

# CHARACTERISTICS OF THE ANATOMICAL PARAMETERS OF THE TESTES OF WHITE OUTBRED RATS IN NORMAL CONDITIONS AND UNDER CHRONIC IRRADIATION

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Exposure to ionizing radiation is becoming more common in medicine for the diagnosis of diseases and the treatment of cancer. In addition to patients undergoing treatment, infrared radiation also poses a great danger to healthcare professionals. Most medical examinations require X-rays to diagnose the disease and then treat them. But even in cases with cancer patients, treatment may also require radiation therapy, which is already radiation for the patient. Although all living things are at risk of damage in response to ionizing radiation, the testes of mammals are much more sensitive to them.

## The Aim Of The Study

The aim of the study was to study the anatomical parameters of the testes of rats in normal conditions and under irradiation in postnatal ontogenesis.

## Materials and methods.

An experimental study was carried out on material taken from the testes of 124 white nonlinear rats from birth to 12 months of age. The animals were divided into 2 groups (n = 124): group I – control (intact) (n = 69); II - group - rats that received irradiation for 20 days from 71 days of age at a dose of 0.2 Gy (the total dose was 4.0 Gy) (n = 55).

## Research results.

In the control group, up to mature (360 days) age, body weight increases 56.7 times, and body length increases 4.8 times. The highest rate of weight gain is observed at 90 - (2036%) and 180 days (104.4%) age, the smallest - at 360 (11.0%) and 270 (17.1%) days of age. A high rate of increase in body length was also noted at 90 (236.4%) and 180 (18.9%) days of age, the smallest - at 360 (6.6%) and 270 (12.5%) days of development. In newborn rats, the weight of the testes is on average  $0.02 \pm 0.0007$ . Until adulthood (360 days of age), this indicator increases 66 times ( $1.32 \pm 0.015$ ). The length and thickness of the testes increase by 7.06 and 7.14 times, respectively, and the volume by 332 times. Until puberty, the lumen of the convoluted seminiferous tubules is closed and filled with spermatogenic epithelium and trophic intercellular substance. At puberty, the lumen of the convoluted seminiferous tubules opens for the advancement of sperm, so the density of the testis tissue decreases. In rats of the experimental group up to 360 days old (mature), body weight increases 52.2 times ( $261.1 \pm 2.161$ ), and body length 4.43 times ( $19.5 \pm 0.225$  cm). The highest rate of weight gain is observed at 90 (1922%) and 180 days (77.2%) ages, the lowest - at 360 (18.8%) and 270 days (22.7%) ages. The highest rate of increase in body length was also noted at 90 - (218.2%) and 270 days (16.0%) age, the smallest - at 180 (7.1%) and 360 (12.1%) days of development. In an experiment with irradiation up to 360 days of development, the weight of the testes increases 60 times ( $1.20 \pm 0.023$  g), the length - 6.4 times, the width - 6.5 times, and the volume of the testes - 269 times.

## Conclusions.

In the control group, up to mature age (360 days), body weight increases 56.8 times, and body length increases 4.8 times. In the experimental group, the parameters of physical development lag behind intact animals. The lag is more pronounced in the 6-month period. The morphometry of the testes showed that their weight, length, and thickness in postnatal ontogeny vary unevenly. Comparison of the rate of increase in body weight and length with the weight and volume of the testes shows that with an increase in their volume, body weight increases more than

length. The weight of the testes increases 1.16 times faster than the body weight, and a high rate of growth of the testes is noted at 90 days of age. In the experiment, all anatomical parameters of the testes lag behind the control values.