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ONCOLOGICAL DISEASES OF THE MAXILLOFACIAL REGION

Hakkulov Ezozbek Komil ugli
Stomatology Faculty Student, Samarkand State Medical University
Gmail: ezozbekhaqqulov2004@gmail.com

Abstract
In this article, the epidemiological, morphological, and clinical features of oncological diseases of the maxillofacial region observed at the clinical bases of the Faculties of Dentistry and Treatment of Samarkand State Medical University during 2020-2024 were analyzed. The study was conducted in a retrospective-sectional design and examined the clinical data of 186 patients with histologically confirmed malignant tumors, the results of visual diagnostics, and the expression of immunohistochemical markers – p53, Ki-67, and EGFR. The results showed that tumors of the tongue and oral cavity predominate, squamous cell carcinoma is the most common, and high proliferative activity can increase the clinical aggressiveness of the tumor. The high proportion of patients identified in stages III-IV confirms the need to improve the early diagnosis and screening system. The study highlights the importance of molecular markers in the assessment of maxillofacial oncological pathologies.

Keywords: Maxillofacial oncology; malignant tumors; squamous cell carcinoma; SamSMU; immunohistochemistry; p53; Ki-67; EGFR; Staging of TNM; radiological diagnostics; epidemiology; clinical aggressiveness; recurrence.

Introduction

Oncological diseases of the maxillofacial region are one of the most pressing problems of modern medicine, and their course, morphological features, and treatment strategies require a high level of scientific approach.According to the World Health Organization, epithelial and connective tissue tumors developing in various segments of the head and neck constitute a significant part of overall oncological morbidity; tumors of the pancreas, oral cavity, tongue, and jaw bones are especially complex in terms of clinical outcomes[1]. In recent years, the study of molecular biomarkers, epigenetic changes, and immunological mechanisms has allowed for a deeper understanding of the pathogenesis of maxillofacial oncological pathologies[2].

The literature indicates that this type of tumor is often diagnosed late, which directly affects the volume of surgical intervention, radiation therapy doses, and the effectiveness of complex treatment[3]. Along with classical histopathological criteria, many authors emphasize the need to clarify the clinical staging and classification of tumors by risk group[4]. Various manifestations of maxillofacial tumors are characterized by local infiltrative growth, lymphogenous metastasis, and a high probability of

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recurrence; this circumstance requires further improvement of imaging methods, clinical and biochemical parameters, and individual therapeutic approaches used at an early stage of diagnosis[5]. Therefore, scientific research in this area is carried out on the basis of a combination of clinical experience, new technologies, and academic analysis.

METHODS

This study was conducted based on the analysis of clinical and morphological data on maxillofacial oncological diseases observed from 2020 to 2024 at the clinical facilities of the Faculties of Dentistry and Treatment of Samarkand State Medical University. The study included 186 patients who visited the university clinic and were histologically confirmed to have malignant neoplasms. Detailed data were collected on patients' age, clinical manifestations, pain syndrome, tumor location, factors of metastatic spread, and laboratory parameters. Diagnostic imaging was based on high-resolution CT, MRI, and ultrasound examinations performed at the Radiology Department of SamSMU[6]. Histological analyses were conducted in the university pathology laboratory using stains, as well as immunohistochemical markers – p53, Ki-67, and EGFR[7]. The research design was retrospective-cutting, and clinical data from all patients were collected according to a protocol approved by the Ethics Council of SamSMU. Statistical processing was carried out in the SPSS 26.0 program, the level of $p<0.05$ was chosen as the criterion of statistical significance.

RESULTS

The average age of the analyzed 186 patients was 49.8±10.7 years, the proportion of men was 59.1%. Clinical observations at SamSMU showed that the most frequent anatomical localization of maxillofacial tumors was found in the tongue (27.4%), oral cavity (31.2%) and lower jaw (16.7%). Histological results showed that 68.3% of patients had squamous cell carcinoma, 14.0% had adenocarcinoma, and 9.1% had mucoepidermoid carcinoma. High expression of p53 by immunohistochemical markers was observed in 53.2% of tumors, and the Ki-67 proliferative index was higher than 32% in 48.7% of cases. Based on radiological parameters, regional lymph node metastases were detected in 36.0% of patients, and tumors with high infiltrative growth characteristics prevailed[8]. 45.7% of patients were diagnosed in stages I-II, 54.3% - in stages III-IV, and it was established that the number of late diagnosed cases according to SamSMU is still high. On average, after 18 months of observation after surgical or combined treatment, recurrence was noted in 17.2% of patients.

DISCUSSION

This study, conducted by the Faculties of Dentistry and Therapy of SamSMU, made it possible to identify regional epidemiological and morphological features of oncological diseases of the maxillofacial region.The obtained results indicate a high level of clinical aggressiveness and late diagnosis of tumors, which is consistent with the trends noted in the international literature[9]. The

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prevalence of squamous cell carcinoma can be explained by the regional epidemiological situation, environmental factors, tobacco consumption, and poor oral hygiene[10].

Table 1. Distribution of Maxillofacial Malignancies by Localization, Histological Type, and Metastasis Rate among Patients Examined at Samarkand State Medical University (2020–2024)

Parameter	Category / Value	Percentage (%)	Notes
Tumor Localization	Oral cavity	31.2%	Most frequent site
	Tongue	27.4%	High functional impact
	Mandible	16.7%	Often presents with bone infiltration
Histological Type	Squamous cell carcinoma	68.3%	Dominant malignancy
	Adenocarcinoma	14.0%	Mostly salivary gland origin
	Mucoepidermoid carcinoma	9.1%	Moderate aggressiveness
Immunohistochemistry	High p53 expression	53.2%	Correlated with aggressiveness
	Ki-67 > 32%	48.7%	Indicates high proliferative activity
Metastasis	Regional lymph node metastasis	36.0%	Confirmed by imaging
TNM Staging	Stage I–II	45.7%	Early-stage detection remains low
	Stage III–IV	54.3%	Late diagnosis predominates

Source: Samarkand State Medical University, Faculty of Dentistry and Faculty of General Medicine, Departmental Oncology Registry (2020–2024). Adapted with reference to international frameworks (Kowalski 2021; Shaw 2019).

The fact that patients with high Ki-67 and p53 activity have a higher risk of tumor infiltration and recurrence increases the clinical significance of the study, since these markers are important as prognostic criteria[11]. Despite the modernization of diagnostic technologies of observations conducted at the clinical bases of SamSMU, the proportion of detection of tumors at stages III-IV remains high due to the insufficiency of early screening. This indicates the need to strengthen preventive examinations in the local healthcare system, introduce regular monitoring in risk groups, and strengthen clinical cooperation between dental departments and general practitioners.[12] The results of the study prove that updating diagnostic and treatment algorithms, expanding the differentiated approach based on molecular markers is a strategic task for the clinics of SamSMU.

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CONCLUSION

The research results showed that oncological diseases in the maxillofacial region have a significant epidemiological burden in our region. Morphological analyses confirmed the predominance of squamous cell carcinoma, high expression of molecular markers - especially p53 and Ki-67 - associated with the aggressiveness of tumors and the risk of recurrence. The late diagnosis observed in the clinics of SamSMU emphasizes the need for early screening, regular preventive examinations, and monitoring of high-risk groups. Expanding the possibilities of visual and molecular diagnostics and implementing individual treatment strategies can significantly improve the prognosis of maxillofacial oncological diseases.

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