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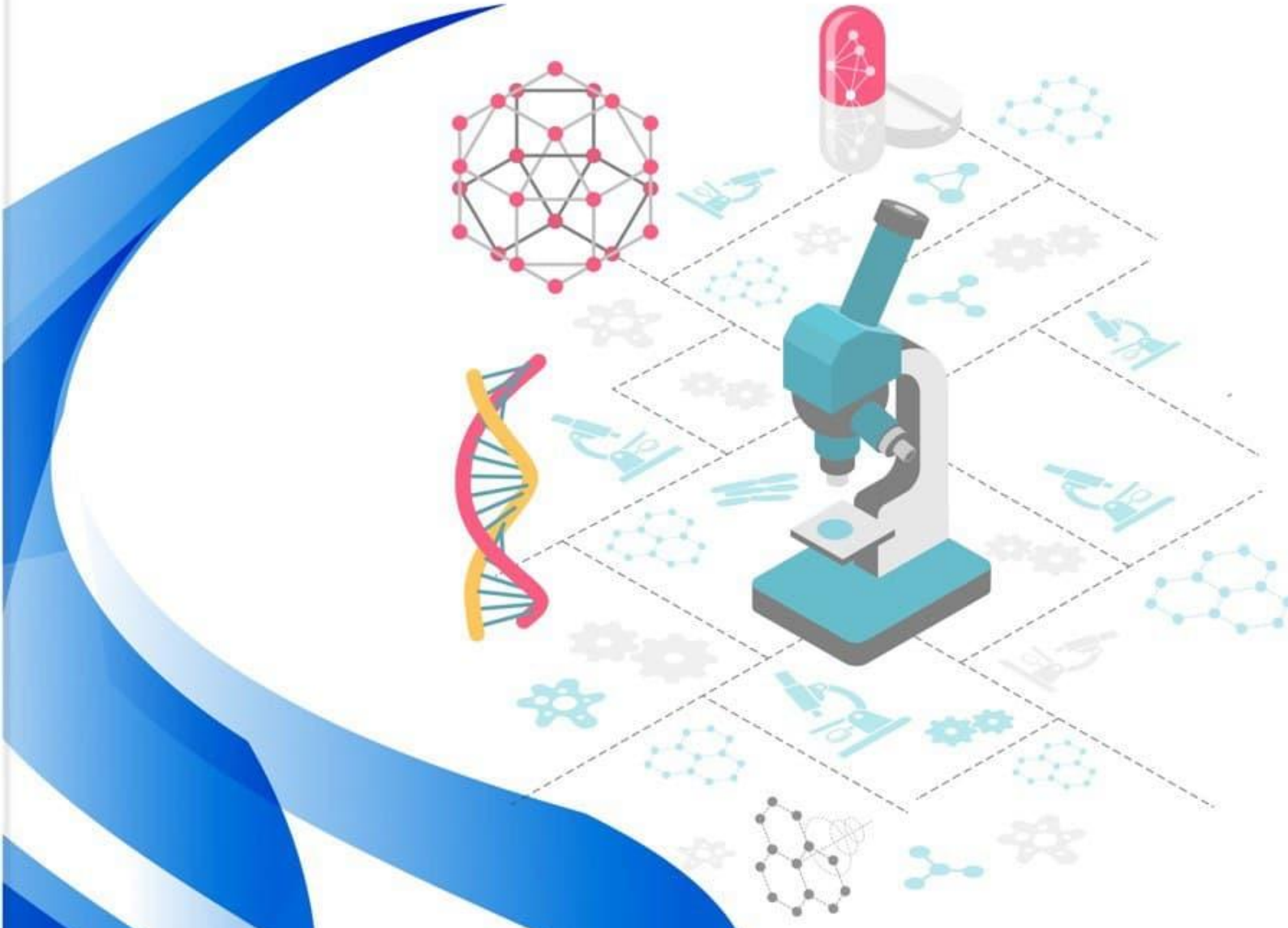

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INFLAMMATORY MARKERS AND ULCERATIVE COLITIS

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Abstract. The study included 128 patients treated ulcerative colitis in the Gastroenterology Department of Bukhara regional Multidisciplinary Medical Center during 2021-2023 and 20 health professionals as a control group. Patients were diagnosed with serum immunoferment analysis using TNF-α, IL-6, IL-17A, TGF-β2 and its importance was studied. The results of the study showed an increase in TNF-α, IL-6, IL-17A and a decrease in TGF-β2 in severe types of ulcerative colitis, and found that it could be used in diagnosis as a poor prognostic marker.

Keywords: ulcerative colitis, TGF-β_2, IL-6, IL-17A, TGF-β2

Introduction

Ulcerative colitis is a chronic cause of unclear inflammation of the large intestine, a continuous superficial inflammation of the mucous membrane, as well as a disease that spreads to varying degrees from the rectum to the upper parts of the large intestine. Ulcerative colitis has the property of relapsing and remitting. Distinguishing signs of ulcerative colitis include a call to urinate and a bloody diarrhea that comes in conjunction with a call to the exit of the litter [1]. Despite the fact that the etiology of ulcerative colitis remains under debate, many data have proven that an autoimmune process lies on the basis. Most patients have common similarities with a number of autoimmune disorders such as involvement of limb damage in the process, with extra-intestinal symptoms of ulcerative colitis observed [2].

A distinctive feature of the epidemiology of ulcerative colitis is the spread of this disease among young people of working age in recent years. European studies have described the impact of ulcerative colitis on the quality and level of life of patients, their work training, their relationship with those around them [3]. More than

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25% of patients around the world have problems with frequent toilet access or the need for a garbage collector in their work. Late diagnosis of the disease, severe and severe forms of the disease indicate its high lethality [4].

Like other inflammatory bowel diseases, there is still no clear cause of ulcerative colitis. The disease is formed as a result of the concomitant arrival of several factors, including a hereditary predisposition, congenital and acquired diseases of the immune system, violation of the intestinal normative microflora and harmful environmental influences. Those of greater importance in them received inflammation TNF-α, IL-6 and anti-inflammatory IL-4 and TGF-β2. TNF-α stimulates the production of IL-6, so that the function of IL-6 is compatible with its activator [5].

Of the anti-inflammatory interleukins, TGF-β2 is a multifunctional anti-inflammatory cytokinin involved in metabolic reactions, apoptosis and migration, stratification processes in target-cells. Every cell in the body, including epithelial, endothelial, nerve and connective tissue cells, produces TGFß. In ulcerative colitis, the synthesis of TGFß2, which denotes regeneration, is reduced as a result of impaired cellular integrity [6].

Assessment of the severity of ulcerative colitis is important for management of treatment and predicting the consequences of the disease. Literature analysis has shown that interleukins analysis in patients with ulcerative colitis has been carried out in large numbers, but given that they can all increase in other diseases, there is a need to develop a special diagnostic method that assesses the severity of the disease [7].

Material and methods

The study was carried out in the Department of Gastroenterology of the Bukhara regional Multidisciplinary Medical Center in 2021-2023. The study included 128 patients diagnosed with yak in accordance with the criteria for inclusion, treated in stationary and outpatient conditions, and 30 healthy individuals as a control group.

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Initially, anamnestic data was collected in all patients.

The condition of the colon mucosa in Yak was carried out in the ENDOMED medical and Diagnostic Clinic using Fujifilm 4450hd videoprocessor, Fujinon ec-530fl videocolonoscope (Japan).

Yak Lamb severity was determined by the endoscopic activity level (Schroeder) of the disease in accordance with Yak's Meyo activity level.

The study applied mesons developed by the Russian society of gastroenterologists and coloproctologists based on the recommendations of the joint European consensus with Truelove-Witts mesons to assess the severity of lambs in the disease classification.

All cytokines were conducted with immunoferment analysis in the autormat analyzer MINDRAY MR-96A (China).

The study analyzed interleukins in terms of disease activity levels, severity levels, clinical variants, and duration of the disease.

Results

Patients with ulcerative colitis were diagnosed with serum inflammation-calling TNF-α, IL-6, IL-17A, Calprotectin, and anti-inflammatory TGF-β2. Based on the results of serum-detectable inflammatory marker analysis, it was observed that primary group patients showed nearly 30 increases in TNF-α compared to individuals in the control group, with IL-6 6.5 times, IL-17A 2.7 times, and TGF-β2 almost 2 times (Table 1).

Tabke 1. Analysis of blood inflammatory markers in patients with ulcerative colitis and individuals in the control group

Indicators	Main group, n=128 (100%)	Control group, n=30 (100%)

TNF-α, pg / ml	6,9±0,43	0,24±0,02
IL-6, pg / ml	11,5±1,47	1,76±0,23
IL-17A, pg / ml	22,9±4,51	8,41±0,89
TGF-β2, pg / ml	12,4±1,26	23,7±4,78

Patients included in the study were diagnosed with serum inflammatory - calling cytokines-TNF-α, IL-6, IL - 17A, and anti-inflammatory cytokin-TGF-β2 with varying severity levels, types of severity, and varying activity levels. Initially, the value of these cytokines in different weight levels of ulcerative colitis was calculated. All inflammatory-calling cytokines showed the highest value in the severe-grade type of the disease, relatively lower values in the moderate and mild types, and anti-inflammatory cytokine showed opposite results. For example, in the severe type of disease, TNF-α was observed to be at the highest value (10.8±2.10 pg/ml), compared to the type in question it was found to be 1.6 times in the moderate type and almost 9 times less in the light type. At its maximum value (16.45±2.87 pg/mL) in the IL-6 severe type, it was observed almost 2 times less in the moderate type compared to the heavy type, almost 7 times less in the mild type. IL-17A was also observed in the highest amounts in the severe type of disease (37.3±6.45 pg/ml), 1.7 times less in the moderate type compared to the severe type, and 4.6 times less in the mild type. Anti-inflammatory TGF-β2 in contrast was found to be most abundant in the mild type (17.43±3.57 pg/ml), 1.7 times less in the moderate type compared to this type of severity, 4 times less in the severe type (Table 2).

Table 2. Analysis of inflammatory markers by disease severity in patients with ulcerative colitis

Indicators	Mild, n=36 (28,1%)	Moderate, n=64 (50%)	Severe, n=28 (21,9%)

TNF-α, pg / ml	1,25±0,11	6,72±1,21	10,8±2,10
IL-6, pg / ml	2,36±0,56	8,53±1,67	16,45±2,87
IL-17A, pg / ml	8,13±1,24	21,5±4,52	37,3±6,45
TGF-β2, pg / ml	17,43±3,57	10,2±2,32	4,16±1,13

At the next stage, the amount of these markers on the clinical variants of ulcerative colitis was calculated. All inflammatory-calling cytokines showed the highest value in the disease acute option, less in the chronic continuous option, and the minimum value in the chronic relapsing option, and anti-inflammatory cytokine showed the opposite results. For example, the disease was observed to have TNF-α at the highest value (11.4±1.83 PG/ml) in the acute withdrawal variant, 1.6 times in the chronic discontinuous variant compared to this variant, and 5 times less in the chronic relapsing variant. The Il-6 was observed at the highest value (17.7±2.87 PG/ml) in the acute option, almost 2 times less in the chronic continuous option in comparison to the acute option, almost 6 times less in the chronic relapsing option. Il-17A was also observed in the highest amount in the acute variant of the disease (39.6±7.69 PG/ml), almost 2 times less in the chronic discontinuous variant compared to this variant, and 4 times less in the chronic relapsing variant. Anti-inflammatory TGF-β2, in contrast, was observed at least in the acute withdrawal variant (5.48±0.84 PG/ml), 2 times more in the chronic discontinuous variant compared to this withdrawal variant, almost 3 times more in the chronic recurrent withdrawal variant (Table 3).

Table 3. Analysis of inflammatory markers in patients with ulcerative colitis on options for morbidity

Indicators	Acute, n=43 (32,8%)	Chronic continuous, n=46 (36,7%)	Chronic relapsing, n=39 (30,5%)

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TNF-α, pg / ml	11,4±1,83	7,25±1,64	2,17±0,10
IL-6, pg / ml	17,7±2,87	9,23±1,42	2,78±0,27
IL-17A, pg / ml	39,6±7,69	20,9±3,78	9,26±1,53
TGF-β2, pg / ml	5,48±0,84	11,9±1,91	15,8±2,45

At the next stage, the amount of these cytokines in different activity levels of ulcerative colitis was calculated. All inflammatory-calling cytokines showed the highest value at the level of pronounced activity of the disease, less at the level of medium activity and the lowest value at the option of low activity, and anti-inflammatory cytokine showed opposite results. For example, it was observed that the disease was present at the highest value of TNF-α (11.9±2.92 pg/ml) at the level of apparent activity, with an average activity rate of 2 times compared to this variant, with a low activity rate of 4.8 times less. IL-6 was observed at the highest value at the level of high activity (18.62±3.48 pg/ml), almost 2.4 times less at the level of moderate activity compared to the level of activity in question, almost 5 times less at the level of moderate activity. IL-17A was also observed with the highest amount of the disease at the level of high activity (40.2±6.73 pg/ml), almost 2 times less at the level of moderate activity compared to the level of activity in question, 5 times less at the level of low activity. Anti-inflammatory TGF-β2, in contrast, was observed in the least amount at the level of high activity (7.59±0.94 pg/ml), 1.5 times more at the level of moderate activity compared to the level of high activity, 2 times more at the level of low activity (Table 4).

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Table 4. Analysis of immunological markers on disease activity levels in patients with ulcerative colitis

Indicators	Low activity, n=42 (32,8%)	Moderate activity, n=48 (37,5%	High activity, n=38 (29,7%)

TNF-α, pg / ml	2,48±0,26	5,87±0,89	11,9±2,92
IL-6, pg / ml	3,76±0,39	7,69±1,76	18,62±3,48
IL-17A, pg / ml	7,58±1,62	20,8±3,98	40,2±6,73
TGF-β2, pg / ml	16,68±3,48	11,43±1,74	7,59±0,94

Finally, the amounts of these cytokines in terms of the duration of ulcerative colitis were determined. When TNF-α, IL-6, IL-17A from all inflammatory-calling serum-detecting markers as well as the stool-detecting Calprotectin were analyzed for duration of morbidity, no significant difference was observed in the amounts of these cytokines in all duration types, that is, an increase in the same in almost all duration types. However, serum-detectable anti-inflammatory marker TGF-β2 was found to be slightly lower than normal in the up to 5-year-old strain of ulcerative colitis (16.11±2.25 pg/ml), 1.7 times less than in the 6-10-year-long strain, and nearly 2.5 times less in the 11-20-year-long strain (Table 5).

Table 5. Distribution of patients by duration of the disease, n=128 (100%)

Duration of the disease, in years	Up to 5 years, n=76 (59,4%)	6 to 10 years, n=32 (25%)	11 to 20 years, n=20 (15,6%)
TNF-α, pg / ml	5,32±0,28	6,24±0,48	7,25±0,65
IL-6, pg / ml	13,6±0,82	9,64±1,76	11,30±1,03
IL-17A, pg / ml	19,79±1,90	23,7±2,43	26,2±3,42
TGF-β2, pg / ml	16,11±2,25	9,39±1,29	6,54±0,48

Conclusion.

Hence, ulcerative colitis has been observed to have decreased levels of inflammation-calling markers (serum-detectable TNF-α, IL-6, IL-17A, anti-inflammatory cytokine (TGF-β2) primarily responsible for regeneration, as weight levels, activity levels increase. Such a result is an increase in markers that call

inflammation in the acute type of disease, a decrease in anti-inflammatory markers, and in chronic continuous and chronic relapsing types, the opposite result is observed.

The results obtained make it possible to use TNF-α, IL-6, IL-17A, TGF-β2 as always available, non-traumatic methods for determining the level of cytokine and assessing the severity of the inflammatory-destructive process in patients with ulcerative colitis.

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