COMPARATIVE ANALYSIS OF IMMUNOLOGICAL PARAMETERS AGAINST THE BACKGROUND OF VARIOUS TREATMENTS FOR ORAL LICHEN PLANUS

Yuliya Makedonova✉ ⓘ**, Sergey Poroyskiy** ⓘ**,
Olga Afanaseva** ⓘ**, Elena Venskel** ⓘ

Volgograd State Medical University, Volgograd, Russia

✉ *yuamakedonova@volgmed.ru*

ABSTRACT — The study of immunological parameters was conducted to investigate the state of pro- and anti-inflammatory cytokines in saliva of patients with lichen planus. The patients were divided into two groups by simple randomization: the first group was treated with Celestoderm applications: Solcoseryl 1:1, the second group was injected with platelet autoplasma. In the near terms of observation (1–7 days), the level of pro- and anti-inflammatory cytokines was evaluated. It was revealed that all patients with lichen planus showed a significant increase in the level of pro-inflammatory cytokines and immunoglobulins; that indicates a pronounced inflammatory reaction in the oral cavity. At the same time, all patients showed a decrease in inflammatory potential due to the local therapy. However, in the group treated with injections of platelet autoplasma, a significant improvement in immunological parameters and more rapid relief of inflammation compared to the other group was noted.

KEYWORDS — oral lichen planus, immunoglobulins, cytokines, saliva, treatment.

INTRODUCTION

The oral cavity possesses not only general immunity, which equally protects all organs and tissues of the body, but also its own local immunity, which plays the main role in protecting against infection [1]. The effectiveness of protection depends on many factors, such as the integrity of the mucous membrane, the state of the lymphoid system, changes in the constitution of lymphoid tissue, which form transition states and a predisposition to a number of diseases and pathological conditions, and the content of protective factors (secretory immunoglobulins, lysozyme, lactoferin, etc.). The inflammatory process is a very finely regulated balance between pro- and anti-inflammatory mediators that neutralize the harmful effects of irritation and minimize damage to their own tissues [2, 3]. The secretion of cytokines is a short, self-limited process that is initiated by certain gene-determined receptors [4].

The diagnostic value of determining cytokines significantly increases when they are studied directly in the focus of the inflammatory process [5,6]. For this purpose, the determination of cytokines directly through liquids in cavities is used, i.e. in mixed saliva of the oral cavity [7]. The content of cytokines in the oral fluid does not correlate with their level in the blood, which once again proves the autonomy of local oral immunity [8].

MATERIALS AND METHODS

As a result of a comprehensive clinical examination and treatment of 60 patients with an erosive and ulcerative form of lichen planus at the age of 45–59 years, divided into 2 equal groups: group I — they carried out the traditional treatment regimen, the applications of Celestoderm and Solcoseryl 1: 1, were used in group II platelet autoplasma injections. The level of pro- and anti-inflammatory cytokines and immunoglobulins after 3 and 7 days was evaluated.

The results of an immunological study of patients with erosive and ulcerative form of lichen planus demonstrated the high effectiveness of drug therapy in the treatment of the above pathology, in particular the use of platelet autoplasma injections. Prior to the initiation of drug therapy, patients of all both clinical groups had a high level of pro — and anti-inflammatory cytokines and immunoglobulins. Directly in the focus of inflammation, the level of cytokines increases significantly during their study, which is consistent with data from other authors [8]. The content of cytokines in the oral fluid does not correlate with their level in the blood, which once again proves the autonomy of local oral immunity. Increased pro-inflammatory cytokine profile (IL-1β — 41.24 ± 1.87 pg/ml; IL-8 — 51.3 ± 1.21 pg/ml; IFNy — 6.33 ± 0.54 pg/ml; TNFa — 3.95 ± 0.37 pg/ml) characterizes a violation of the immunity regulation , a pronounced inflammatory process and damage to the tissues of the oral mucosa. A high level of the anti-inflammatory cytokine interleukin-4 (10.1 ± 2.3 pg/ml) indicated the develop-

ment of compensatory reactions aimed at suppressing the inflammatory process. The increased content of immunoglobulins (sIgA — 0.43 ± 0.01 IU/ml, IgG — 0.022 ± 0.001 IU/ml, IgM — 0.15 ± 0.01 IU/ml) indicates an imbalance between their synthesis and decay in the background of a damaging factor in acute and chronic inflammatory and destructive diseases of the oral cavity.

After 3 days from the start of treatment, the concentration of pro-inflammatory cytokines began to decrease, however, the difference compared with the data obtained at the beginning of the treatment and between the comparison groups was statistically unreliable (p> 0.05, p> 0.01). The concentration of anti-inflammatory IL-4 and immunoglobulins continued to increase in all treatment groups, although this difference was not statistically significant relative to the start of the treatment and between the observation groups (p> 0.05).

Seven days after the start of the treatment, there was a tendency to a decrease in the level of pro-inflammatory cytokines in patients of all clinical groups. For example, the concentration of IL-1ß in the group of patients who received traditional drug treatment (group I) was 33.8 ± 1.23 pg/ml, while using PRP therapy it was 34.1 ± 0.91 pg/ml. The concentration of interleukin-8 was 42.5 ± 1.23 pg/ml, which is 10.8% more compared with the comparison group II (p <0.01). It should be noted that in the group of patients, the treatment regimen of which included injections of platelet autoplasma, a significant difference was also obtained relative to the first observation group (p <0.01). When studying the concentration of TNFa, there was also a significant decrease in this indicator relative to the start of treatment in all observation groups. Between comparison groups the following was noted in group II relative to group of observation I :(2.61 ± 0.16 pg/ml and 3.48 ± 0.23 pg/ml, respectively, at p <0.01). The interferon-gamma concentration continued to decrease in all cohorts, however, no significant difference was obtained between the comparison groups (p> 0.05). So, IFNy in group I was 5.27 ± 0.33 pg/ml, in group II — 4.83 ± 0.21 pg/ml. The value of the anti-inflammatory cytokine indicator continued to increase in all comparison groups: in the first group, 13.3 ± 2.2 pg/ml; in II — 12.8 ± 2.1 pg/ml. The concentration of secretory immunoglobulin A practically did not change its value and amounted to 0.39 ± 0.06 IU/ml in group I, and 0.37 ± 0.08 IU/ml in group II. A similar situation was observed when determining the IgG index.

CONCLUSIONS

Thus, a week after the start of the treatment, the initiation of the restoration of immunological param-

eters was noticed. More pronounced dynamics was reported in patients of the second observation group. A decrease in the concentration of cytokines on the 7th day of observation is a reflection of a decrease in the activity and severity of the inflammatory process in the oral cavity. In addition, since there was no increase of immunoglobulin concentration, a decrease in the activity of the inflammatory process was observed. The study confirmed the effectiveness of this dental treatment for elderly patients. The analysis of the obtained data justifies the need to include the above pharmacotherapy method in the treatment regimen.

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