

**SIGNIFICANCE OF VIOLATION ACTIVITIES OF THE ADJACENT GLANDS OF
THE MALE REPRODUCTION SYSTEM IN INFERTILITY**

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Relevance

In the structure of an infertile marriage, the trend towards an increase in the male factor and a deterioration in the quality of sperm dictates the need for a close study of the existing problem. Infertility is a polyetiological disease and requires modern universal markers, the study of the level of which would allow determining the appropriate tactics for managing patients with impaired fertility, assessing the prognosis and prospects for treatment. A biochemical study of the ejaculate makes it possible to assess the activity of the accessory glands of the male reproductive system and the hormonal status of the body as a whole, which is important in assessing the pathology of spermatogenesis.

Zinc is found in large quantities in semen and prostate secretion and is of particular importance for the normal anatomical and functional state of the organs of the male reproductive system. This trace element is involved in the formation of sensitivity to various hormones and growth factors, is involved in the regulation of the activity of sperm plasma enzymes. Zinc promotes the processes of coagulation and liquefaction of the ejaculate, inhibits spontaneous agglutination of sperm; increases sperm motility, is important in ensuring the antibacterial activity of seminal fluid.

Inhibin B is a well-known endocrine marker for evaluating spermatogenesis. Sensitivity and specificity are important parameters for making clinical decisions and avoiding traumatic biopsies. Assessment of inhibin B levels should become an alternative to testicular biopsy, and can also be used in the differential diagnosis of male infertility.

The role of the biochemical study of seminal fluid is clearly underestimated, but often it is the study of seminal fluid that can identify the causes of reproductive dysfunction in men, and therefore provide early diagnosis, determine the tactics of therapy, and possibly outline new ways of treatment. This issue has been studied fragmentarily, and therefore further research and the search for other causes of pathospermia are relevant.

The purpose of the work was an assessment of biochemical markers of seminal plasma (citric acid, fructose and zinc) and the hormone inhibin B in blood plasma in infertile men.

Materials and Methods of Research

The results of a survey of 72 men with impaired fertility were analyzed. All patients were aged 26 to 45 years with non-obstructive azoospermia. Verification of the diagnosis was carried out on the basis of complaints, history taking and examination, clinical and instrumental research methods, general blood and urine tests, biochemical parameters of seminal fluid, determination of hormone levels in the blood serum, examination for the presence of a bacterial and viral infection, as well as ultrasound of the scrotum, kidneys and dopplerography of the veins of the spermatic cord (to exclude varicocele). The control group consisted of 20 practically healthy men with normal spermogram parameters. Mathematical data processing was carried out by methods of variation statistics using standard mathematical software packages on a personal computer with the determination of the mean, its error, Student's t test.

Results and its Discussion

The results of the study of the spermogram of the given data revealed that, in 3.2 ml of ejaculate, the concentration of spermatozoa was 13.7 million/ml, which was significantly lower than the control values ($P < 0.05$). Analysis of spermatozoa of morphologically normal forms according to Kruger showed that in patients it is 2.7%, significantly lower than the control values ($P < 0.05$). Motile spermatozoa were 2 times less in patients than in the control group ($P < 0.01$). In 47 (62.7%) patients, an increase in the viscosity of the ejaculate was noted, which is due either to a decrease in the volume of the ejaculate or a high content of mucus in it. In 9 (12.0%) patients, a decrease in the viscosity of the ejaculate was noted, which is associated with violations of the enzymatic, generative and endocrine function of the testicles. When studying the concentration of zinc ions, an almost 2-fold decrease in infertility in men was found (1.9 ± 0.3 versus 3.7 ± 0.8 mmol/l; $P < 0.01$). All men with infertility showed a decrease in the concentration of fructose in the ejaculate (7.4 ± 0.5 mmol/l) compared with the norm (15.0 ± 0.9 mmol/l, $p < 0.01$). There was also a decrease (18.34 ± 1.27 mmol/ml) in the concentration of citric acid in the ejaculate compared to the norm (23.42 ± 1.83 mmol/ml, $p < 0.05$). When studying the level of inhibin B in the blood serum, its significant decrease was revealed in infertile men ($p < 0.001$). Summarizing the above data, we can assume a probable mechanism for the development of changes associated with impaired fertility, in which there is a decrease in the level of fructose, citric acid and zinc. At the same time, there is a decrease in the level of inhibin B in the blood serum. All these changes lead to the activation of phospholipase A₂, the production of which is indirectly related to the content of zinc ions; this process is due to the activation of free radical processes in the organs of spermatogenesis and ejaculate. Careful monitoring of spermatozoa, the study of their changes at the structural level, as well as the study of biochemical parameters that can discriminate against pathological changes, are the priority tasks of laboratory diagnostics.

Findings:

Thus, studies of the concentration of inhibin B in blood plasma, citric acid, fructose and zinc in seminal plasma can be used in a comprehensive examination of patients to clarify the treatment and diagnostic tactics, which will identify the causes of abnormal reproduction of androgens, abnormalities in the morphology of spermatozoa, pathologies of glandular organs and output channels.

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