Morphology of the Non-Sensory Tissue Components in Rat Aging Vomeronasal Organ

S. A. Eltony and S. A. Elgayar Histology Department, Faculty of Medicine, Assiut University

Abstract:

The vomeronasal organ (VNO) is a chemosensory organ that detects environmental pheromones. The morphology of the 'non-sensory' epithelium (NSE) of the VNO and its lamina propria, as well as how it relates to ageing has received little attention. Histological, histochemical, morphometric and ultrastructural techniques were used to study the morphological structure of the rat NSE in five adult (3 months old) and five aged (2-2.5 years old) male albino rats. In adult rats, the NSE contained dark and light columnar cells with predominance of the latter. The surface of the epithelial cells was covered with microvilli and/or cilia. The lamina propria contained serous vomeronasal glands (VNGs), smooth muscles with numerous variable-sized mitochondria, vessels including lymphatic capillaries and nerve bundles. The following changes were detected in aged rats. The NSE exhibited an increase in number of dark columnar cells. Some cells revealed a prominent cell coat, dense aggregation of filaments in the luminal cytoplasm and appearance of multinucleated cells. Their surface revealed malformed configuration. Large mitochondria (2 μm), formed by fusion, were frequently observed in the smooth muscle cells of the lamina propria. Lipid droplets were frequently detected both in the VNGs acini and in the lymphatic endothelium. Ageing affected both the cells of the tissues and the extracellular matrix.

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