THE EFFECTIVENESS OF AUTOTRANSPANTATION OF MACROPHAGE CELLS IN THE TREATMENT OF PURULENT ENDOBRONCHITIS IN CHILDREN

We used method of autotransplantation of macrophage cells in the treatment of purulent endobronchitis of different etiology in children. 30 patients (14 boys and 16 girls) at the age from 1 to 9 years old were examined. Bronchological investigation of patients diagnosed one-sided purulent endobronchitis. The positive dynamics of the cytological indexes and clinical symptoms have proved the effectiveness of this method.

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Introduction

The treatment effectiveness of the purulent in the most cases depends on the restoration of the bronchial patency and it also depends on the factors of the local immune defense. In the literature we can see the data regarding use of ozone in the therapeutic doses which can render as an antibacterial and painkilling action; also it can improve metabolic and reparative processes (Ildov, 1997; Shamsiev and Yuldashev, 1997; Shamsiev et al., 1999).

The aim of this work was the improvement of the treatment results of children with purulent endobronchitis of the different etiology with using of the autotransplantation of the macrophage cell of the respirator tract with stimulation by ozonized physiologic saline. The effectiveness of the treatment should be evaluated according to the cytological indexes of the broncho-alveolar lavage fluid (BALF), and also according to the clinical data.

Material and methods

In order to achieve our goal it was examined 30 patients at the age from 1 to 9 years old. There were 14 boys and 16 girls. In the nosologic order they are located in the following order: 10 children with recurrent bronchitis, 11 children with foreign bodies of the bronchus and 9 patients with bronchiectasis. In the control group there were children with urolithiasis without pathology of the respiratory tract from their bronchus it was drawing lavage fluid during the surgical operation through the intubation tube.

Autotransplantation was performed by use the following method. Transplant was received by using selective broncho-alveolar lavage (BAL) with sterile 0.85% fluid of ozonized sodium chloride from one of the segmental bronchus of the donor side without signs of endobronchitis and collecting of the lavage material in the silicon “trap”, prepared from the disposable syringe which has volume of 20 ml. This substance was selectively injected in the bronchus of the infected side after preliminary lavage by use of 0.85% fluid of sodium chloride by using disposable syringe through the silicone catheter. Ozonization of the fluid of sodium chloride was performed of the equipment OTRI-01, during 10 minute, concentration of the ozone in the fluid was 5-8 mg/l.

From the precipitate of centrifugation of BALF it was prepared a swab with the following fixation. Calculation of the cell elements was carried out under the immersion for 100 cells with the evaluation of the cytological culture in percents.
Results and discussion

During the bronchological investigation of patients of the all group it was diagnosed one-sided purulent endobronchitis. In the lavage fluid drawing from the donor’s bronchus it was prevailed alveolar macrophage (AM) 91.4±2.0 and in patients with AM it was 63.4±2.7. The amount of neutrophil (NP) was accordingly 10.8±2.0 and 7.4±1.8 and the amount of lymphocytes (LC) was accordingly 7.8±1.2 and 1.42±0.3.

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<th>TABLE 1. CYTIOLOGICAL CHARACTERISTICS OF BRONCHOALVEOLAR-LAVAGE FLUID IN PATIENTS WITH PURULENT ENDOBRONCHITIS DURING THE TREATMENT BY USING OF AUTOTRANSPLANTATION</th>
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Note: P - significance of the differences, * - P=0.001, ** - P=0.005.

In the table it is shown the cytological characteristics of BALF in children with purulent endobronchitis before (the first bronchoscopy) and after treatment (the third bronchoscopy) by use of autotransplantation with ozonized physiologic saline and in children without pathology of the respiratory tract. As you can see according to the indexes of BALF the improvement of the cytological indexes during the treatment by use of the method of autotransplantation was determined already after the second bronchoscopy and after the third bronchoscopy we could see almost normalization of the cytogram of BALF. So, it was determined the cleaning of the bronchus from the exudates and restoration of the bronchial patency. It is reflected also on the clinical duration of the disease by the decreasing of the body temperature, normalization of the frequency and depth of breathing, decreasing of the sputum elimination and frequency of the cough. On the physical examination it was also determined the positive dynamic as the increasing or the absence of bubbling rales and restoration of the vesicular resonance.

Conclusion

So, the using of autotransplantation of the defense cells of the respirator tract and associated with them humoral factors after its stimulation by ozonized physiologic saline of sodium chloride is the effective method of treatment children with purulent endobronchitis of the different etiology and it can be recommended to use it in the pulmonological centers of the children’s clinic.

References