

## COMPLICATIONS THAT MAY OCCUR IN PREGNANT WOMEN WITH LEIOMYOMA

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**Objective:** To evaluate the significance of immunological markers in predicting early and late obstetric complications in pregnant women with uterine leiomyoma.

**Materials and Methods:** In the course of our study, 36 pregnant women diagnosed with uterine leiomyoma and receiving treatment at the gynecology department of the Bukhara City Maternity Complex were examined. All patients underwent anamnesis collection, clinical-functional assessments, and molecular-genetic investigations.

**Results:** The results of the study showed that the average level of IgA in the blood serum of women in the control group was  $1.85 \pm 0.12$  g/L, which falls within the normal range of 1.46 to 2.22 g/L. In women diagnosed with uterine leiomyoma, the serum IgA level was 1.62 times higher than in the control group ( $p < 0.05$ ). Furthermore, the average IgA concentration in these patients exceeded the upper limit of the normal range by 1.35 times ( $p < 0.05$ ).

**Conclusion:** According to our study, the examination and analysis of immunological markers in pregnant women with leiomyoma is an effective method for early prediction of disease progression and obstetric complications. Immunological monitoring not only allows for evaluating the course of the condition but also enables the planning of preventive and therapeutic measures based on an individualized approach.

**Keywords:** Uterine leiomyoma, humoral immune response, leiomyoma and pregnancy

**Relevance.** Uterine fibroid (leiomyoma, fibromyoma) is a benign tumour that develops from the muscular layer of the uterus (myometrium). It consists of smooth muscle cells and connective tissue. Fibroid is one of the most common gynaecological diseases in women of reproductive age [1-4]. Uterine fibroids most often proceed asymptotically, especially at early stages of the disease, when fibroid nodes are small in size and small in number. However, in the majority of women with fibroids there are alarming symptoms significantly reducing quality of life [2,3]. The main complaints of patients are related to pain syndrome caused by growth of fibroid nodes, as well as fatigue, weakness, apathy, menorrhagia and metrorrhagia, and chronic anaemia. In addition, dyspareunia, psychological stress associated with the aforementioned problems, and fear of possible medical interventions or reproductive dysfunction are often noted.

After disease onset these changes begin to be influenced by promoters (hormones) and effector mechanisms (growth factors) [5,8]. The pathogenesis of uterine fibroid is a multifactorial and complex process, which is based on genetic predisposition, hormonal influences, changes in the immune system and tissue-structural disorders. These mechanisms mutually complement each other, contributing to disease development and formation of its clinical picture.

Despite significant advances in studying the pathogenesis of uterine fibroid, the disease still remains one of the most prevalent causes of surgical interventions in gynaecology.

Until now, the clinical, morphological and endocrinological aspects of the disease have been studied in greatest detail [6]. At the same time, many researchers emphasise the important role of the immune system, in particular growth factors, in the pathogenesis of uterine fibroid [5,7].

Recent scientific studies have shown that immunological mechanisms play an important role in the development of fibroid and its complications. Using specific immunological markers reflecting the immune response of the organism, it is possible to early identify the rate of fibroid growth and risk of complications [4,8].

These differences become noticeable only at later stages of tumour growth, when cells begin to change their properties [7,].

**Objective of the study**-to assess humoral immunity in patients with uterine fibroid in order to identify pathogenetic mechanisms of the pathological process.

**Materials and methods.** In the gynaecological department of the maternity complex of the city of Bukhara 36 patients diagnosed with uterine fibroid were examined. The mean age of the women examined was  $50.1 \pm 4.09$  years. In 64.0% of patients, ultrasound examination revealed one fibroid node; in 36.0%-several nodes. The total volume of the uterus in 58.0% of patients corresponded to 4-5 weeks of pregnancy, in 42.0% -to 6-9 weeks.

The majority of patients (57.0%) had no complaints characteristic of fibroid; 27.0% reported painful periods, and 16.0%-pronounced and prolonged painful manifestations.

The control (donor) group consisted of 27 healthy women of comparable age to the clinical group, who had no history of tumours of the uterus or other internal organs. In these women the level of immunoglobulin A (IgA) was determined.

According to the researchers, circulating immune complexes (CIC) are an important diagnostic criterion for assessing the degree of activation of the humoral component of the immune system.

The level of immunoglobulin A in serum was determined by radial immunodiffusion. Circulating immune complexes were measured by the method of Naskova et al., which is based on nephelometry using polyethylene glycol (PEG) in the medium, as well as photolorimetry (KPK-2M atn) for assessing light scattering in the studied serum.

**Discussion.** The study results showed that the mean level of IgA in the serum of women in the control group was  $1.85 \pm 0.12$  g/l, which falls within the lower and upper limits of normal-from 1.46 to 2.22 g/l. In patients with uterine fibroid the IgA level was 1.62 times higher compared to the control group ( $p < 0.05$ ). The mean concentration of IgA in the patients exceeded the upper normal limit by 1.35 times ( $p < 0.05$ ). Individual analysis showed that only 14 (23.3%) of the patients with fibroid had IgA within the normal range, while 46 (76.6%) had IgA above the upper normal limit. No patients with IgA below the norm were identified.

In the control group the mean concentration of circulating immune complexes (CIC) was  $87.1 \pm 8.2$  arbitrary units. This indicator lies within the normal range, the upper limit of which is 104.3 arbitrary units. In patients with uterine fibroid the concentration of CIC in serum was significantly increased and was 1.43 times higher than the average normal value ( $p < 0.05$ ), which is statistically significant.

Analysis of data revealed the following trend: in 7 (12%) of patients with fibroid the level of CIC was within normal limits, in the remaining 53 (88%) this indicator was above normal.

This suggests high activation of the immune system in benign uterine tumours.

It is currently known that formation of various pathological conditions is accompanied by violation of cellular membrane integrity, which leads to their injury under the influence of free oxidation radicals [8].

One of the common signs of tissue damage is membrane disruption and the release of nuclear components, resulting in considerable amounts of DNA fragments appearing in the bloodstream. The interaction of the immune system with DNA fragments leads to the formation of autoantibodies, the level of which correlates with the degree of damage of cellular structures [6,8].

Thus, the conducted analysis showed increased activity of humoral immunity in patients with uterine fibroid, which is expressed in a significant increase in levels of IgA and circulating immune complexes. These indicators have important diagnostic significance for understanding the immunological basis of the pathological process.

The results of the study indicate that in patients with uterine fibroid experiencing pain syndrome, the levels of circulating immune complexes and IgA are significantly above normal, which points to activation of humoral immunity in the body. High levels of these immunological indicators may indicate increased destructive processes and the presence of autoimmune reactions.

These conditions underline the important role of immune mechanisms in the development of the pathological process and are of great significance in the development of diagnostic and therapeutic strategies.

**Conclusion.** According to the results of our study, investigation and analysis of immunological markers in women of reproductive age with uterine fibroid is an effective method for early prediction of disease development and gynaecological complications. The study found that uterine fibroid in pregnancy is associated not only with anatomical-physiological, but also with immunological factors.

In women with uterine fibroid during pregnancy a disruption of normal adaptive immune responses is observed. In particular, cytokine imbalance and insufficient formation of local immunological tolerance negatively affect fetal development and the course of pregnancy.

This leads to disruption of immunological interactions between the fetus and the placenta, which creates prerequisites for development of fetoplacental insufficiency, pre-eclampsia and premature miscarriages.

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