Structural Changes Of Rat Testis In Experimental Thyrotoxicosis

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ABSTRACT

Thyroid hormones play an important role in many physiological activities, including being important in the proper functioning of the reproductive function of animals, in controlling their development. The thyroid gland directly performs its actions in the activity of the reproductive organs, in particular the sex glands, through its hormones. Excess or lack of thyroid hormones leads to changes in testicular function. In experimental tyreotoxicosis, morphometric indicators of the rat testicular protein Curtain were observed in the experimental group that the curtain thickened in the upper, lower pole and gate Sox, while collagen fiber Tufts also expanded. In the tyreotoxicosis model, it was found that the number of testicular burrowing tubes was slightly reduced, the diameter of the burrowing tube cavity was expanded from this same trait, which decreased the height of the epithelial floor.

Keywords: thyreotoxicosis, squid, testicles, spermatogonium, spermatocyte, spermatid, spermatozoa.

Relevance of the topic: Male infertility is currently a major problem worldwide, with male infertility associated with abnormal sperm parameters and contributing to 50% of all infertility cases, highlighting the importance of normal spermatogenesis [1]. Testicular size, number of germ cells, and sperm release are closely related to the number of sertoli cells [2].

Thyroid hormone receptors have mutual importance at different stages of insular cell development [3]. Improving the opinions of these scientists Chakraborty A and others (2021) thyroid hormone receptors are detected at different stages of development of rat sex cells, namely spermatogonia, preleptoten, leptoten, paxiten, zygoten, round and elongated spermatids, in maturation processes [4].

Recently, there have been reports of deterioration of the male reproductive system of spermatozoa Type A and B after excessive exposure to iodine, which has a euthyroid state. Chakraborty A and other (2016) posits that the thyroid gland has an autoregulation mechanism that can limit the entry of excess iodine through the Wolff-Tchaikov effect to a certain level but, in testicular tissue, such a phenomenon has not been studied perfectly [5].

Thus, according to the data of many scientists, changes in the functioning of the thyroid gland lead to stuructive changes in the testicles [6]. Nevertheless, the mechanisms of action of thyroid hormones on sertoli and germ cells are still unclear, and the need to carry out additional morphological studies to determine

how gland hormones control the proliferation of sertoli and germ cells, regulate testicular paracrine factors, and how these affect Morpho-functional phenomena such as spermatogenesis, sperm movement is an urgent problem of

Purpose of work: The study of structural and morphomitric indicators of cellular structures in the rat testicle in experimental tyreotoxicosis.

Materials and research methods: The experiment was carried out in 30 white male bats of the reproductive period with a weight of 200-250 g. The animals were transferred to the laboratory vivarium of the Bukhara Medical Institute. The animals are divided into two groups. The first experimental group consisted of rats receiving sodium levothyroxine (50 mcg|100gr sent to the head of the abdomen) for 15 days, while the second control group included rats receiving 0.9% NaCl solution in equivalent volume.

A 12% neutral formalin solution was used to fix his testicles. Permitted samples were dehydrated after rinsing in running water by soaking the test material in alcohol of increasing concentration. Histological incisions of thickness 7-9 microns were prepared and painted with hematoxylin-eosin and van Gizon (Semchenko V.V 2006).

Statistical processing of digital data was carried out using Excel programs. Statistical hypotheses are based on the student's t-criterion (Lapach S.N. 2001). All observed differences were considered significant at the P <0.05 significance level.

Personal examination results: Each germ of the rat is covered with a serous veil consisting of mesothelial cells made up of fibrous connective tissue of the abdomen. Around the ovary, the parietal and vetsiral floors of the abdominal vesicle vaginalis are covered with a protein curtain (tunica albuginea) in the ham. The Tunica albuginea thickens on one side of the germ, the so-called germ Oracle (mediastinum testis), and contains the blood vessels, nerves, germ web (rete testis) and straight ducts heading towards the germ.

The sebaceous glands are affected differently by the nonegular functioning of the endocrine glands, in particular thyroid hormones affect the sebaceous gland in different ways. An increase in thyroid hormones (tyreotoxicosis) leads to a change in germ morphology. In the tyreotoxicosis model, the structure of the germ protein curtain is shown in Figure 1.

The protein curtain of the rat testicle contains connective tissue fibers, in which partial reticular fibers as well as most elastic fibers and collagen fiber Tufts are located in the parralyl direction in the protein curtain. Collagen fiber tutams participate in the formation of walls that divide the germ into several pieces, heading inward from the germ's gate socket (in the structure of the protein curtain). Collagen fiber Tufts in the testicular protein curtain in the control group: shown in Figure 2.

In control rats, the thickness of the testicular enveloping protein curtain averages 35.4±0.44 μm at the upper pole, 38.2±0.52 μm at its lower pole, and 39.7±0.61 μm at the gate socket. In a group of bats called tyreotoxicosis, the thickness of the testicular enveloping protein curtain averaged - 39.8±0.41 μm at the upper pole, 43.6±0.57 μm at the lower pole, and 46.1±0.66 μm at the gate socket.

The thickness of collagen fiber tutams in the protein curtain is, in the control group, average at the upper pole - 26.4±0.44 mkm, at the lower pole - 28.1±0.52 mkm, and at the gate socket - 30.6±0.7 mkm. In the group where tyreotoxicosis is called, the mean at the upper pole is 29.9±0.33 mkm, at the lower pole - 32.9±0.57 mkm, at the gate Sox - 34.8±0.57 mkm.

Morphometric indicators of the rat testicular protein curtain in tyreotoxicosis are shown in Table 1.

Table 1.
Morphometric indicators of the testicular protein curtain in tyreotoxicosis

group	protein curtain thickness (mkm)			thickness of collagen fiber Tufts (mkm)		
	high pole	bottom pole	gate domain	high pole	bottom pole	gate domain
control	33,0-38,0 35,4±0,44	35,0-41,0 38,2±0,52	36,0-43,0 39,7±0,61	24,0-29,0 26,4±0,44	25,0-31,0 28,1±0,52	26,0-34,0 30,6±0,7
experiment	37,0-42,0 39,8±0,41	40,0-47,0 43,6±0,57	42,0-50,0 46,1±0,66	28,0-32,0 29,9±0,33	29,0-36,0 32,9±0,57	31,0-38,0 34,8±0,57

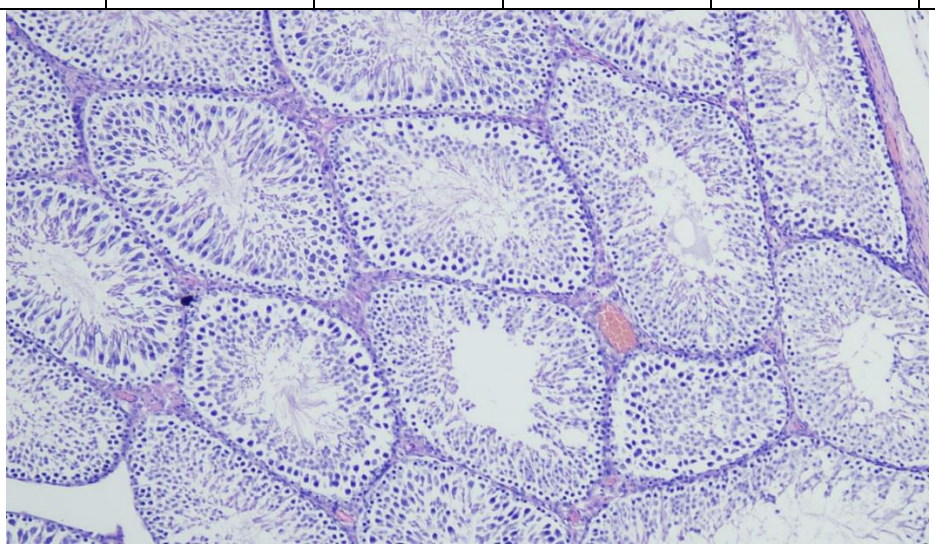

Figure 1. Structure of the testicular protein curtain in tyreotoxicosis .

1. protein curtain, 2. twisted tubes, 3. luman gap, 4. twisted tube epithelial floor. Dye hematoxylin-eosin. ob.10×ok.10

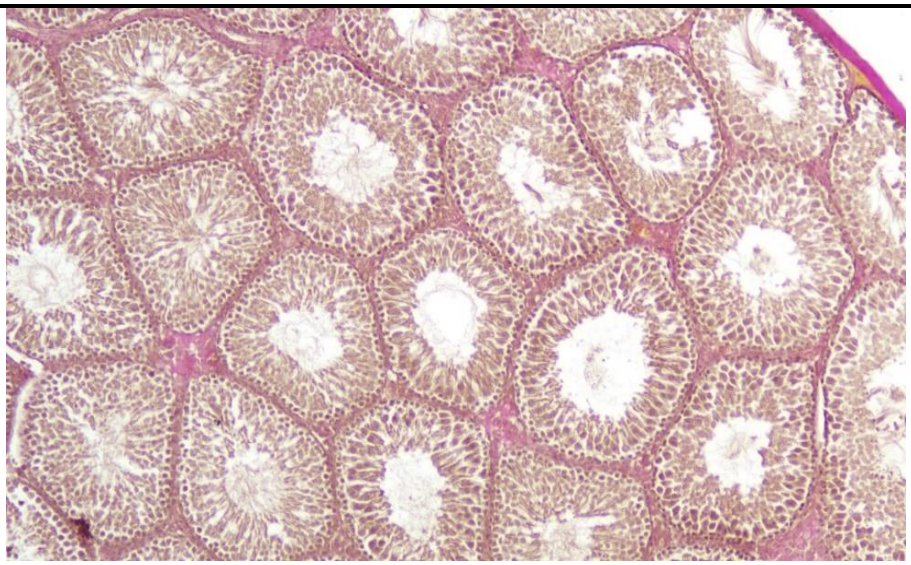

Figure 2. In the control group of collagen fiber Tufts in the rat testicular protein curtain: 1. collagen fiber Tufts in the protein curtain. 2. collagen fiber Tufts between twisted tubes. 3. luman gap. 4. twisted tube epithelial floor. Paint. Van-Guizon. ob.10×ok.10

Thin connective tissue barriers starting from the testicular gate socket divide each testicle into several pieces. Each segment consists of several curved-bugri tubes buried in relatively sparse interstitial tissue on its branch. In the control group, rats are shown in Figure 3 of the testicular deflection tube Sturgeon. The curved-bugri tube is surrounded by thin contractile myoid cells, which form shrinkage waves to move sperm that have not yet moved in the tubes.

In the control group, the number of twisted tubes in the rat testicle averaged - 9.83±0.52 in one field of view of the microscope. in bats where the tyreotoxic model is called, the number of twisted tubes decreased to an average of - 9.0±0.44. While the diameter of these deflected tubes was 199.8±2.09 mkm in the control group, in the first experimental group the tubes had an average diameter of - 197.7±1.91 mkm.

In the tyreotoxicosis model, the number of twisted tubes of the testicular twist tubes is shown in Figure 4 with a slight decrease, a significant decrease in the height of the epithelial floor, and an expansion in the diameter of the twisted tube cavity.

The height of the squamous testicular curve-bugri tubes epithelial layer averaged - 80.6±0.87 mkm in the control group, while the height of the epithelial layer averaged - 43.2±1.22 mkm in animals called tyreotoxicosis. The diameter of the testicular curve-bugri tube cavity was measured to mean - 39.5±0.69 mkm in the control group. In the first experimental group, the diameter of the curved-bugri tube cavity averaged - 70.2±0.61 mkm. In the tyreotoxicosis model, morphometric indicators of testicular deflection tubes are shown in Table 2.

Table 2

Morphometric indicators of testicular twist tubes in the tyreotoxicosis model

group	number of seminiferous tubules in one blind area 10x10	seminiferous pipe diameter 10 x40	epithelial floor height 10x40	tubule cavity diameter 10x40
Control	7,0-13,0 9,83±0,52	186,0-210,0 199,8±2,09	76,0-86,0 80,6±0,87	36,0-44,0 39,5±0,69

experiment	6,0-11,0 9,0±0,44	184,0-206,0 197,7±1,91	36,0-50,0 43,2±1,22	67,0-74,0 70,2±0,61

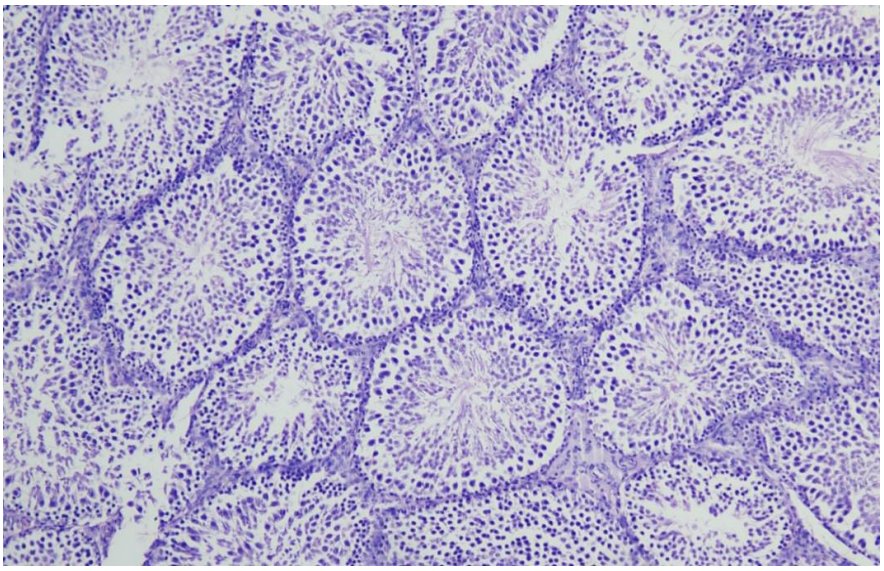

Figure 3. Rats in the control group testicular deflection tube Sturgeon: 1. twisted tubes, 2. interstitial tissue between twisted tubes, 3. luman gap, 4. twisted tube epithelial floor. Dye hematoxylin-eosin. ob.10×ok.10

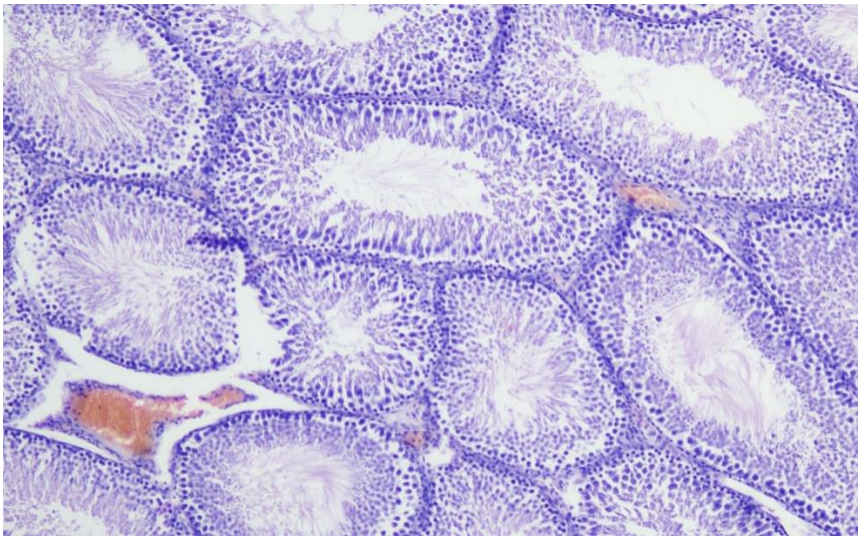

Figure 4. Sturucrural changes in rat testicular twist tubes in tyreotoxicosis: 1. twisted tubes, 2. interstitial tissue between twisted tubes, 3. luman gap, 4. twisted tube epithelial floor. Dye hematoxylin-eosin. ob.10×ok.10

Thus, when the morphometric indicators of the rat testicular protein Curtain were analyzed in experimental tyreotoxicosis, it was observed that in the experimental group, the curtain thickened in the upper, lower pole and gate sacs of the protein curtain, accordingly, collagen fiber Tufts also expanded.

In the tyreotoxicosis model, when morphometric indicators of testicular burrowing tubes were analyzed: the number of burrowing tubes was slightly reduced, the diameter of the burrowing tubes did not change diurally, significantly reduced the

height of the epithelial floor, and the diameter of the burrowing tube cavity was expanded.

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