LEVELS OF TNF-α AND IL-8 IN PATIENTS WITH ACUTE AND CHRONIC PANCREATITIS

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Annotation. The aim of the study was to research levels of TNF-α and IL-8 in patients with acute and chronic pancreatitis. The study included 86 patients with a confirmed diagnosis of acute edematous pancreatitis (group 1) and 36 patients with a confirmed diagnosis of chronic pancreatitis (group 2). Control group consisted of 70 conditionally healthy people, in whom laboratory and instrumental indices were determined similar to those in patients with acute and chronic pancreatitis. According to the aim and objectives of the study, we analyzed the levels of amylase, lipase, TNF-α and IL-8. The data was processed using the SPSS 20.0 statistical software package for Windows. Determined that the level of amylase in group 1 was significantly (p<0.01) different from the same indicator in group 2 and in the control group. A similar trend was observed in the study of lipase levels in all groups. At the same time, there was no significant difference between the indicators of group 2 and the control group (p>0.05). Regarding the levels of TNF-α, its highest rates were observed in group 1. In a statistical analysis, it turned out that the level of TNF-α was significantly higher (p<0.05) in group 1 than in group 2 and the control group. The levels of IL-8 both in group 1 and group 2 were significantly higher (p<0.01) than in the control group. At the same time, the value of this indicator also differed significantly in the statistical comparison of groups 1 and 2. Thus, in acute pancreatitis, the levels of TNF-α were significantly higher (p<0.05) than in chronic pancreatitis, but its concentration did not correlate with other studied parameters. IL-8 levels progressively increase with an increase in the degree of activity of the inflammatory process, both in acute and in chronic pancreatitis, and correlates with an increase in such indicators as amylase and lipase in the acute form of the disease.

Key words: acute pancreatitis, chronic pancreatitis, TNF-α, IL-8.

Introduction

One of the most pressing problems of surgery for a long time remains the problem of pancreatitis. Despite the constant development of ideas about the pathogenesis of the inflammatory process in the pancreas, the development and introduction of new methods of diagnosis and treatment in the clinical practice, the problem of acute and chronic pancreatitis does not lose its relevance [1, 2].

The incidence of acute pancreatitis is increasing worldwide, and at present, this disease is one of the most common causes of hospitalization of patients with pathology of the gastrointestinal tract [3, 4]. Although the incidence and prevalence of chronic pancreatitis is lower than acute, it significantly affects the quality of life of patients characterized by chronic abdominal pain, frequent exacerbations of the disease, and also exocrine and/or endocrine insufficiency [5, 6].

The annual incidence of acute pancreatitis varies from 13 to 45 per 100000 people, and chronic - from 5 to 12 per 100000 people. The prevalence of chronic pancreatitis is about 50 per 100000 people [1].

In our opinion, it is of scientific interest to study the levels of inflammatory markers, such as TNF-α and IL-8, in patients with acute and chronic pancreatitis.

The aim of the research was to study the levels of TNF-α and IL-8 in patients with acute and chronic pancreatitis.

Materials and methods

The research was carried out in the clinic of the Department of Endoscopic and Cardiovascular Surgery at National Pirogov Memorial Medical University, Vinnytsya.

The total number of participants in the study was 192. Group 1 included 86 patients with a confirmed diagnosis of acute edema pancreatitis, group 2 - 36 patients with a confirmed diagnosis of chronic pancreatitis. The diagnosis was verified according to the classification of ICD-10 and according to national and local protocols.

The control group consisted of 70 conventionally healthy people, in whom laboratory and instrumental diagnostics were performed similarly to patients with acute and chronic pancreatitis.

In addition to the routine parameters, according to the purpose and objectives of the study, we studied serum TNF-α and IL-8 levels using an ELISA kit (BioSource).

According to the goals and objectives of the study, we analyzed the levels of such parameters as amylase, lipase, TNF-α and IL-8.

The data was processed using the SPSS 20.0 statistical software package for Windows.

Results. Discussion

The average age of patients with acute pancreatitis was 46.2±16.2 years, in patients with chronic pancreatitis - 45.8±17.9 years, in the control group - 39.7±10.5 years.

The gender distribution in the groups was uniform, the number of men and women was almost the same.

Thus, the study groups were homogeneous in terms of
The development of complications such as multiple organ failure and septic shock. It was concluded that in acute severe pancreatitis pro- and anti-inflammatory cytokine response occurs at an early stage and remains in the systemic circulation for several days. There was also a correlation with the dynamics of the severity of the disease. But it was concluded that the concentration of cytokines in the plasma can not accurately predict the death in some patients.

In our study, we aimed to determine the levels of TNF-α and IL-8 in acute and chronic pancreatitis to assess the relationship between levels of these parameters and the concentration of pancreatic enzymes in both forms of the disease.

Our results have shown that levels of TNF-α were significantly higher in acute pancreatitis than in chronic pancreatitis. However, there was no significant increase in TNF-α production in chronic disease compared to healthy individuals. In determining correlations between pancreatic enzyme levels such as amylase and lipase levels, and TNF-α, we did not find any significant dependencies.

Instead, in the study of IL-8 levels, it turned out that this inflammation marker progressively increases with increasing activity of the inflammatory process, both in acute and chronic pancreatitis, and correlates with the growth of such parameters as amylase and lipase in acute form of the disease.

Conclusions and perspectives of further developments

1. In acute pancreatitis, TNF-α levels were significantly higher (p<0.05) than in chronic pancreatitis, but its concentration did not correlate with other studied indicators.

2. IL-8 levels progressively increase with increasing activity of the inflammatory process, both in acute and chronic pancreatitis, and correlates with increased rates of amylase and lipase in acute form of the disease.

Prospective is the further study of the levels of other proinflammatory cytokines in acute and chronic pancreatitis.

### References

1. Yadav, D. & Lowenfels, A. B. (2013). The Epidemiology of Pancreatitis and Pancreatic Cancer. *Gastroenterology*, 144 (6), 1252-1261. DOI: 10.1053/j.gastro.2013.01.068.

2. Machicado, J. D. & Yadav, D. (2017). Epidemiology of Recurrent Acute and Chronic Pancreatitis: Similarities and Differences. *Dig. Dis. Sci.*, 62 (7), 1683-1691. DOI: 10.1007/s10620-017-4510-5.

3. Shah, A. P., Mourad, M. M. & Bramhall, S. R. (2018) Acute pancreatitis: current perspectives on diagnosis and management. *J. Inflamm. Res.*, 11, 77-85. DOI: 10.2147/JIR.S135751.

4. van Dijk, S. M., Hallensleben, N. D. L., van Santvoort, H. C., Fockens P., van Goor, H., Bruno, M. J. & Besselink, M. G. (2017). Acute pancreatitis: recent advances through randomised trials. *Gut*, 66 (11), 2024-2032. DOI: 10.1136/gutjnl-2016-313595.

5. Kirkegard, J., Mortensen, F. V. & Cronin-Fenton, D. (2017) Chronic Pancreatitis and Pancreatic Cancer Risk: A Systematic
ПИВНИ TFN-α ТА IL-8 У ХВОРИХ НА ГОСТРІЙ ТА ХРОНІЧНИЙ ПАНКРЕАТИТ

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Анотація. Метою дослідження було вивчення рівні TFN-α та IL-8 у хворих на гострий та хронічний панкреатит. У дослідженні було включене 86 хворих із підтвердженим діагнозом гострою медианозом (група 1) та 36 хворих із підтвердженим діагнозом хронічного панкреатиту (група 2).

У групі 1 концентрація TNF-α в 1,4 рази більша в порівнянні зі групою 2 (p<0,05), і кореляє зі зростанням таких показників, як амілаза та липаза. У групі 2 концентрація TNF-α була достовірно нижчою в порівнянні зі групою 1 (p<0,05), але не кореляла із рівнем амілази та липази.

Ключові слова: TNF-α, IL-8, гострий панкреатит, хронічний панкреатит.

УРОВНІ TFN-α І IL-8 У БОЛЬНЫХ ОСТРЫМ И ХРОНИЧЕСКИМ ПАНКРЕАТИТОМ

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Аннотация. Нами была включена 86 больных с подтвержденным диагнозом остого отёчного панкреатита (группа 1) и 36 больных с подтвержденным диагнозом хронического панкреатита (группа 2). Определённое значимое различие между обеими группами не было (р>0,05).

При гострому панкреатите уровень TNF-α был достоверно выше (p<0,05), чем при хроническом панкреатите, и коррелировал с ростом уровней амилазы и липазы.

Ключевые слова: острый панкреатит, хронический панкреатит, TNF-α, IL-8.