American Journal of Medicine and Medical Sciences 2025, 15(2): 487-489
DOI: 10.5923/j.ajmms.20251502.48

Purulent Bacterial Complications in Children with Infectious Mononucleosis

Shermukhamedova G. T.[1,2]

[1]Republican Specialized Scientific and Practical Medical Center of Epidemiology, Microbiology, Infectious and Parasitic Diseases of Ministry of Health Republic of Uzbekistan, Tashkent, Uzbekistan
[2]City Clinical Infectious Disease Hospital No.1 in Tashkent, Uzbekistan

Abstract According to WHO, 90% of people on the globe are infected with the herpes virus, of which 50% have a manifest form of the disease, a recurrent course. Infectious mononucleosis (IM) affects 16 to 800 people per 100 thousand people per year. One of the main clinical symptoms of MI is damage to the oropharynx in the form of catarrhal or exudative lesions of the oropharynx. Since the 60s of the twentieth century, it has been suggested that the cause of sore throat during MI (exudative sore throat, plaque on the tonsils) is of a viral-bacterial nature, in which the leading place is occupied by the microbial flora [2,3,4]. This fact became an indication for the prescription of antibacterial therapy in the treatment of MI. However, in parallel with this, other scientists emphasized that the leading place in pathological changes in the throat is occupied by viral etiology, and pathogenic microorganisms have minimal importance in the development of sore throat [6,7]. Rodionova O.V. (2000) in their studies argues that sore throats during MI are caused by virus-microbial interaction, with the virus taking the leading place. According to Bernstein B. (2006), in 30% of cases, secondary flora is associated with MI accompanied by angina, and in a third of patients, Str. pyogenes, and the author noted the advisability of prescribing antibacterial therapy to these patients.

Keywords Infectious mononucleosis, Children, Procalcitonin, Bacteriological examination

1. Material and Methods of Research

A prospective study of 120 patients with the diagnosis of infectious mononucleosis hospitalized in the box department of the City Clinical Infectious Diseases Hospital No.1 in Tashkent was conducted.

2. Results Obtained

In all examined children there were no significant differences depending on sex, a significant part of patients were 82 (68.3%) children of preschool age (3-7 years), the rest were school-aged children (7-13 years) - 30 (25.0%) children, while children of early (1-3 years) and pubertal age (13-18) were 6 (5.0%) and 2 (1.7%) children, respectively.

When analyzing the results of bacteriological examination, pathogenic microflora was isolated in 31.7% of patients in the main group, of which Staphylococcus aureus was detected in 21.7% of patients, Streptococcus pyogenes - in 10.0%. Candida albicans was isolated in 10.8% of patients, and pathogenic microflora was also detected in 7 patients, i.e. patients with bacterial-fungal association amounted to 5.8% of all examined patients. Based on these data, the patients were divided into the following groups: patients with identified bacterial flora (n=31), with identified fungal infection (n=6), with fungal-bacterial association (n=7), as well as patients with no pathogenic flora in the number of 76 children (Fig. 1).

When analyzing the age aspect of the examined patients by groups, it was revealed that the majority of children without pathogenic microflora were children aged 3-7 years (86.8%), in the age group of 7-13 years - 13.2%. In the group of patients in whom bacterial flora was detected, almost all age groups were observed: the main part of these patients were children aged 7-13 years (61.3%), 2 children in the age group of 13-18 years also had bacterial flora isolated in swabs from the pharynx. 29.0% of patients in this group were children aged 3-7 years and 3.2% aged 1-3 years. Children aged 3-7 years (66.7%) and 1-3 years (33.3%) made up the group of patients with isolation of fungal flora from the smear. The majority of patients in whom both bacteria and fungi were isolated from the swab were children aged 1-3 years (42.9%) and 3-7 years (42.9%), children aged 7-13 years accounted for only 14.3%. Among children aged 7-13 years, the probability of isolating bacterial flora in pharyngeal swabs was statistically significantly 11 times higher compared to children of other ages (OR=11.2; 95% CI, 4.3 - 29.3) ($\chi 2$=29.358). The probability of isolation of fungal flora from pharyngeal swabs was 9 times higher in children aged 37 years (OR=9.750; 95% CI, 1.4 - 70) and this difference

Received: Jan. 20, 2025; Accepted: Feb. 23, 2025; Published: Feb. 28, 2025
Published online at http://journal.sapub.org/ajmms

was statistically significant (P<0.05). The results of the study show that the development of purulent-inflammatory process in oropharynx depends on the age of the patient, so, bacterial flora was higher in patients older than 7 years old, and fungal flora was higher in children younger than 7 years old (Fig. 2).

Distribution of children's life history according to the results of bacteriological examination of swabs taken from the oropharyngeal mucosa and comparative analysis by groups revealed that out of 76 children without pathogenic flora in 25.0% (19 children) and out of 44 patients with pathogenic flora in 75.0% (33 children) the fact of being on artificial feeding was revealed. The probability of isolation of pathogenic microflora in the pharynx of children with infectious mononucleosis under 1 year of age who were on artificial feeding was 9 times higher than in patients who were on natural feeding (OR=9.00; 95% CI - 3.8 - 21.2), and the difference between the groups was at a statistically significant level ($\chi 2=28.4$).

Of 76 patients in whom pathogenic microflora was isolated from the laryngeal mucosa, hypotrophy was observed in 3 children (3.94%) under 1 year of age, rickets in 2 patients (2.6%), and allergies in 12 children (15.8%). And in children with pathogenic microflora these conditions were observed in 4.5%; 4.5% var 29.5% of children, respectively. There was no significant statistical difference (p>0.05) in the examined groups by the degree of pre-morbid background in the history.

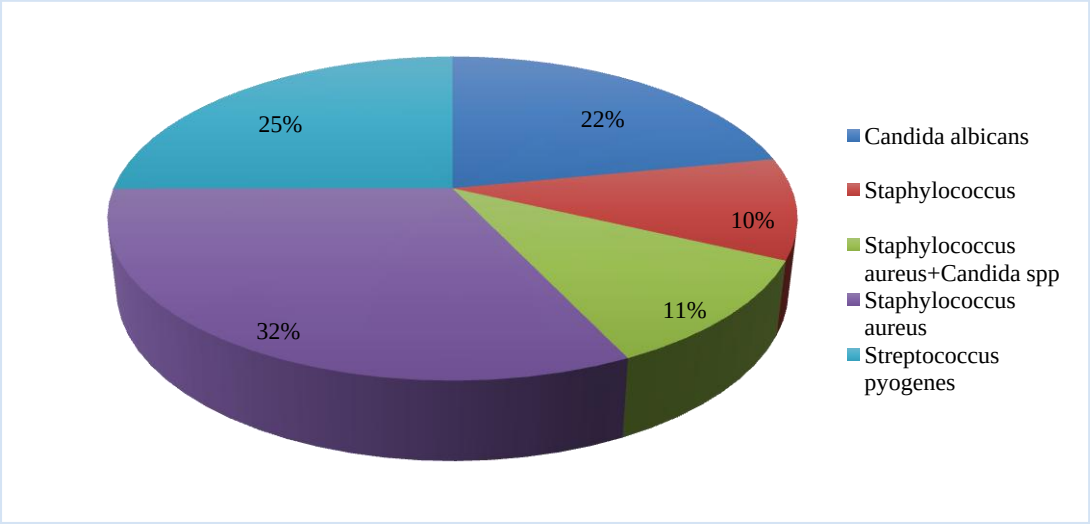

Figure 1. Results of bacteriologic examination of swabs from the pharynx taken from patients (n=120)

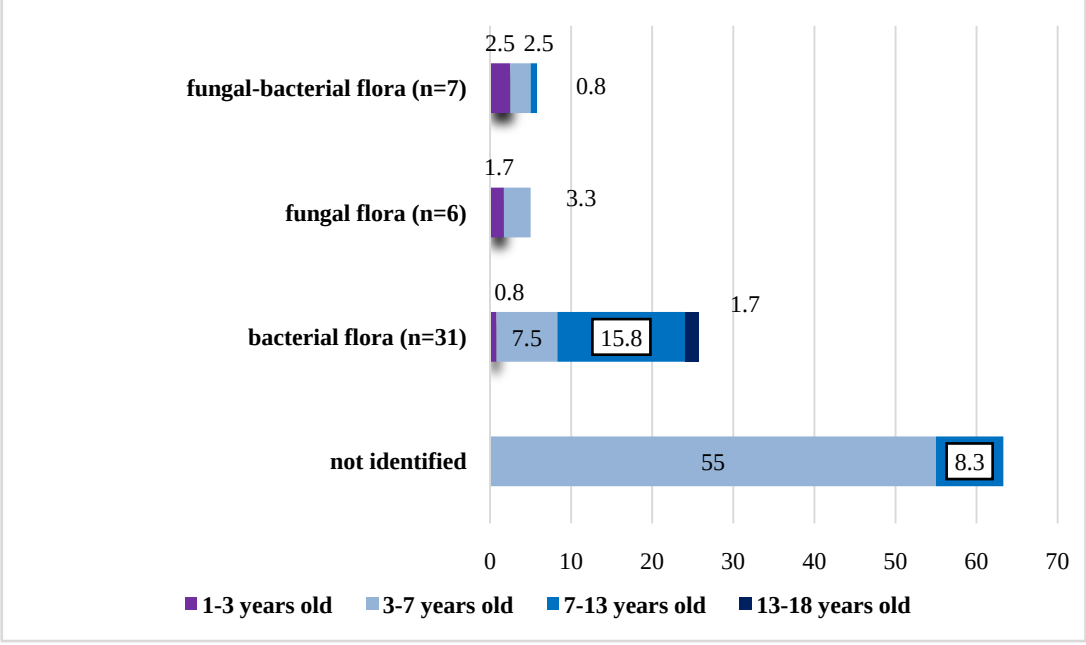

Figure 2. Formation of purulent-inflammatory process depending on the age of patients

In children with isolated pathogenic flora in oropharyngeal swabs in 38.6% of cases anemia was noted, in 8 children (18.2%) - dental caries and in 13 patients (29.5%) - various chronic inflammatory diseases of the GI tract. The incidence of anemia in the group of children with identified pathogenic microflora in the oropharynx compared to the group of children without pathogenic microflora was 5 times more frequent (OR=5.352; 95% CI - 2.067 - 13.8), dental caries was also 5 times more frequent (OR=5.407; 95% CI - 1.3 - 21.6), chronic inflammatory diseases of the GI tract was 6 times more frequent (OR=6.1; 95% CI - 2.067 - 13.8).

In a comparative study of the severity of clinical symptoms based on the results of smears from the oropharyngeal mucosa, it was revealed that in 76 patients without pathogenic microflora in 100% of cases the disease proceeded with fever, sore throat, and enlargement of peripheral lymph nodes.

3. Conclusions

1. At viral etiology of purulent-inflammatory process the disease runs with febrile fever ($p<0,05$), catarrhal changes of oropharynx, at bacterial and bacterial- fungal association hectic fever is characteristic ($p< 0,05$), and at fungal etiology - febrile ($\chi2 =3.745$), and at three of these conditions inflammation of pharynx is manifested with obvious plaque ($\chi2 = 64.039$).
2. In infectious mononucleosis the etiologic factor of purulent-inflammatory process in the oropharynx in 31.7% of cases is pathogenic bacterial flora, in particular Staphylococcus aureus - 21.7%, Streptococcus pyogenes - 10.0%, and Candida albicans - 10.8%, and also in 5.8% of cases is bacterial-fungal association.
3. In children with infectious mononucleosis, the age of children older than 7 years ($\chi2=29.358$), the age of children younger than 3 years ($P<0.05$), artificial feeding before 1 year of age ($\chi2=28.4$), the presence of concomitant diseases such as anemia, rickets, chronic inflammatory diseases of the respiratory system ($p<0.05$) are important in the development of secondary bacterial infection.

REFERENCES

[1] Bernstein D., Brady M., Connelly B. Infections caused by herpesviruses // in Infectious Diseases in Children / Edited by D. Marry. - Moscow: Praktika, 2016. -927 p.

[2] Klimova R.R. Frequency of detection of markers of herpesvirus infections in frequently ill children with acute respiratory infection // Pediatrics. - 2014. - T. 93, № 1. 32-37. p.

[3] Krasnov M.V., Stekolshchikova I.A., Borovkova M.G., Andreeva L.V. Infectious mononucleosis in children // Modern problems of science and education. - 2015. - № 2-1.

[4] Rodionova O.V. Infectious mononucleosis: clinic, new approaches to diagnosis and therapy in children / O.V. Rodionova, O.A. Aksenov., A.A. Bukin // Manual for doctors. -St. Petersburg, 2020. - 22 p.

[5] Chernova T.M., Bannova S.L., Ohrema N.M. et al. Microbial landscape of the pharyngeal mucosa in infectious pathology of the lymphopharyngeal ring in children. Proceedings of the XII Congress of pediatric tumor specialists of Russia "Actual issues of tumor pathology in children". M., 2018. C. 76.

[6] Adaishvili P.S. Etiopathogenesis of oropharyngeal lesions and obasnovanie therapii pri infektatsionnom mononucleosis u children. 2013 Moscow Abstract.

[7] Microbiocenosis of mucous membranes of oropharynx in children with angina / L.V. Feklisova et al. // Yukumlins Diseases. -2016. -№ 2. 27-31. p.

[8] Zaytsev, I.A. Hepatitis caused by Epstein-Barr virus / I.A. Zaytsev, V.T. Kirienko // Zdorov'ya Ukrainy 21 storichya: medical newspaper. - 2016. - № 9. C. 52.

[9] Adeishvili P.S., Shamsheva O.V., Guseva N.A. "Modern ideas about oropharyngeal lesions in infectious mononucleosis" // Deternye Infections, vol. 11, no. 3, 2022, pp. 42-45.