rusti-1811@mail.ru
ORCID ID: 0000-0003-0874-8876;

Lola Atamuradovna Mukhamadiyeva
D. M, Associate professor, Head of the Department №3 of Pediatrics and Medical Genetics of Samarkand State Medical Institute. 140100, Uzbekistan, Samarkand, 18, Amir Temur str. (+998906033396).
mlola@bk.ru ORCID ID: C20140822124939

Umarova Saodat Sulaymonovna*
Assistant of the Department №3 of Pediatrics and Medical Genetics of Samarkand State Medical Institute. 140100, Uzbekistan, Samarkand, 18, Amir Temur str. (+998933373800).

Irina Andreevna Yulayeva*
Assistant of the Department Clinical laboratory Diagnostics of Samarkand State Medical Institute. 140100, Uzbekistan, Samarkand, 18 Amir Temur str. (+998915251137). yulaevairina7@gmail.com.

Background

Active detection of etiological factors of respiratory infections and development of criteria for timely diagnosis and treatment is, from the point of view of clinical bronchology, a promising research trend [2,4,5,6]. Chlamydia and mycoplasma infections currently occupy the second and third places among triggers of obstructive bronchitis, which, in turn, often tend to become chronic (74%) and have a severe course with lethal outcomes (12,9%) [1,7,8]. Over the past 50 years, extensive experience has been accumulated in the study of chlamydial and mycoplasma infections in both adults and children. Despite this accumulated experience, the role of mycoplasma infection in the etiology of acute obstructive bronchitis and the formation of its recurrent course is still poorly understood [3,9,10,11].

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Objective of the Study

To determine the role of atypical microflora in the development of acute obstructive bronchitis in children.

Materials and Methods

We examined 365 children with acute obstructive bronchitis aged from 5 months to 6 years, among whom 90 patients with positive immunoassay for chlamydia and mycoplasmas were selected. These children were hospitalized at SamMI Clinic No. 2, SBRSCEMP, and were under our observation for the period 2020-2022. All patients underwent general clinical examination, chest radiography, and immunological methods of investigation.

Results and Discussion

Among the examined boys there were slightly more 54 (60,0%) than girls 36 (40,0%). As in some other types of pediatric pathology, the predominance of morbidity among boys seems to be related to the peculiarities of gender physiology. We analyzed the distribution of patients by age. Children aged 1 to 3 years of life prevailed among the observed patients - 50.0% (45). The distribution of patients by age and group depending on the type of treatment is presented in Table 1.

Table 1.

Age	Group 1 n=26		Group 2 n=20		Group 3 n=24		Group 4 n=20	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%
5 months to 1 year	13	50,0	5	25,0	6	25,0	5	25,0
From 1 to 3 years old	7	27,0	12	60,0	14	58,3	12	60,0
From 4 to 6 years old	6	23,0	3	15,0	4	16,7	3	15,0
Total:	26	100%	20	100%	24	100%	20	100%

As can be seen from Table 1. the groups were comparable by age. According to Fig.1, we can see that the number of rural residents 77.8% (70) prevails among the ill people, against 20 (22.2%), 3 times more than urban residents.

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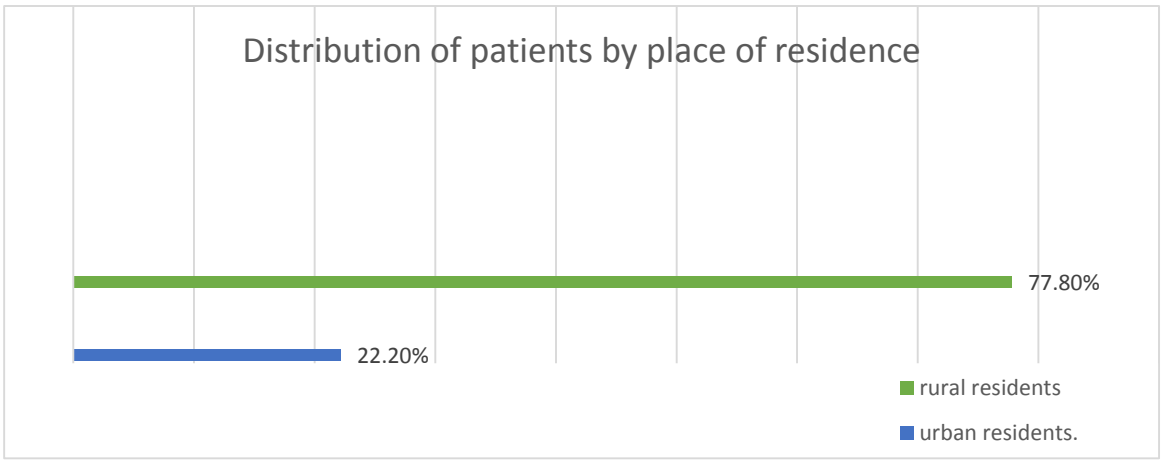

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Depending on the therapy given, the children were divided into 4 groups. The first group of children received standard therapy (drugs that were prescribed to children in parentheses), which included mucolytics (ambrosan, ambrobene, pectolvan, ACC, mucaltin), antispasmodics (eufylline, no-shpa), antibacterial therapy when indicated (ceftriaxone, cefazolin, biseptol, amoxacillin, optiprim, azimac), immunomodulators (anaferon, viferon, colostrum). If their condition improved, the children received physical therapy: electrophoresis on the chest, vibromassage.

The second group of children received standard therapy and the 14-member macrolide Clarithromycin was used as antibiotic therapy. Clarithromycin was administered once a day orally at a rate of 7.5 mg/kg to children for 7 days.

The third group received standard therapy and the immunomodulator Galavit. Children aged 3 to 6 years old Galavit was used under the tongue in a dose of 1-2 tablets daily from 2 to 4 times a day for 5 days, children from 5 months to 3 years old Galavit was used in the form of suppositories once a day for 5 days, then every other day for 5 more suppositories. The fourth group received the standard therapy of 14-member macrolide Clarithromycin and immunomodulator Galavit according to the scheme depending on age.

According to Lee W.J. et al. (2016), one of the main causes of AOB in preschool children is associated infections of viral and bacterial origin, particularly chlamydia and mycoplasma.

Distribution of patients according to the frequency of atypical microflora in children with AOB by sex and age in Group 1 is shown in Fig. 2.

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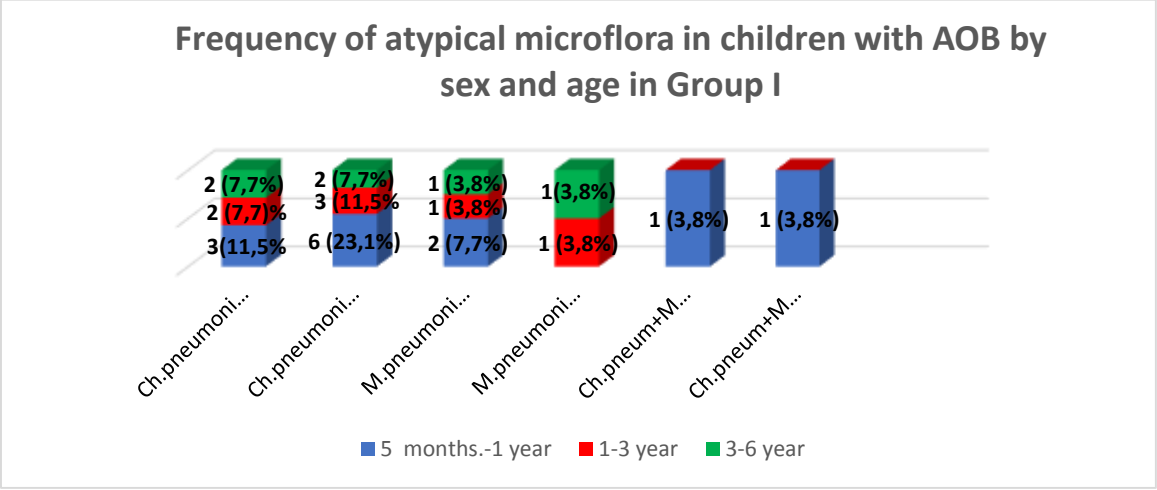

Fig.2.Frequency of a typical microflora in children with AOB by sex and age in group I.

As presented in Figure 2. in the first group Ch. pneumoniae was found in 3 (11.5%) boys and 6 (23.1%) girls in the age group from 5 months to 1 year, in 2 (7.7%) boys, and in 3 (11.5%) girls in the age group from 1 to 3 years and in the age group from 3 to 6 years in 2 (7.7%) boys and girls. Antibodies to M. pneumonia were detected in 2 (7.7%) boys and 1 (3.8%) girls in the age group from 5 months to 1 year. At the age of 1 to 3 years, 1 (3.8%) boy was diagnosed. This pathogen was not detected in girls in this age group. In the age group from 5 months to 1 year, M. pneumoniae was determined in 1 (3.8%) boy and girl (Fig. 2). The association of Ch. pneumoniae and M. pneumoniae in the age group from 5 months to 1 year were equal in both boys and girls and amounted to 1 (3.8%). In other age groups the association of Ch. pneumoniae and M. pneumoniae was not detected.

In Group II, Ch. Pneumoniae was detected in equal numbers in both sexes in the age category from 5 months to 1 year old, 1 (5%) each. In 9 (45%) boys antibodies to this pathogen were detected in the age category from 1 to 3 years. No antibodies to Ch. Pneumoniae were detected in girls in this age category. Antibodies to Ch. Pneumoniae were detected in 2 (10%) boys between the ages of 3 and 6 years. Antibodies to Ch. Pneumoniae were not detected in girls in this age category. Antibodies to M. pneumoniae in boys in the age group from 5 months to 1 year were detected in 2 (%), and in 1 (5%) girls. In the age group from 1 to 3 years, antibodies to M. pneumoniae were detected in 1 (5%) boy and 2 (10%) girls. Antibodies to M. pneumoniae were detected in 1 (5%) boy in the age group from 3 to 6 years old. Antibodies to M. pneumoniae were not detected in girls in this age group. The association of Ch. pneumoniae and M. pneumoniae was not detected in this group (Fig. 3).

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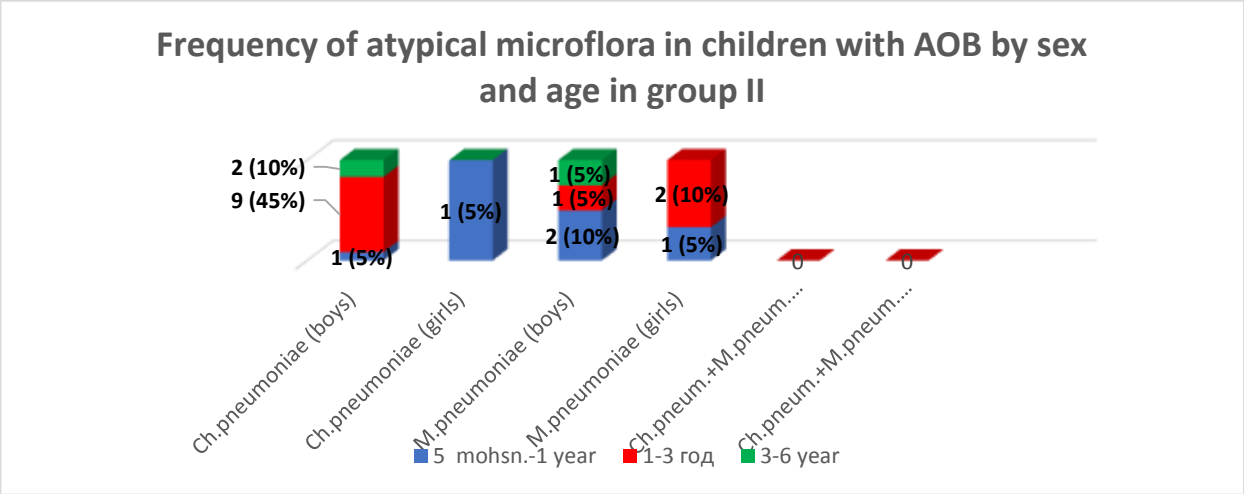

Fig.3. Frequency of atypical microflora in children with AOB by sex and age in group II.

In the group III antibodies to Ch. Pneumoniae in the age group from 5 months to 1 year were detected in 3 (12,5%) boys and in 1 (4,17%) girls. Antibodies to Ch. Pneumoniae were detected in equal amounts in 5 (20.8%) boys and girls in the age group from 1 to 3 years. In the age group from 3 to 6 years old, antibodies to Ch. Pneumoniae were detected in 1 (4.17%) girl, and antibodies to Ch. Pneumoniae were not detected in boys of this age category. Antibodies to M. pneumoniae in the age group from 5 months to 1 year old were not detected in boys, 1 (4.17%) girl was detected. Antibodies to M. pneumoniae were detected in 2 (8.33%) boys and 1 (4.17%) girl in the age category from 1 to 3 years. Antibodies to M. pneumoniae were detected in 3 (12.5%) patients in the age group. No antibodies to M. pneumoniae were detected in girls in this age group. The association of Ch. pneumoniae and M. pneumoniae was detected in this group in 1 (4.17%) boy in the age group from 1 to 3 years old, and in 1 (4.17%) girl in the age group from 3 to 6 years old (Fig. 4).

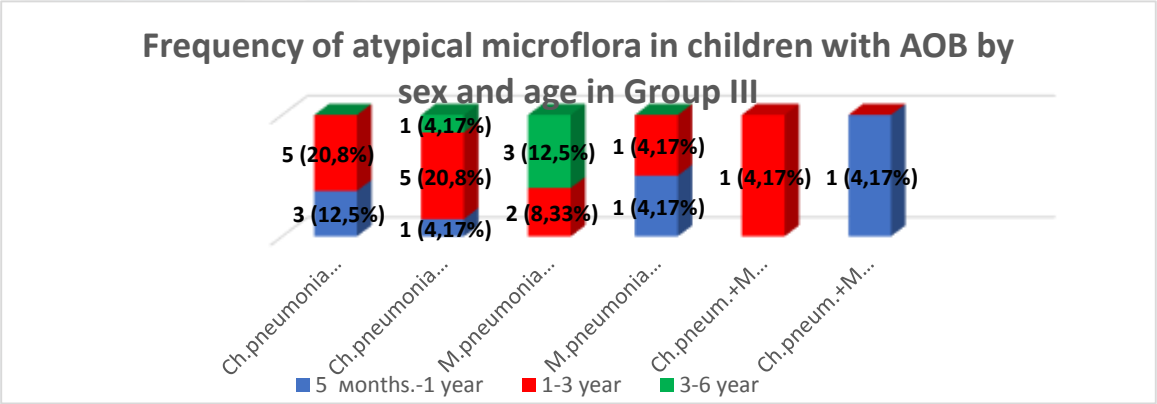

Fig.4. Frequency of atypical microflora in children with AOS by sex and age in group III.

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In the IV group 4 (20%) boys in the age category from 5 months to 1 year had antibodies to Ch. Pneumoniae, and girls in this age category did not have antibodies to Ch. Pneumoniae. Four (20%) boys and three (15%) girls in the age category from 1 to 3 years were found to have antibodies to Ch. Pneumoniae. In the age category of children from 3 to 6 years old, antibodies to Ch. pneumoniae were detected in 5% (1) of boys and 10% (2) of girls. Antibodies to M. pneumoniae were detected in 5% (1) of cases in boys in the age category from 5 months to 1 year. Antibodies to M. pneumoniae were not detected in girls in this age category. In 10% (2) cases antibodies to M. pneumoniae were detected in both sexes. And in 1 (5%) girl antibodies to the association of Ch. pneumoniae and M. pneumoniae were determined (Fig. 5.).

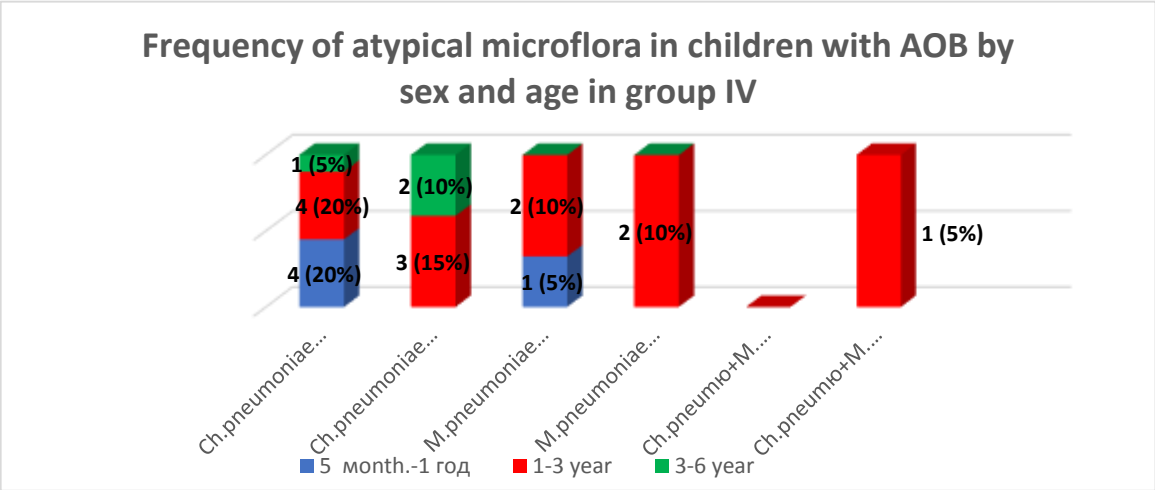

Fig.5. Frequency of atypical microflora in children with AOB by sex and age in group IV

Conclusions

Thus, out of 365 children with acute obstructive bronchitis aged from 2 months to 6 years, 90 patients with ELYSA were identified with atypical microflora more often in children aged from 1 to 3 years and the predominance of boys (60%) was noted. The majority of children lived in rural areas (77.8%). When analyzing the prevalence by sex of Ch. pneumoniae, seropositive boys 36 (40.0%) patients and girls 24 (26.6%) children were recorded, and M. Pneumoniae was found to be seropositive in 16 boys, which was 17.8% of children, and twice as rare in 9 (10.0%) girls with AOB. Of the children we examined who were co-infected with Ch. pneumoniae and M. pneumoniae, girls predominated in 3.33% of cases, versus 2.22% ($p<0.05$).

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