

<https://doi.org/10.29013/ELBLS-23-2-20-22>

*Suleymanov Suleyman Fayzullaevich,
PhD, Senior Researcher, Associate Professor
of the Chair of Microbiology, Virusology and
Immunology of the Bukhara State Medical Institute,
Bukhara, Uzbekistan*

EVALUATION OF CELLULAR AND CYTOKINE REACTIONS IN PATIENTS WITH CHRONIC PANCREATITIS DURING IMMUNOTHERAPY

Abstract. The article provides data on the study of cellular parameters of the immune status and cytokine profile in 36 patients with chronic pancreatitis (CP). As a control, 30 apparently healthy individuals who had no pathologies from the gastrointestinal tract were selected. In patients with CP, profound suppression of the main pool of T (CD3) lymphocytes and its subpopulations, and of the interleukin profile were revealed. The use of the immunopreparation Thymoptinum (dose 0.8–1.0 mg per course of therapy) in combination with traditional treatment in patients with CP led to the normalization of the parameters of cellular immunity and stabilization of the interleukin profile.

Keywords: chronic pancreatitis, T- and B-links of immunity, cellular immunity, status, Thymoptinum, immunocorrection, interleukins.

It has now been established that in everyday life there are a number of unfavorable factors, which include shifts in the external environment, food technology, lifestyle and the spread of “Western nutrition”, which led to an increase in pancreatic pathologies (PZh). Over the past 40 years, a tendency towards a steady increase in the incidence of chronic pancreatitis (CP) has been demonstrated by more than 2 times throughout the world [1–4].

CP in terms of prevalence, increased incidence and the cause of disability is an urgent problem of modern medicine. In the structure of diseases of the digestive system [3–6].

CP is 8–10%, and in general clinical practice – 0.2–0.6% and is the cause of temporary disability, high mortality in patients of the most working age [1, 7].

Disorders in the immune system can lead to inflammation in the pancreas. It can be both immunological reactions and the response of the organism

of CP patients to microorganisms of bacterial nature. The last 20 years have been marked by the growth of research on disorders of the immune and cytokine status in diseases of the pancreas [1–8].

Purpose of the study: To study the cellular and cytokine parameters of the immune system and conduct immunocorrective treatment in patients with CP.

Materials and methods. 36 patients were examined (33–65 ages) with a diagnosis of CP. The diagnosis was carried out on the basis of complaints, medical history, and objective laboratory tests, instrumental data: ultrasound, fibrogastroduodenoscopy, survey radiography of abdominal organs. The control group consisted of donors from 30 healthy subjects (25–55 ages).

The parameters of cellular immunity (T-lymphocytes and a subpopulation, B-lymphocytes) were identified using monoclonal antibodies (LLC “Sorbent Service”, Russia).

Quantification of levels TNF- α , IL-6, IL-4 in serum performed using reagents set ProCon (LLC "Protein contour", St. Petersburg, Russia) by ELISA. Immunotherapy was carried out in 15 patients.

Thymoptinum (Uzbekistan) was used as an Immunological drug. 0.8–1.2 mg per treatment (dose 100 mg/day for 8–12 days). The indicators of immunity was studied twice: before – and after 1 month after treatment).

Results and discussion. In patients with CP found immunodeficiency cell component: 0.7–times whatever suppression of the total lymphocyte pool – T(CD3) – $35.3 \pm 2.6\%$ as compared with the control group – $52.4 \pm 1.8\%$ ($p < 0.001$); 0.8–fold decrease in the absolute number of T (CD3) – cells ($p < 0.05$).

Also determined the oppression subpopulations of T-lymphocytes, have the helper-suppressor function – Th(CD4) – $29.5 \pm 1.1\%$ ($p < 0.001$) and 341.8 ± 32.1 cells/1 mcl blood ($p < 0.001$) (control in $36.5\% \pm 0.7$ and 616.4 ± 44.3 cells/1 mcl of blood, respectively), the contents of Ts(CD8) – $13.8 \pm 1.4\%$ ($p < 0.05$) and 127.3 ± 9.8 cells/1 mcl blood ($p < 0.01$).

On the side of B (CD19)–cell link, opposite, the tendency to increase as the relative parameter – $20.6 \pm 2.3\%$ ($p < 0.05$), which was 1.4 times higher than those of the control group values, such and totally – 1.7–fold increasing – 385.8 ± 33.4 cells/1 mcl of blood (in the control – 230.1 ± 26.7 cells /1 mcl of blood).

Analysis of the spectrum of cytokines has shown that in patients with CP during the aggravations markedly increases the parameters of pro-inflammatory cytokines: TNF- α up to 202.6 ± 22.3 pg/ml (normal – 24.5 ± 5.1 pg/ml, $p < 0.001$) and IL-6 was increased 6 times (317.4 ± 53.5 pg/ml and 47.8 ± 11.2 pg/ml, respectively, at $p < 0.001$).

The level of anti-inflammatory cytokine IL-4 have increased by 4.3 times compared with the norm, which was statistically confirmed (157.5 ± 36.7 pg/ml and 32.6 ± 14.3 pg/ml, respectively, $p < 0.001$).

Thus, in patients with CP have found secondary immunodeficiency, for which we used to eliminate Thymoptinum applied in combination with basic therapy. Immunotherapy resulted to an increasing in both relative – $54.7 \pm 3.2\%$, and the absolute values of T(CD3) – lymphocytes – 992.3 ± 64.8 cells/1 mcl of blood. At the same time, increasing and stabilization were observed in Th(CD4) and Ts(CD8). This immunoregulatory index consisted 2.2.

Carrying out traditional treatment in patients with CP was noted moderate decreasing levels of TNF- α , IL-6 ($p < 0.05$; compared with the data before the treatment) and a weak increase in IL-4 and 172.3 ± 41.1 pg/ml. Influenced by immunocorrective therapy conducted on a back-ground of the traditional treatment, in patients with CP was revealed marked reduction of pro-inflammatory cytokines: TNF- α to 118.4 ± 29.1 pg/ml, IL-6 133.6 ± 51.8 pg/ml.

Moreover, it was observed the reduction in production of anti-inflammatory cytokine IL-4 95.2 ± 27.4 pg/ml.

Conclusions: The CP patients was observed significant changes in the functioning of most of the parameters of the immune system, namely the profound suppression of T (CD3) – lymphocyte subpopulations. In patients with CP it was revealed a trend in the growth rates of pro- and anti-inflammatory cytokines. The combination of traditional treatment and Thymoptinum is effective in patients with CP, as it contributed to the restoration and stabilization of most of the parameters of the immune system.

References:

1. Drewes A. M., Stefan A. W. Bouwense S. A. W., Campbell C. M. Guidelines for the understanding and management of pain in chronic pancreatitis // *Pancreatolgy.* – Vol. 17. 2017. – P. 720–731.
2. Lazarchuk T. B. Dynamics parameters T- and B-links of immunity patients with chronic pancreaticitis patients // *Bull. of the Sci Ach.* – No. 2. 1999. – P. 76–79. [In Ukrainian].

3. Suleymanov S. F. Immunological processes as etiopathogenesis of chronic pancreatitis // Publishing house: LAP. Saarbrücken, 2015.– 56 p. [In Russian].
4. Suleymanov S. F. Using immucorrection therapy in patients with chronic pancreatitis // European Science Review.– No. 7–8. 2016.– P. 141–142.
5. Suleymanov S. F. Disorders Of The Immune System And Their Immunological Rehabilitation In Patients With Chronic Pancreatitis // Eur. Jour. of Molec. & Clin. Med.– Vol. 7.– Issue 3.2020. – P. 5178–5187.
6. Suleymanov S. F. Analysis of the degree of immune disorders and the application of immunocorrectors in diseases of digestive system // European Science Review.– Vienna, Austria.–No. 9–10. September–October.2021. – P. 12–15.
7. Suleymanov S. F. Immunological Aspects of Chronic Pancreatitis // Publishing house: “Sadridin Salim Bukhoriy”.– Bukhara, 2022.– 109 p.
8. Suleymanov S. F., Suleymanov F. S. Use of Thymoptinum in Patients with Chronic Pancreatitis // Materials of the III Scientific and Practical International Distance Conference, – Kharkiv, March 24, 2023.– P. 166–168.