

## ORIGINAL ARTICLE

## MORPHOLOGICAL CHARACTERISTICS OF PLEOMORPHIC ADENOMAS OF SALIVARY GLANDS (ANALYSIS OF THE SURGICAL MATERIAL)

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### ABSTRACT

**The aim** of the study is to reveal the morphological features of pleomorphic adenomas of the salivary glands during a comprehensive examination of the surgical material.

**Materials and methods:** Surgical material from 30 patients with pleomorphic adenomas of the salivary glands was studied. Microspecimens stained with hematoxylin and eosin were studied, using an Olympus BX-41 microscope (Japan) with subsequent processing with the Olympus DP-software version 3.1 software, which was used to conduct a morphometric study. By morphometry in the tumor tissue, the specific volumes of the parenchyma and stroma, the thickness of the capsule located between the tumor tissue and the tissue of the salivary gland were determined; the absolute number of vessels in the field of view of the microscope was counted at  $\times 100$  magnification.

**Results:** Comprehensive morphological analysis of the surgical material of removed neoplasms of the salivary glands has showed that mesenchymal (15 cases, 50.0%) and mixed (10 cases, 33.3%) variants of pleomorphic adenomas are more common, and less often epithelial variants (5 cases, 16.7%). Pleomorphic adenoma is characterized by a different ratio of the epithelial (parenchymal) and mesenchymal (stromal) components forming this tumor, structural diversity and heterogeneity of the structure of these components, which do not have clear boundaries and are mixed with each other. A characteristic feature of pleomorphic adenoma is also the combination in each case of different types of epithelial cells and the structures that they form, as well as areas of various differentiation of the mesenchymal component. Mesenchymal and mixed variants of pleomorphic adenomas, in comparison with the epithelial variant, are more prone to progression and recurrence, as evidenced by our identified active processes of angiogenesis in tumor tissue, frequent tumor invasion of the capsule, thinning of the capsule or the absence of the capsule, less pronounced infiltration of the capsule by immune cells.

**Conclusions:** The morphological features of mesenchymal, mixed and epithelial variants of pleomorphic adenomas of the salivary glands revealed by the authors should be taken into account by clinicians during choosing the tactics for treating the patient, which will undoubtedly help to reduce the incidence of tumor malignization and its recurrence.

**KEY WORDS:** pleomorphic adenoma, salivary gland, morphology

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### INTRODUCTION

Salivary gland tumors, according to the World Health Organization (WHO), represent 3 to 6% of all tumors of the head and neck region, with an annual incidence throughout the world ranging from 0.05 to 2 cases per 100,000 individuals [1]. Epidemiological data reveal different frequencies of salivary gland tumors in distinct ethnic groups and geographic locations, which make it difficult to establish global estimates [2].

Pleomorphic adenoma ranks as the commonly occurring benign tumor and constitutes up to two-thirds of all salivary gland neoplasms [3]. Mostly, pleomorphic adenoma is located in the parotid glands (85%), minor salivary glands (10%) and the submandibular glands (5%). In the majority of cases, tumors originate in the superficial lobe. However, occasional cases may involve the deep lobe of the parotid gland and the parapharyngeal space. Minor salivary gland tumors are frequently encountered on the palate, followed by the lip, cheek, tongue and floor of the mouth [4].

The peak incidence of pleomorphic adenoma occurs at a mature age (30-50 years), with women prevailing

among the cases (male: female ratio of about 1:1.4) [5]. Pleomorphic adenoma is a tumor with complex histoarchitectonics, characterized by slow growth, scant clinical symptoms and a tendency to recurrence [6]. It has been noted that 50% of recurrences of pleomorphic adenomas of the salivary gland are found in the first two years after surgery. By the end of the five-year follow-up, up to 80% of these neoplasms recur [7].

Clinicians often find it difficult to diagnose pleomorphic adenomas of the salivary glands. This leads to misdiagnosis and, as a result, the choice of the wrong tactics for treating the patient. Errors in diagnosis, according to various authors, range from 7 to 46% of cases. The greatest difficulties arise in the differential diagnosis of neoplastic and reactive-degenerative processes [8].

The most informative, accurate and valuable method of intravital diagnosis of pleomorphic adenoma is morphological examination of biopsy and surgical material. Despite numerous publications of domestic and foreign scientists, interest in the study of the morphological features of pleo-