Section A-Research paper

PSYCHOLOGICAL AND IMMUNOLOGICAL RELATIONS IN MALE INFERTILITY

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ABSTRACT
The study of infertility in recent decades has been conducted in various fields of biology, medicine, medical psychology, psychiatry, and sociology. Understanding the severity of the problem allowed us to create conditions for the active development, development and improvement of methods for the diagnosis and treatment of infertility, including the introduction of assisted reproductive technologies.
The study included 86 men aged 26 to 45 years with impaired fertility (the main group). The men underwent a special urological examination. Verification of the diagnosis was carried out based on complaints, medical history and examination, clinical and instrumental research methods. To obtain standard immunological parameters, a group of fertile mentally healthy men who formed a control group (30 people) was examined.
The most common reactions in men with infertility were anxiety reactions-39 (45.3 %). So, the share of anxiety-depressive reactions was 20.9 % - 18 men and most often, in almost half of cases,

they occurred in the age group of 35-40 years. The addition of a depressive component was a consequence of their premorbid features.

Thus, it is established that the clinical picture of psychoemotional reactions in conditions of prolonged psychogeny depends on the constellation of premorbid personality traits, hereditary factors, duration of infertility treatment, socio-psychological and immunological factors.

KEYWORDS: psychological features, immunological factors, psychoemotional disorders, infertility, reproductive technologies

INTRODUCTION

According to the World Health Organization (WHO), the rate of infertile couples in the world is about 15% and has no downward trend. In total, WHO identifies 22 factors of female and 16 factors of male infertility. It is believed that in infertility there is a combined effect of factors of physical ill-health, social and psychological distress [1, 4].

The study of infertility in recent decades has been conducted in various fields of biology, medicine, medical psychology, psychiatry, and sociology [3]. Understanding the severity of the problem allowed us to create conditions for the active development, development and improvement of methods for the diagnosis and treatment of infertility, including the introduction of assisted reproductive technologies [2]. The temporary criterion for making a diagnosis of infertility, designated by the World Health Organization, is considered to be a period of 12 months, during which a couple with regular unprotected sexual contact fails to conceive a child [7].

Information about effective psychological assistance to this group of people in scientific publications is relatively rare. However, after the appearance of data that confirmed the effectiveness of psychotherapeutic intervention, multidisciplinary assistance programs began to be developed, which involve the cooperation of doctors and medical psychologists at the stages of diagnosis, treatment, the use of assisted reproductive technologies, and further support of pregnancy and childbirth [6].

The mental state of the patient and, to a greater extent, their psychological and psycho-emotional characteristics have the greatest influence on the outcome of infertility treatment [11, 12]. In this regard, the problem of psychoemotional reactions of men with infertility is becoming increasingly relevant, which is due to insufficient knowledge of the impact of mental health on the human reproductive system, which significantly increases the relative risk of infertility. The most important clinical manifestation is psychoemotional stress with anxiety and depressive reactions, which occurs when infertility treatment is ineffective [8].

The development of psychoemotional reactions occurs with a complex interaction of biological, social, and psychological factors that lead to a holistic response of the body to a complex impact. Therefore, research in the field of psychological manifestations is currently being rapidly developed at the intersection of different specialities [5].

Objectively, stress is manifested by excitation of the autonomic centres of the central nervous system with activation of the hypothalamic-pituitary-adrenal system, an increase in the concentration of catecholamines and glucocorticoids in the blood, aimed at preserving the body's homeostasis. Under stress, the body responds systemically, while the immune, nervous and

endocrine systems interact. Changes in the level of endocrine regulation under stress have a direct impact on the immune response. Various forms of immune response can occur in both the central and peripheral nervous systems. Thus, glial cells of the central nervous system, when activated, can produce cytokines that regulate immune processes in the body. The main pro-inflammatory cytokines synthesized by microglia are interleukin 1 (IL-1), tumour necrosis factor-alpha (TNFO-α), and interleukin 6 (IL-6), which ensure the interaction of the immune, nervous, and endocrine systems [10].

At the same time, despite a considerable number of works devoted to the study of the formation of psychoemotional reactions, a number of questions concerning the pathogenetic mechanisms of immunological and neuroendocrine changes still remain unresolved [9].

The purpose of the study to study the psychological and immunological relationships in male infertility.

MATERIALS AND METHODS

The study included 86 men aged 26 to 45 years with impaired fertility (the main group). The men underwent a special urological examination. Verification of the diagnosis was carried out based on complaints, medical history and examination, clinical and instrumental research methods. To obtain standard immunological parameters, a group of fertile mentally healthy men who formed a control group (30 people) was examined. When forming a sample group, the principle of voluntary participation in the study was implemented, which made it possible to reduce the possibility of motivational distortions. The following psychometric methods were used: personal and situational anxiety questionnaire Spielberger-Hanin Scale; hospital Anxiety and Depression Scale (HADS); emotional tone assessment scale. Mathematical data processing was carried out by methods of variational statistics using standard mathematical packages of application programs on a computer with the determination of the average, its error, and criterion t Student's name.

RESULTS AND DISCUSSION

The psychological response to infertility in men was represented by a wide range of psychoemotional reactions, including anxiety, anxiety-depressive, depressive and neurotic reactions. Manifestations of the lability of higher nervous activity were characterized by irritability, anxiety, inadequate reactions to ordinary household stimuli, decreased mood, sleep disturbance, and rapid fatigue. The most common reactions in men with infertility were anxiety reactions-39 (45.3 %). So, the share of anxiety-depressive reactions was 20.9 % - 18 men and most often, in almost half of cases, they occurred in the age group of 35-40 years. The addition of a depressive component was a consequence of their premorbid features. Depressive reactions were detected in 3.5 % of respondents. Neurotic reactions were equally evident in all age groups and accounted for 30.3 % of all psychoemotional disorders (Figure 1).

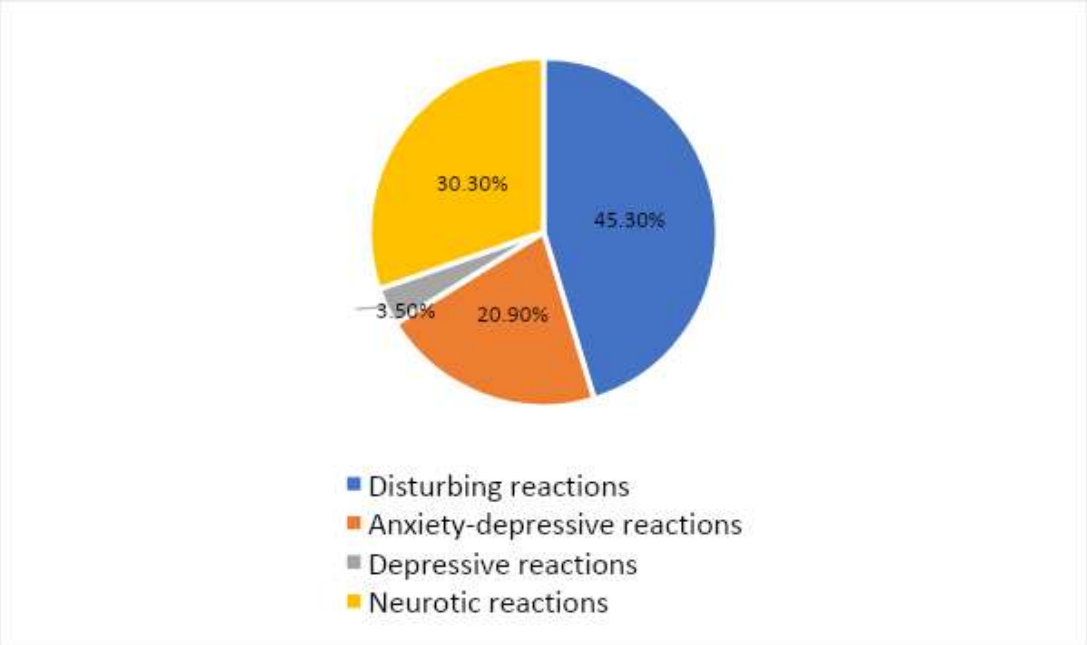

Figure 1. Structure of psychoemotional disorders

Further, we analyzed the differences in the methodology for assessing neurotic states. According to the results obtained, men of the main group are more prone to anxiety (48 people-55.8%). Based on the above, it can be assumed that men who do not have children and do not manage to conceive experience an increased level of anxiety, as they are constantly in a state of tension and stress, which they experience based on the current situation.

Considering the above, men with infertility were mainly characterized by a generally low mood background, emotional instability, and anxiety. Such people had a concentration on the idea of "parenthood", which was closely related to the fear of not leaving behind offspring, and these fears constantly cause negative emotions in infertile people.

It is necessary to pay attention to the fact that the group of men aged 35-40 years accounted for more than half of the cases, which could be due to a number of factors, such as the duration of infertility, the position held, and material well-being. As is known, the development of psychoemotional disorders is preceded by a variety of psychogenic-traumatic situations. Analysis of the data obtained allowed us to identify the following types of psycho-traumatic factors: бchildlessness, infertility treatment, death or illness of close relatives, life problems, unsettled personal life or dissatisfaction in relationships with a spouse, and the problem of ageing.

From the data obtained, it follows that situations of death or illness of close relatives, life problems, lack of work are typical for 32.5 % of men without a clear accentuation of character, as well as for 20.99% of patients with an accentuation of the epileptoid type, in whom premorbide discovered hypersociality, pedantic, emotive features, asthenic and inhibitory components were found in premorbid.

As is known, the nervous, immune, and endocrine systems are not autonomous but are components of a general system of response to external stimuli and stimuli-the adaptation system. The effect of stressors on the body is accompanied by activation of the adrenal cortex functions,

followed by suppression of corticosteroids. Under these conditions, the phenomenon of intra-stressor immunosuppression is a protective reaction of the body aimed at buffering the cascade of hyperergic reactions, increasing the level of hyperresponsiveness of the immune system and stimulating autoimmune processes. These provisions are confirmed by the changes we have identified. Regulation of the response of immune system cells is the result of their direct interaction or indirect effect on them of several biologically active mediators (interleukins), including interferons. According to the results of our study, an increase in the level of serum interferon was detected in most patients, which indicates a strain on this system, since normally only trace amounts of interferon are detected in the blood serum interferon. The state of humoral immunity was assessed by the concentration of IgA, IgM, and IgG immunoglobulins. The phenotypic characteristics of the main lymphocyte populations were studied using monoclonal antibodies to differentiation antigens, immunoregulatory index (and the immunoregulatory index (4^{+}CD4+/ 8^{CD8+}) was also calculated. An analysis of peripheral blood lymphocytes showed statistically significant differences in the content of T - lymphocytes in patients compared to the control group. Thus, the main group was characterized by a decrease in the relative content of T-lymphocytes to 49.7$\pm$1.2%, in contrast to 53.4$\pm$1.3% in the control group. At the same time, their decrease was due to a predominant decrease in the content of T - helpers (28.7$\pm$ 1.2% and 34.5$\pm$0.9%, respectively, for the groups). There was also a slight decrease in the immunoregulatory index. It should be noted that the development of pronounced psychoemotional abnormalities is accompanied by suppression of cellular immunity and the formation of an interferon-deficient state, which confirms the active participation of immune and neuroendocrine mechanisms in the development of stress and exacerbates male infertility.

CONCLUSION

Thus, it is established that the clinical picture of psychoemotional reactions in conditions of prolonged psychogeny depends on the constellation of premorbid personality traits, hereditary factors, duration of infertility treatment, socio-psychological and immunological factors. The conducted study indicates the need for a differentiated approach to psychological counselling in patients, taking into account personal characteristics, the level of anxiety, depressive reactions, somatic and immune status.

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