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CYTOKINE LEVELS AS MARKERS OF WOUND HEALING AND TREATMENT OF PURULENT WOUNDS IN CHILDREN

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Today, the problem of preventing the chronicity of wound processes in both adults and children remains urgent, the search for effective methods of empirical treatment of purulent and infected wounds. Among all mediators of inflammation in the most studied in injuries and other infected and sterile injuries in children, adults belong to interleukins: interleukin-1β (IL-1β), interleukin-6 (IL-6), interleukin-8 (IL-8), interleukin -10 (IL-10) and tumor necrosis factor a (TNF-a). These cytokines are mediators of processes aimed at the regulation of repair processes in the wound.

The goal is to study the level of pro-inflammatory and anti-inflammatory cytokines in dynamics in the treatment of infected and purulent wounds in children using the proposed optimized local treatment compared to the standard technique.

Materials and Methods. A survey was conducted of 45 children with purulent wounds who were treated in the clinic of Zaporizhzhya State Medical University from 2015 to 2018. Depending on the treatment tactics, they were divided into the first (n = 26) and second groups (n = 19). The patients of the first group were supplemented with optimized complex local treatment, including a combination of magnetotherapy, liposome solutions of an antibacterial drug. Treatment efficacy was evaluated by clinical signs and serum levels of interleukin-1β and interleukin-10 on days 1 and 7 of treatment.

Results. After analyzing the clinical course of the wound process in children of two groups, we found that a decrease in hyperemia and the absence of purulent discharge on the 5th day occurred more often in patients of the first group (in 21 (80.7%) and in 7 (41.2%) - the second (($p < 0.05$) .At the same time, on the 5th day in 75.9% of cases in children of the first group the appearance of granulation tissue was noted, while in the second - only in 33.3% ($p < 0.05$).

Analyzing the data of immunological parameters of blood serum, we found certain features. Children of the first group with purulent wounds after lymphadenitis on the first day of treatment showed a high level of pro-inflammatory interleukin-1β (an average of 1.88 ± 0.05 pg / ml) than 0.27 ± 0.03 pg / ml ($p < 0.05$). which served as a negative prognostic marker, despite the general trends, we note that the levels of cytokines on the first day of treatment were slightly different between the subgroups of children who were divided by nosology. So, the highest levels of pro-inflammatory IL-1β were determined in children with lymphadenitis, which seems logical. On the other hand, the same cytokine was significantly lower in children with phlegmon compared with patients with an abscess and an infected wound. Obviously, this fact indicates the influence of microcirculation disorders in this nosological form. The highest level of anti-inflammatory interleukin-10 was observed in patients with purulent wounds after lymphadenitis in children of the first group. The general tendencies of changes in the cytokine content in the dynamics corresponded to generally accepted ones: the level of IL-1β decreased and IL-10 increased. In the first group of wound treatment, the level of IL-10 increased and IL-1β decreased, which confirms the effectiveness of the proposed treatment methodology already on the 7th day. The level of IL-1β did not statistically differ only in children with phlegmon, which may indicate the role of the microvasculature in achieving the effect of complex local treatment. On the other hand, the most statistically significant changes in the amount of IL-10 were observed in children with abscesses and lymphadenitis, rather than with an infected wound and phlegmon.

In our opinion, this fact is associated with the presence of a certain limitation of the inflammatory process without significant disturbances in microcirculation; it is observed precisely with an abscess (shaft of inflammatory infiltration) and lymphadenitis (capsule of the lymph node), while the peculiarity of phlegmon is the absence of a clear border of inflammation and its limitations, depth is possible process. A comparative analysis of the general data of immunological parameters during treatment showed that the level of IL-1β on day 7 in 69.2% of patients in the main treatment group significantly decreased ($p < 0.05$). An increase in the level of anti-inflammatory interleukin-10 was noted in 55.2% of patients in the main group, while in the control group it increased only in 33.4% ($p < 0.05$). Such changes in the markers of inflammation corresponded to certain features of the clinical course of the wound process (reduction of local symptoms, development of granulation tissue) in children of the study groups. In children of the control group, on the 7th day of treatment, despite the increase in anti-inflammatory interleukin-10, pro-inflammatory IL-1β also remained high. This fact indicates a "lag" in the dynamics of cytokines in children who received standard therapy compared with children who received the proposed optimized local treatment.

Conclusions: 1. The use of magnetotherapy and liposomal solutions in the treatment of purulent wounds in children was accompanied by statistically significant changes in cytokine levels in children. Most significantly, this treatment tactic influenced the level of anti-inflammatory cytokine IL-10.

2. Changes in the markers of inflammation corresponded to certain features of the clinical course of the wound process (reduction of local symptoms, development of granulation tissue) in children of study groups.

3. The level of cytokines IL-1β and IL-10 can be used to assess the dynamics of the wound process in children.

Key words: *cytokine, purulent wounds, treatment, children.*

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INTRAOPERATIVE PUNCTURE BIOPSY OF THE PARATHYROID GLANDS AS A DIAGNOSTIC OPTION

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The aim of this study was to investigate the difference between preoperative and postoperative parathyroid hormone levels in 93 patients with primary hyperparathyroidism.

Materials and Methods. All patients of the first (n=58) and second (n=5) groups underwent parathyroidectomy for hyperparathyroidism with determination of the concentration of parathyroid hormone 30 minutes before surgery and 20 minutes after removal of the altered parathyroid gland. During the operation, puncture of the altered parathyroid gland was carried out with determination of the concentration of parathyroid hormone in the washout from the puncture needle. To verify the diagnosis, a morphological study of the removed parathyroid gland was performed. Patients in the control group (n=30) were examined for serum parathyroid hormone levels in the preoperative and postoperative periods.

Results. With a single lesion of the thyroid gland, the preoperative level of PTH was 250.2 [164.7; 396.2] pg / ml, and after parathyroidectomy, it significantly decreased to