

Wide Field of Cancerization Case Report

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Abstract

Cancerization field described histologically as an abnormal tissues surrounding oral squamous cell carcinoma, related to exposure carcinogens that lead to Genetic events and formation of preneoplastic daughter cells in a particular tumor field, which carry high risk of developing premalignant and malignant lesions.

The most important impicator after surgery of the primary tumor, it may lead to new cancers (second primary tumor or local recurrence), depending on the exact site and time interval. Tobacco and alcohol are independent risk factors, when combined, they have a synergistic effect.

It's difficult to detect early lesions by clinical and histologic examination. Early detection improves long-term survival, although multiple resections are often necessary.

This is a case report of 68 years old Sudanese male with a wide field of cancerization around a well differentiated squamous cell carcinoma.

Keywords: *Cancerization Field; Oral Squamous Cell Carcinoma; Erythro- Leukoplakia; Dysplasia*

Introduction

The oral cavity is one of the commonest sites for development of potential malignancies, since it comes into direct contact with many carcinogens. The majority of oral malignancies are squamous cell carcinoma with a survival rate of about 5 years [1].

The prognosis of squamous cell carcinoma patients is adversely influenced by development of a new tumor. Squamous cell carcinoma may arise as a recurrence of an incompletely resected tumor or second primary tumor (SPT) or second field tumor (SFT) [2]. These findings led to the field of cancerization theory given by Slaughter and colleagues (1953) which hypothesized that "the entire epithelial surface of the upper aero digestive tract has an increased risk for the development of premalignant lesions due to multiple genetic abnormalities in the whole tissue region [3].

Field cancerization is describe according to the histologic examinations; oral cancer develops in multifocal areas of precancerous change, histologically abnormal tissue surrounds the tumors, oral cancer often consists of multiple independent lesions that sometimes coalesce, and the persistence of abnormal tissue after surgery may explain SPTs and local recurrences [4,5].

Case Scenario

A 68 years old Sudanese male came to Oral and Maxillofacial Clinic complaining from tender ulcerative swelling and difficulty in eating

started suddenly 9 months ago. No significant medical history, history of smoking for 15 years ago, snuff dipping for more than 20 years (patient did not rinse after use the snuff and sleep with it) and patient denied any history of alcohols.

Clinical examinations showed a tender exophytic indurated ulcer with everted rolled edges and irregular margins extended bucco-lingually without apparent discharge in the right side of the mandible and white patches and plaques in the gingiva of middle area of the anterior mandible. There was mixed white and red patches (erythroleukoplakia) and non-indurated ulcer in the left buccal mucosa and gingiva (Figures 1-2). In addition non-tender mobile (1*1) cm sub mandibular lymph node was observed.



Figure 1: Shows anexophytic indurate ulcer with everted rolled edges and irregular margins extended bucco-lingually in the right side of the mandible.



Figure 2: Shows white patches in the gingiva of middle area of the anterior mandible, mixed white and red patches and non-indurated ulcer in the left buccal mucosa and gingiva.

DPT x-ray revealed moth eaten appearance of bone loss and erosion in posterior regions of the mandible (Figure 3).



Figure 3: DPT x-ray revealed moth eaten appearance of bone loss and erosion in posterior regions of the mandible.

TNM staging: stage IVa (T4a N1 M0).

Multiple (map field) incisional biopsies were taken and the histopathological examination showed wide field of cancerization (well differentiated squamous cell carcinoma, moderate dysplasia). Metastatic workup was carried out and reported no evidence of distant metastasis.

Patient was treated by supra omohyoid neck dissection, wide surgical excision and marginal resection with safety margins. Post operative histopathological examination reported negative margins. After one month patient was referred for concurrent chemo-radiation. Patient was scheduled for regular close follow up.

Discussion

The mucosal changes in the oral cavity “cancerization field” were generally considered to be as a result of exposure to carcinogens that cause multiple genetic alterations in the whole tissue region, these pre-malignant pathologies may progress to dysplastic lesions then to invasive carcinomas. The occurrence of multiple tumors can be explained by two competing hypotheses:

- Monoclonal theory in which single cell is transformed, and through the mucosal spread, give rise to multiple genetically related tumors.
- Polyclonal theory in which multiple transforming events give rise to genetically unrelated multiple tumors.
- An alternative theory for the occurrence of multiple malignant lesions was due to wide spread migration of transformed cells through the whole aero digestive tract [6]. Two types of migration are involved in the concept of this theory; migration of tumor cells by for ex. Saliva (micro metastases) and intra epithelial migration of the initially transformed cells [7].

The field cancerization theory suggests that there is a high probability of recurrence for other synchronous or metachronous tumors in patients with oral squamous cell carcinoma. Therefore, frequent clinical and histologic screening are mandatory for postoperatively detected lesions; those at high risk (smokers and chronic alcohol consumers), though tobacco and alcohol have a synergistic effect when combined together [8].

Many parameters determine the development of a new tumor; the most important is the follow up period, since the premalignant lesions need a longer time up to 96 months to progress into invasive carcinoma [9].

Radiotherapy is effective in decreasing the incidence of secondary primary tumors but it is less effective in benign epithelium and leukoplakia [10].

Conclusion

Understanding the concept of oral field cancerization requires careful post-operative monitoring of patients with oral squamous cell carcinomas, besides the regular clinical and Histopathological screening along with molecular testing, for an early detection of any second primary tumor or local recurrence. Early detection and monitoring of the field may have profound implications for cancer prevention.

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