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MODIFICATION OF FORMS OF SPERM IN THE TESTICLES OF MEN WITH INFLAMMATORY DISEASES OF THE GENITOURINARY SYSTEM

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Abstract . This paper presents information on the process of the formation of germ cells in men with inflammatory diseases of the genital organs that have been exposed to electromagnetic fields.
Observations of spermatozoa showed that there were more living cells than non-living (respectively, 50.19% and 48.81%).
During the observation, a violation of cell motility was detected in the direction of increasing the number of motionless cells to 37.4% and sedentary to 56,33%.
The influence of the electromagnetic field led to disruption of the spermatogenesis process at the stage of formation of late spermatids and spermatozoa.
As a result of the non-coordinated divergence by acrosome of germ cells, cells with double heads, deformed necks and bifurcated flagella were formed.
The sperm heads, which accounted for 32.6%, subjected to greatest deformation, changes in the structures of the cervix is defined 7.21% and changes in the structures of the tails - 3.72%.

Keywords: electromagnetic fields, spermatozoa, acrosome, motility.

Introduction. The solution to the problem of fertility treatment in the country has a great importance due to the increase in the number of patients with arthritic infections, which can be caused by many factors. The infertility rate in the country

reaches 0-40%, of which the male factor is a large part in the structure of diseases [1, c.30]. Various factors can lead to the occurrence of infertility: chronic inflammatory diseases [2, c.132]. The effect of adverse environmental factors can cause the appearance of inflammatory diseases of the male genital organs [3, c.71]. From environmental factors it is necessary to separate the active influence on people as a result of the activity of nuclear power plants, chemical enterprises emitting electromagnetic waves from metallurgical installations, mining sub-communities, electropidetations, or electricity produce [4, c.50; 5, c.106]. In everyday life, people also feel the influence of electromagnetic waves- radiation from household appliances, the most unfavorable of which is the influence of electromagnetic waves from microwave ovens. Given the above information, the determination of harmful factors of the environment, in particular, the influence of the electromagnetic field on male sexual function and spermatogenesis is an urgent problem of modern medicine [6, c.29].

Aim: The purpose of our study was to determine the electromagnetic field on the occurrence of inflammatory diseases in men.

Materials and methods. Under the supervision, there were 33 patients from 18 to 44 years old with inflammatory diseases of the genital organs, the destruction of the process of spermatogenesis in which was assessed by the degree of occurrence of pathological forms of sperm at all stages of the spermatogenic cycle. The tests was evaluated by men who took semen the in the laboratory of In vitro Dnipro. In the analysis, such indicators as the number of urethral epithelial cells, prostate cells, leukocytes in 1 ml of sperm, the number of sperm in 1 ml, the total number of sperm, the number of normal and pathological cells in percentage were taken into account in the analysis. The viable and non-viable cells were counted. Living cells were evaluated for their degree of mobility. Cells were counted: active, but immobile, cells were stationary, without translational motions. In parallel, the calculation of non-living sperm was performed. Cells with normal structure and appearance of pathological lumps of sperm were also monitored. The pathological forms of male

germ cells in percentage correlation were counted: cells with pathology of the head, neck and tail. In inflammatory diseases of the human genitals, caused by the action of the electromagnetic field, there will be a violation of the formation of sperm at the stage of mitotic and meiotic divisions.

Results and discussion. The monitored people were in harmful conditions of production - under the action of electromagnetic waves at metallurgical, mining, and chemical enterprises. To a lesser extent, the subjects also felt the effect of an electromagnetic field emitted by electric appliances: refrigerators, microwaves and electric lawns, televisions, mobile phones. Microscopic examination of sperm revealed that in analyzes of men with acute and chronic inflammatory diseases in the field, single epithelial cells of the urethra and prostate were observed in the state of fatty dystrophy, lecithin grains and amyloid little bodies in a small number, single spermatophages.' Bether' crystals were not identified in any analysis. The expressed inflammatory process in the testicles of men who had the influence of harmful environmental factors, such factors as the presence in the semen analysis of a large number of leukocytes in 1 ml of fluid. Most patients numbered 50,000 to 200,000 cells. The study also found that in the analyzes of patients, the average equation of sperm count in men's sperm was 56.4 million in 1 ml, the total number of spermatozoa reached an average of 216.55 million in 1 ml. In sperm analyzes, the number of living and non-living sperm had approximately the same values, but more were still alive than non-living germ cells (50.19% alive, 49.819% non-living). Further analysis of sperm showed that of viable germ cells of active but still motile sperm counted 37.4%, cells without translational motions 6.54% and immobile sperm - 56.33%. When calculating non-living sperm, we obtained an average of 49.81% (Table 1). Immobile spermatozoa had the largest fraction of the structure of viable cells. In inflammatory diseases of the male reproductive organs in males, which have been adversely affected by the electromagnetic field, the largest share in the structure of viable sexually transmitted cells have motionless sperm, that is, the largest loss of ability of germ cells to translational movements. This data shows the more likely

causes of infertility in men and determine the role of the male factor in infertile marriage.

When studying the structure of sperm in the analysis of sperm of men with inflammatory diseases of the genital organs, formed consistently throughout all stages of the spermatogenic cycle, there was an average of 56.4%.

Table 1.

The number of sperm, mil/ml	The total number of sperm, mil	Sperm mobility, %			
		Alive			Inanimate/ dead
		immobil	without translational motion	fixed	
56,4	216,55	37,4	6,54	56,33	49,81

Percentage of viable human testicular sperm after exposure to EMF

Cells that had abnomalities in the chromosome breakdown and atypical acrosome at the stage of spermatozoa II order and sperm formation were also counted. As a result, spermatozoa formed with a split head, atypically formed neck and double flagella. The germ cells and double head accounted for 32.4% , cervical pathology-7.21%, double flagella - 3.72% (Table 2).

Table 2.

Percentage of normal and pathological forms of sperm of male testes after exposure to EMF

Spermatozoids with normal form, %	Spermatozoids with pathological form, %		
	heads	necks	tail
56,4	32,6	7,21	3,72

Conclusion. As a result of the study, we can draw the following conclusions:

1. The electromagnetic field has adversely affected various organs and systems, in particular, the male sexual system. The consequence is changes, which are defined in the form of reduction of translational motions of germ cells, and also modification of forms of sperm in the process of spermatogenesis.

2. The influence of the electromagnetic field has led to changes in the structure of viable cells in the testicles of men towards an increase in the motility of cells up to 37.4%.

3. The influence of the electromagnetic field caused a disturbance of the process of spermatogenesis at the stages of formation of spermatids II order and spermatozoa with the formation of cells with double heads, deformed necks and tails. Heads of the greatest deformation were subjected to the level of spermatozoa.

4. The above information indicates that the electromagnetic field adversely affects the spermatogenesis process, which can lead to male infertility and increase the role of the male factor in the structure of marital infertility.

Prospects of further research. Further studies may investigate the quantitative and qualitative components of human and mammalian sperm after the use of drugs that improve spermatogenic function.

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