PRODUCTION OF PRO-INFLAMMATORY CYTOKINES IN NEWBORN CHILDREN WITH HERPESVIRUS INFECTION

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Intrauterine infections remain a significant medical and social problem in obstetrics and perinatology. They affect neonatal and infant morbidity and mortality rates, are among the most critical etiological factors of antenatal pathology, causing pregnancy loss, stillbirth, and the birth of low-weight infants, as well as newborns with congenital infection symptoms and neurological disorders during the postnatal period.

The immune system, being integrative, determines infant survival and is one of the most responsive and regulatory systems of homeostasis in the development of pathological processes, especially in postnatal adaptation.

Research Objective. To study the characteristics of pro-inflammatory cytokine production (IL-1β, IL-6) in newborns with herpesvirus infection (HSV - herpes simplex virus).

Materials and Methods. This study included 78 newborns with a diagnosed intrauterine infection. According to the study's aim, all infants were divided into two groups: the main group – 27 children with herpes simplex virus types 1 and 2 (HSV), and a control group of 30 healthy full-term newborns of similar age. The levels of pro-inflammatory cytokines (IL-1β, IL-6) in the umbilical and peripheral blood of newborns with HSV were studied and analyzed. IL-1β and IL-6 concentrations were determined using a solid-phase enzyme-linked immunosorbent assay with test systems from AO "VECTOR-BEST" (Russia, Novosibirsk).

Research Results. Analysis of the obtained indicators revealed that the IL-1β level in the umbilical cord blood serum of infants in the HSV group was 238.3±13.30 pg/ml, significantly higher than the control group value of 194.7±8.17 pg/ml ($P<0.05$).

The IL-6 level in infants with HSV was 2.1 times higher (27.6±1.93 pg/ml) ($P<0.001$) compared to the control group values of 12.9±0.59 pg/ml. Comparative analysis revealed that IL-1β concentration in peripheral blood serum significantly increased compared to umbilical blood levels. In Group 1 infants with HSV, the average IL-1β level rose by 24.3%, with an average of 314.7±23.21 pg/ml ($P<0.05$).

Similarly, IL-6 content in peripheral blood of newborns with HSV increased by 27.5%, averaging 38.1±2.43 pg/ml compared to the initial 27.6±1.93 pg/ml ($P<0.05$).

Conclusions. A marked imbalance and hypercytokinemia indicate a direct relationship between cytokine status and severe intrauterine infections in newborns. Hyperproduction of pro-inflammatory cytokines, which act as protective factors against infections, may become a factor of aggression, contributing to destructive processes and the development of multiple organ failure.