Study of the correlation of capillary network formation and spermatogenesis in the seminiferous tubules of the adolescent rats

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Introduction: It is known that the spermatogenesis in seminiferous tubules is regulated by endocrine, as well as paracrine/autocrine pathways in mammals. However, the molecular mechanism of the wave spread of spermatogenesis is obscure. Previously we had shown the seminiferous tubules sections with different spermatogenic activity (active and inactive) on the histological slice of testis from the intact adolescent rat (25 days). The first time it was shown the equal ratio of functionally active tubule sections was in the central and periphery part of the slice. As a result of the impact of growth inhibiting endogenous protein complex (intraperitoneal injection 200 mcg / 100 ml), this ratio is disordered. The number of active tubule sections is reduced in the central part of the slice and at the same time increases its periphery.

According to the literature, the testis microvasculature of the adolescent rats is finally formed only 35 days after birth. This applies to capillary networks near the seminiferous tubules, as well as interstitial cells. Based on the above, we can suppose that the existence of tubules sections with different spermatogenic activity is due to unorganized capillary networks.

The aim of the work is the 3D reconstruction of the adolescent rat seminiferous tubules with the organ`s blood vessels.

Material and Methods: Material – testes of adolescent rat (25 days); Methods – Preparation of histological slides from fixed material and analysis of different size (2 mm, 12 mm) of seminiferous tubule from serial slices in light microscope; Spatial Modeling 3Dmax Program.

Result: The microscopic analysis of testis serial slices has shown different size of seminiferous tubule, in which reveals the consequential order of spermatogeneticaly active and inactive areas.

Correlation between distribution of the vascular network and spermatogeneticaly active and inactive tubules sections is not revealed.

Conclusion:

1. Based on 3D reconstruction of adolescent rat seminiferous tubule, it was found that the alternating spermatogeneticaly active and inactive areas within a single tubule can be considered as the regular phenomenon and the age peculiarity.

2. The alternating of spermatogeneticaly active and inactive areas of seminiferous tubules is not connected to distribution of vasculature.