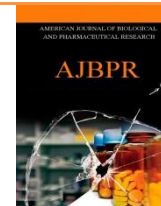




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ORAL SQUAMOUS CELL CARCINOMA – CLINICAL AND RADIOLOGIC CORRELATION

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ABSTRACT

Most oral cavity and oropharyngeal lesions are benign. Among the malignant lesions occurring in this region, SCCs predominate, accounting for more than 90%. Other malignancies that may occur in the oral cavity or oropharynx include minor salivary gland tumors, lymphomas, and various mesenchymal tumors. The most commonly recognized risk factors for SCC include long-term overuse of alcohol and tobacco. Squamous cell carcinoma (SCC) is commonly evaluated with radiologic imaging. The symptoms of disease, the routes by which it may spread, and the prognosis vary greatly, depending in large part on the anatomic site at which the primary tumor originates. In this article few of the various radiographic appearances of oral squamous cell carcinoma are discussed.

INTRODUCTION

Oral cancer is the sixth most common cancer worldwide. More than 90% of all oral cancers are squamous cell carcinoma (SCC). It may affect any anatomical site in the mouth, but most commonly the tongue and the floor of the mouth. It usually arises from a pre-existing potentially malignant lesion and occasionally de novo; but in either case from within a field of precancerized epithelium [1].

The main carcinogenic agents associated to the development of tumors of the upper aerodigestive tract are tobacco and alcohol. More recently, chronic trauma has been shown to act as a promoter in the process of oral carcinogenesis. The presence of oncogenic human papilloma viruses, in particular types 16 and 18, cytomegalovirus and the Epstein Barr virus has also been associated to the development of oral carcinomas [2].

Important risk factors related to the carcinoma itself that are associated with a poor prognosis include large size of the tumour at the time of diagnosis, the presence of metastases in regional lymphnodes and a deep invasive front of the tumour. Malignant tumors that arise de-novo are termed primary tumors, and those that originate from distant primary tumors are referred to as secondary or metastatic malignancy. Squamous cell carcinoma appears initially as white or red (sometimes mixed) irregular patchy lesions of the affected epithelium. With time, these lesions exhibit central ulceration; a rolled or indurated border, which represents peripheral invasion of malignant cells; and palpable infiltration into adjacent muscle or bone.

The following clinical signs and symptoms suggest that a lesion may be malignant: displaced teeth, loosened teeth over a short time, foul smell, ulceration, presence of an indurated or rolled border, exposure of underlying bone, sensory or motor neural deficits, lymphadenopathy, weight loss, dysgeusia, dysphagia, dysphonia, hemorrhage, lack of normal healing and pain or rapid swelling with no demonstrable dental cause. Diagnostic images may aid in the establishment of an initial diagnosis of a tumor. Radiologic investigation has the

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potential to determine the presence of osseous involvement from soft tissue tumors and allow the practitioner to assess the involvement of lymph nodes and treatment outcome [3]. The clinical characteristics of SCC vary from case to case and include the exophytic (verrucous or papillary), endophytic, ulcerated, leukoplakic, erythroplakic or erythroleukoplakic forms. Depending on their extent and/or location, these lesions may cause painful symptoms and resorption of adjacent bone seen as a “moth-eaten” appearance on radiographs [4].

CASE REPORT 1

A 35 year old male patient had presented with an ulcero-proliferative growth on the right alveolar premolar region and buccal vestibule with everted edges (Figure 1) which was firm in consistency, non-tender on palpation and was indurated. Single right submandibular lymph node was mobile, palpable and tender. Radiograph evaluation suggested an ill-defined border with lack of cortication. Widening with destruction of the adjacent lamina dura and periodontal ligament space of adjacent tooth is seen. However, there is no evident root resorption or displacement of adjacent teeth (Figure 2).

Figure 1. Ulcero-proliferative growth with everted edges



Figure 2. An ill-defined radiolucency with lack of cortication



CASE REPORT 2

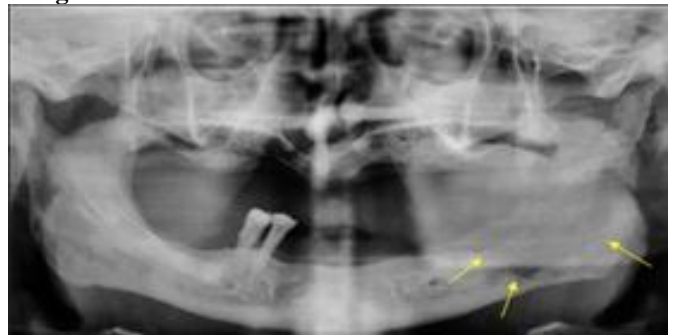
A 45 year old male patient had presented with a diffuse swelling and a large non-healing ulcer of size 2X1cm in the left posterior alveolar region involving buccal vestibule with sloughing seen on the floor of the ulcer with no surrounding erythematous halo (Figure 3). Non-scrapable

white patches were seen adjacent to the ulcer on the alveolar ridge. It was firm in consistency, tender on palpation and was indurated. Radiographic evaluation suggested elevated soft tissue shadow with irregular bone margins without any cortication with uneven extensions of bone destruction (Figure 4).

Figure 3. Diffuse swelling and a large non-healing ulcer



Figure 4. Elevated soft tissue shadow with irregular bone margins



CASE REPORT 3:

A 40 year old male patient had presented with an ulceroproliferative growth on right posterior region of hard palate in the molar area with scattered necrotic areas and elevated borders with no surrounding erythematous area extending almost upto midline (Figure 5). It was tender on palpation and indurated.

Patient had given history of difficulty in mouth opening since 15 days. Two right submandibular lymph nodes were palpable; one of size 4X3 cm and other was smaller in size about 1X1 cm, both of which were mobile, palpable and tender. Radiographic examination revealed slightly raised outline of hard palate with no other appreciable changes (Figure 6).



Figure 5. an ulceroproliferative growth on right posterior region of hard palate



Figure 6. slightly raised outline of hard palate



CASE REPORT 4

A 75 year old female patient had presented with a huge proliferative cauliflower-like growth in the lower anterior region of jaw extending from mandibular right premolar region to the mandibular left molar region interfering with occlusion with red interspread areas and is firm, indurated to underlying structures and tender on palpation (Figure 7).

Mandibular anteriors exhibited grade III mobility. Lymph node examination revealed two palpable left submandibular lymph nodes that were palpable, mobile and tender and also two right palpable submandibular lymph nodes that were firm, indurated and non-tender. Radiographic evaluation suggested destruction of alveolar bone causing 'tooth floating in space appearance'. (Figure 8).

Figure 7. A huge proliferative cauliflower-like growth in the lower anterior region



Figure 8. Tooth floating in space appearance



DISCUSSION

According to World Health Organization, carcinoma of oral cavity in males in developing countries, is the sixth commonest cancer after lung, prostate, colorectal, stomach and bladder cancer, while in females, it is the tenth commonest site of cancer after breast, colorectal, lung, stomach, uterus, cervix, ovary, bladder and liver. Most invasive oral carcinomas are preceded by a preinvasive stage that may last for many years. Tumor progression in epithelia has been classified as normal, hyperplastic (non-dysplastic), dysplastic carcinoma in situ and invasive carcinoma [5]. OSCC predominantly affects males with variable male: female ratios ranging in recent studies from 6:1 to 2:1 [6]. Small lesions are often asymptomatic or may present with vague symptoms. On the other hand, locally advanced lesions usually present with pain, halitosis, and difficulty with speaking, swallowing, and chewing [7]. Oral cancer is significantly high mostly on the buccal and commissural mucosa and is attributed directly to the use of unrefined topical tobacco which are kept in the mouth for longer periods. Although smoking

tobacco offers more pronounced risk for oral cancer, combining tobacco and alcohol results in an increased cancer incidence because of their synergistic action [8]. Most invasive oral carcinomas are preceded by a preinvasive stage, that may last for many years. Tumor progression in epithelia has been classified as normal, hyperplastic (non-dysplastic), dysplastic carcinoma in situ and invasive carcinoma. The majority of the initial alterations of precancerous and cancerous oral lesions are not readily recognizable, on clinical or histopathological examination. Squamous cell carcinoma, the most common oral malignancy, may be defined as a malignant tumor originating from surface epithelium. It is characterized initially by invasion of malignant epithelial cells into the underlying connective tissue with subsequent spread into deeper soft tissues adjacent bone local-regional lymph nodes and ultimately to distant sites such as the lung, liver, and skeleton. Radiology plays a number of important roles in the management of the patient with cancer. First, diagnostic images may aid in the establishment of an initial diagnosis of a tumor. Diagnostic imaging also aids in the



appropriate staging of disease from early small cancers to large cancers that have spread. The absence of visible radiologic signs as described does not preclude malignancy; it only implies that no visible radiographic signs exist. The typical appearance of the periphery (border) of a malignant lesion is an ill-defined border with lack of cortication and absence of encapsulation (a soft tissue or radiolucent periphery). Fingerlike extension of the tumor occurs in many directions; this extension is followed by osseous destruction producing a region of radiolucency. Evidence of osseous destruction with adjacent soft tissue mass is highly suggestive of malignancy. Since most malignancies do not produce bone or stimulate the formation of reactive bone, their internal aspect is radiolucent in most instances. Rapidly growing malignant lesions generally destroy supporting alveolar bone so that teeth may appear to be floating in space. Because malignant tumors tend to grow rapidly, they invade by means of the easiest routes, such as through the maxillary antrum or through the periodontal

ligament space around teeth, resulting in irregular widening with destruction of the lamina dura; they also may spread through the inferior alveolar neurovascular canal, causing similar widening. Regardless of the easy access of oral cavity for clinical examination, OSCC is usually diagnosed in advanced stages. Most common reasons are the initial wrong diagnosis and the ignorance from the patient or from the attending physician [9].

CONCLUSION

Early diagnosis remains the key element for the sufficient therapy of OSCC. Clinicians should be aware that single ulcers, tumors, red or white plaques, particularly if any of these are persisting for more than two weeks, may be manifestations of malignancy. The global increase in frequency and mortality, as well as the poor prognosis of head and neck squamous cell carcinoma, has intensified current research efforts in the field of prevention and early detection of this disease.

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