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MICROSCOPIC STRUCTURE OF THE THYROID GLAND IN THE DOMESTIC OX

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All vertebrates have a thyroid gland. In mammals, it is usually bilobed and located just caudal to the larynx, adjacent to the lateral surface of the trachea. We studied the thyroid gland of a domestic ox (*Bos taurus* L., 1758). When performing the work, generally accepted methods of morphological studies were used (Goralsky, L.P. et al., 2011).

The thyroid gland in domestic ox consists of 2 lobes joined by a relatively narrow and short glandular isthmus. Ox thyroid frequently exhibits "atypical follicles" of ultimobranchial origin which have different microscopic structure. They can be found in the areas of the gland with increased amount of connective tissue separating the follicles.

Their epithelial lining exhibits heteromorphism. In the same follicle different types of epithelium can be seen, from the monolayer type to the multirowed or even multistratified ones.

Such atypical follicles are usually filled with different content. Most often it is a very light colloid, visibly foamy at times, with frequent addition of other structures. Most frequently in typical preserved ultimobranchial bodies a significant number of follicles are filled with the fine-grained content, being very difficult to identify.

Relatively often, in the follicles of ultimobranchial origin desquamated epithelial cells, sometimes in great amount, or so-called "cellular debris", being the result of their break-down, are observed. In some of the animals "preserved ultimobranchial bodies" occur which have structures analogous to that of the lower vertebrates where they act as an independent endocrine gland (Sawicki, 1991).

The rest of the thyroid has a typical mammalian histological structure. No sex-related differences were found in its histological structure. At the same time age dependent differences and seasonal variations were observed.

In all the ox examined the thyroid follicles varied greatly in size and shape. Their polymorphism increases significantly with advancing age of the animals and is the most visible in the very old (especially in those over 10 years of age). Such large follicles are encountered in very old animals even in deeper layers of the gland while in calves the largest follicles can be observed in the outer layer of the organ.

The calf thyroid consists of small follicles whose diameter seldom

exceeds 150 μm . The shape of these follicles is more rounded than that of older animals. The follicles in the calf thyroid are filled with very liquid colloid.

The epithelium of these follicles was predominately tall cuboidal, and some areas of columnar epithelium were occasionally seen. In the thyroid of very old animals the epithelium is low cuboidal, becoming visibly flat in larger follicles. These follicles contain dense colloid.

Described differences in the structure of the thyroid related to the animal's age coincide with seasonal changes. This variation also increases with advancing age.

In summer (June) and in early autumn (September) the thyroid follicles are lined with distinctly higher epithelium than in low temperature winter months (including April). This tendency occurs in all age groups examined. In this period columnar epithelium can be found in calves even in bigger follicles, especially in the region of specific indentations into their interior. Most follicles contain very thin colloid at that time. The thyroid in calves even in winter is dominated by the cuboidal epithelium and flattened epithelial cells are seen only sporadically in larger follicles.

In young and adult animals seasonal changes tend to be more distinct. Their epithelium is significantly higher in warm months of the year compared with winter time. Moreover, even in very old animals with unusually big follicles, areas of the thyroid gland with thin foamy colloid and high cuboidal epithelium can be seen in the summer period.

At the same time various height of the epithelial lining can be often observed in the same follicles. In winter months (including April) the thyroid of young and adult animals consists primarily of low cuboidal epithelium along with a distinct number of higher density, dark stained by the Azan method. Big and very big follicles are visibly lined with flat epithelium composed of dark cells with "pyknotic" nuclei. In winter, follicles of this type are especially numerous in very old animals.

In very young calves (1 month old in particular) areas of the thyroid with numerous groups of interfollicular cells are observed - some of them being impregnated with silver salts and recognized as C cells. C cells (calcitonin-forming) in the bison thyroid occur most frequently in a typical parafollicular position, alone or in small groups.