

Macro-Microscopic Anatomy and Reactive Changes in the Testimonial Appendices under Exposure to Magnesium Chlorate in Postnatal Ontogenesis

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Abstract: There are practically no works in the literature that would present the data of detailed dynamic observation in the period from the moment of development of reactive changes in the epididymis under the influence of magnesium chlorate in postnatal ontogenesis, especially in comparison with the results of pathological morphological studies.

Keywords: Macro, microscopy, anatomy, magnesium chlorate, ontogenesis.

The urgency of the problem. In the Republic of Uzbekistan, in order to improve the health of the younger generation, a number of state programs have been adopted ("Soglom Avlod" yili, "Ona va bola" yili, etc.), mainly aimed at protecting the health of mothers and children.

At the same time, it is well known that the state of health of the father also plays an important role in the development of the child (V.L. Bykov, 2000). According to the latest statistical data, the reproductive function of men is sharply deteriorating (D.S. Irgashev et al., 2001; Kh.Ya. Karimov et al., 2003; M.V. Koryakin, 1998; V.S. Paukov, Yu.A. Erokhin, 2001; A. Aktas, O. Pamukcu - Baran, 2005). SH J Teshaev (2007) Even 30-40 years ago, infertility among men of fertile age was 15-25%. At present, this figure exceeds 40% (V.L. Bykov, 2000; Kh.D. Asadov, 2005). A common cause of infertility in men is impaired spermatogenesis. So, in the 60s of the last century, the lower limit of the normal concentration of spermatozoa in 1 ml of semen was 60 million. In 1983, this figure dropped to 40 million / ml, and in 1992 to 20 million / ml. At the same time, studies of the male reproductive system have not received sufficient attention, although it is known that there is a relationship between the efficiency of spermatogenesis and testicular volume.

As an equal participant in the reproductive process, a man, unlike a woman, is currently subject to higher morbidity and mortality. Accordingly, the life expectancy of men is less than that of women (V.L. Bykov, 2000; Kh.D. Asadov, 2004,2005; S. Erpek et.al., 2005; Ar. Ersay et al., 2005). All of this suggests that men have reproductive health problems.

One of the reasons for male infertility is the late diagnosis of the pathology of the testicles and epididymis. According to the literature (S.A.Allazov, M.A.Fakhratov, 2005; A.Guven, A.Kayikci et al., 2005), 15% of adult men have varicose veins of the spermatic cord (varicocele). Varicocele is observed in 1/3 of the total number of all infertile men. At the age of 10 to 25 years, the frequency of varicocele varies from 9 to 25.8%, and on average is 16.3% (M.V. Koryakin, A.S. Akopyan et al., 1998,2000).

Among other forms of pathology of the male reproductive system, a sharp (2-4 times) increase in the frequency of such developmental anomalies as cryptorchidism (delay or non-descent of the testicles into the scrotum) and underdevelopment of the penile urethra (hypospadias) should be mentioned. In industrialized countries, there is an increase (3-5 times) in the frequency of testicular malignant neoplasms. As you know, a factor predisposing to the development of testicular cancer is

cryptorchidism. Late detection of cryptorchidism and monorchism becomes one of the causes of male infertility, delayed treatment of which leads to testicular cancer (S. Irvine, 1996).

In addition to these diseases, changes in the volume of the testicles are also found in pathologies such as dropsy of the testicle, hypoplasia, testicular cyst, etc.

The volume of the testes and epididymis, as well as their size, is an important criterion for assessing the male reproductive system, since the efficiency of spermatogenesis is directly related to them. The volume of testes in men living in different ecological zones has its own regional and ethnic characteristics. So, in the United States, in middle-aged men, the volume of the testes averages 24.8 cm³, in Japan 17.6 cm³, in Russia - 18.9 + 3.9 cm³. Such parameters have not been developed in Uzbekistan. At the same time, the volume of the right and left testicles has its own characteristics. For example, in Moscow, the difference between testicles in men does not, on average, exceed 0.4 cm³ (M.V. Koryakin, A.S. Akopyan, 1998).

Meanwhile, the examination of the male genital organs is not particularly difficult. However, many doctors limit themselves to only the most superficial examination of the genitals. At the same time, many common malignant diseases of the male genital organs can be detected already upon physical examination.

In some countries (Japan, USA) there are special testicular standards taking into account the age of men (H. Takihara, 1983). In our republic, such standards for different age groups of men, taking into account anthropometric indicators, have not been developed. There is also no data on the volume of the epididymis of men living in areas where various chemicals, including pesticides, are used to increase yields.

At the same time, most authors (V.L. Bykov, 2000; U.B. Vafakulov, Kh.D. Asadov, 2005; A.I. Nikitin, 1998,2003; L.A. Fedorov, 1999; JSWeinder, H Moller, TK Jensen, 1998) associate the deterioration of spermatogenesis indices and an increase in the frequency of pathological conditions of the male reproductive system with anthropogenic pollution of the external environment and, above all, with pesticides.

To date, at the level of light-optical and electron microscopes, as well as by classical methods, the fine structure of the testes and epididymis of humans and laboratory animals has been studied (A.S. Akopyan, 2002; A.R. Zubarev, 1999; I.D. Klyufinsky, 1990; M. Kafshnoochi et al., 2005). Structural changes in the epididymis were also studied under the influence of cold (T.S. Blinova, 1977; Ya.A. Rakhimov, 1986) and chemical (P.I. Tashkhodzhaev et al., 1999; Sh.N. Dadajonov, 2005) environmental factors. Wednesday. However, the process of formation and regularities of changes in the structural components of the epididymis of rats in normal conditions and under the influence of pesticides passed through the milk of the mother (female rat) to the pups (rats) did not receive sufficient illumination. It is also not clear at what time of the lactation period pesticides pose the greatest danger to the formation of morphological changes in the tissues of the epididymis in the long term of postnatal ontogenesis. In our republic, the most widely used pesticide defoliant is magnesium chlorate, but the process of formation of rat epididymis in early postnatal ontogenesis and their reactive changes when magnesium chlorate enters the body through mother's milk remain poorly understood.

Purpose of the study. To study the macromicroscopic anatomy and reactive changes in the epididymis when exposed to magnesium chlorate in postnatal ontogenesis.

Material and research methods

The experimental study was carried out on the material of the testes of 145 white outbred rats from the moment of birth to 90 days of age (Table 1).

Table 1: AGE DISTRIBUTION OF THE EXPERIMENTAL MATERIAL

Age, day	Number of animals		Total
	control	in experiment action of magnesium chlorate	
Novorozh-data	8	-	8
16	10	12	22
30	10	12	22
46	12	12	24
60	11	14	25
76	10	11	21
90	11	12	23
Total	72	73	145

The material is divided into 2 groups. The first group was a control group, the second group included animals whose mothers (rats - females) were injected with a solution of magnesium chlorate at a dose of 1/100 LD 50 intragastrically during the first 5 days after birth. The effect of magnesium chlorate on rat pups of the second and third groups was carried out through the mother's milk.

Statistical processing of the obtained results was carried out using standard methods of variation statistics using the tables of R.B. Strelkov (1986) and the use of Student's t-test to assess the significance of differences. The average values in the tables are presented as $M \pm m$ (mean \pm mean error of the mean). Differences satisfying $P < 0.05$, $P < 0.01$, $P < 0.001$ were considered significant.

For the first time, as a result of a comprehensive study, the patterns of structural changes in the tissues of the epididymis of rats under the action of magnesium chlorate, passed through the milk of the mother (female rat) to the pups (rats), were established. It was determined in which of the lactation periods magnesium chlorate defoliant will have the most adverse effect on the epididymis tissues.

Until a certain period of development, trophic matter in the lumen of the epididymis tubules remains in the structure of the epididymis of rats. With the transition of chris to adulthood, there is a gradual resorption of the trophic matter of the lumen and thickening of the walls of the tubules.

In rats of the experimental groups, a lag in the indices of physical development and anatomical parameters of the testicular appendages was revealed. The delay in the increase in the parameters of the epididymis is especially noticeable in the late stages of rat development (90 days). Structural changes in the components of rat testes during postnatal ontogenesis occur constantly, but at different rates, depending on age and on exposure to a chemical.

The results of the study can be used in the activities of a general practitioner and urologists, endocrinologists. The obtained data can be included in the program on histology, pathophysiology, urology and pediatrics in the sections "The structure and development of the organs of the male reproductive system", "Microscopic structure of the organs of the male reproductive system", "The influence of environmental factors on the reproductive function of the body", "Etiology and pathogenesis male infertility".

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