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CYTOKINE PROFILE IN PATIENTS WITH CONGENITAL CLEFT UPPER LIP AND PALATE

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Abstract:

A study was conducted to study the levels of pro - and anti-inflammatory cytokines (IL-2, IL-6, IL-4, IL-18, and MCP-1) in 46 children with cleft upper lip and palate who were in the children's regional multiphilic hospital in Bukhara. All the sick children underwent a comprehensive examination by specialists (surgeon, pediatrician, orthopedist, otorhinoloringologist, psychoneurologist) to identify somatic abnormalities and concomitant malformations.

Keywords: Cytokines-IL-6, polymorphism, inflammatory processes, pediatrician, orthopedist, otolaryngologist.

INTRODUCTION

The conducted studies on the level of cytokines showed that the synthesis of pro-inflammatory cytokines-IL-6, IL-18 and MCP-1 and anti-inflammatory cytokine IL-10 in sick children was significantly increased, while the level of IL-2 was slightly lower than the control values. The noted changes and the state of the cytokine status should be qualified as a secondary immunodeficiency condition requiring immunomodulatory measures

MAIN PART

It has been established that the number of children with congenital malformations, including those of the face and jaw, has been increasing progressively all over the world. In particular, congenital clefts of the upper lip and palate-account for about 13% of all congenital malformations of a person. According to the WHO, they occur in 0.6-16 cases per 1000 newborns and occupy the 2-3 place among human birth defects in frequency. The frequency of birth of children with cleft upper lip and palate has a stable upward trend. One of the important reasons for the course of the pathological process of the maxillofacial region are violations in various parts of the immune system. The manifestations of secondary immune insufficiency in the oral cavity are characterized by specific elements, including polymorphism of primary and secondary pathological elements, prolonged rates of development of inflammatory processes, and atypical localization of lesions of the oral mucosa. The problem of changes in the state of the immune system in children with VRHN has been little studied, although it is known that secondary immune deficits may occur in children with IDP. Therefore, the urgently needed development and improvement of methods of treatment and rehabilitation of this contingent of children is difficult to implement without a thorough study of the characteristics of their immune system and justification of the expediency of using immuno-oriented drugs in the treatment. It is known that the immune response includes all multidirectional types of effector mechanisms, each of which is optimal against certain pathogens. At the same time, subpopulations of T-helper cells play a key role in the regulation of the functions of immunocytes through the production of cytokines with oppositional effects. The oppositional pools of cytokines-IFNγ and IL-4, IL-10-are considered as markers of Th1-and Th2-lymphocytes, of which IFNγ enhances the cell-mediated immune response, and IL-4 and IL-10-humoral. In the postnatal adaptation of the immune system of newborns, one of the leading mechanisms is the activation of the cytokine system, which plays an important role in colonizing the mucous membranes and skin of the child, activating phagocytosis and triggering immune processes in T-lymphocytes.

THE AIM OF STUDY

The aim of the study was to study the levels of pro-and anti-inflammatory cytokines (IL-6, IL-18, MCP-1, IL-10) in children with cleft upper lip and palate.

MATERIALS AND METHODS.

Under our supervision were 46 children with congenital cleft upper lip and palate, who underwent surgery in the surgical department of the Republican Hospital of Bukhara. Considering that earlier (under the age of 1.5-3 years) surgical treatment leads to early recovery of communication functions, prevents psychoemotional disorders, the age of the children examined by us was in the range from 0 to 14 months. The examination consisted of the collection of clinical and anamnestic data and laboratory tests. All children with maxillofacial pathology underwent a comprehensive examination by specialists (surgeon, pediatrician, orthopedist, otolaryngologist, psychoneurologist) to

identify somatic abnormalities and concomitant malformations and to carry out the necessary correction of abnormalities in the preoperative period.

After the examination of the child, surgical and therapeutic measures were carried out, depending on the degree of deformation. The control group consisted of 16 practically healthy children of the same age.The study of the level of cytokines IL-2, IL-6, IL-18, MCP-1 and IL-4 in the blood serum was carried out by the ELISA site (Vector Best CJSC, St. Petersburg). Static processing of the received data was carried out on a personal computer using a standard package of application programs

RESULTS AND DISCUSSION:

Of the 46 children surveyed, there were 28 girls (60.8%) and 18 boys(39.2%). When studying the clinical data of children, the following concomitant diseases were identified: dysbacteriosis, allergic diseases (diathesis, stomatitis), diseases of the ENT organs. The majority of women who gave birth to children with HRVNG had a 2nd or 3rd birth. During the first pregnancy, 14 children (30.4%) were born, while during the 4th pregnancy, 6 children (13.04%) were born. In most of the women who gave birth to children with HRVNH, pregnancy proceeded with toxicosis phenomena of 1 and 2 halves, 26.3% of women had various complications of the course of rads, 28% of women in the first trimester had influenza.

The study of cytokine levels in children with CRVGN showed that the concentration of IL-18 was 3.5 times higher than the values of the control group and averaged 1045.7+12.6 pkg / ml ($P<0.01$). Interleukin-18 (IL-18) or γ-interferon-inducing factor plays an important role in the immune response. It is produced mainly by macrophages, but can also be expressed by kupferon cells, microglia, keratinocytes, osteoblasts, and astrocytes. It stimulates the formation of various subpopulations of T-helper cells, has pro-inflammatory activity, and plays a role in the development of a pathological condition. Elevated levels of IL-18 were detected in sick children with more pronounced symptoms of inflammation, who had a more severe clinical course of the pathological process. According to the literature, under the action of IL-18 in macrophages, the enzymes cyclooxygenase NO-synthase are induced, and the synthesis of proinflammatory cytokines and chymokines is activated. IL-18 is no less effective in stimulating the synthesis of Th2-type cytokines, in particular IL-4. The analysis of the results showed that the level of ID-4 was increased in children with HRVNG (9.01+0.5 pkg / ml versus 6.95+0.43 pkg/ml in the control group) ($P<0.05$). Therefore, ID-18 acts as a polyclonal activator acting together with other cytokines.

When analyzing the level of MCP-1, its increased content was also observed in sick children (566.6+11.7 pkg / ml versus 176.4+9.7 pkg/ml in the control) ($P<0.01$). MCP-1 is the most important factor of monocytone chemotaxis in the focus of inflammation. The source of MSP-1 synthesis is a wide range of cells: fibroblasts, monocytes and macrophages, endotheliocytes, leiomyocytes, intestinal epithelial cells, osteoblasts, melanocytes, mesotheliocytes, bone marrow stroma cells, astrocytes, etc.

In children with HRVGN, the level of IL-6 was significantly increased compared to the control group (67.5+3.1 pkg/ml versus 19.9+2.0 pkg/ml) ($P<0.01$), while the level of IL-2 was slightly lower than the control values (2.51+0.1 pkg/ml versus 2.7+0.1 pkg/ml in the control group).

SUMMARIZING THE PRESENTED DATA,

It should be noted that the development of congenital pathology of the maxillofacial region is a very urgent problem already because of their wide prevalence at the present time. And the noted changes in the state of cytokine status in children with congenital cleft of the upper lip and palate can be qualified as a secondary immunodeficiency condition requiring immunomodulatory measures

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