EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 3
Issue: 1
397-399
Year: 2016

GINGIVAL ORAL SQUAMOUS CELL CARCINOMA: A REVIEW

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Article Received on 18/11/2015 **Article Revised on 10/12/2015** **Article Accepted on 01/01/2016**

ABSTRACT
Oral carcinoma is a serious health concern as it is one of the more leading cancers in India and other south-east Asian countries. Oral squamous cell carcinoma (OSCC) is epithelial malignancy. It is most common malignancy of the oral cavity. It can occur at various sites in the oral cavity, but the occurance of the gingival squamous cell carcinoma is relatively rare. Various unique features of gingival OSCC clearly differentiates it from OSCC arising at other sites. Gingival OSCC often mimics other lesions of oral lesion especially those of reactive or inflammatory origin and arising at the same site. Thus it may delays the diagnosis and can make the prognosis of the patients to poorer. Also, in addition many predisposing and presenting factors are different from those of other OSCC. In case of gingival OSCC, the proximity to the underlying periosteum may invite early bone invasion.

KEYWORDS: Oral squamous cell carcinoma, Gingival squamous cell carcinoma, Oral cancer.

INTRODUCTION

Oral Squamous cell carcinoma (OSCC) is epithelial in origin and it is the most common malignant tumor of the oral cavity. It accounts for about 90% of all oral malignancies.[1]

OSCC is defined as a "Malignant epithelial neoplasm exhibiting squamous differentiation characterized by the formation of keratin and/or the presence of intercellular bridges."[2,3]

Early, superficially, or microscopic invasive SCC is defined as "Squamous carcinoma in which there is penetration of the basement membrane with invasion of the carcinoma into the underlying submucosal compartment."[4]

OSCC is mostly asymptomatic, and the initial symptoms are usually an intraoral mass or swelling, ulceration, pain, ill-fitting dentures, mobility of teeth, or unhealed extraction wounds.[3]

Early oral squamous cell carcinoma often presents clinically as a red lesion (erythroplakia), white lesion (leukoplakia), or a combination of both (erythroleukoplakia). However, as the lesion advances, superficial ulceration of the mucosal surface can develop. As the lesion increases in size, it can become an exophytic mass with a fungating or papillary surface architecture.[5]

The etiology of OSCC remains unknown, but many predisposing factors such as smoking associated with heavy alcohol use are well known. Other common habits in India have also been associated with OSCC, such as chewing betel leaves and inverted smoking.[6,7,8]

The most common site for OSCC is the tongue, which accounts for approximately 40% of all cases in the oral cavity proper.[9] These tumors most frequently occur on the posterior lateral border and ventral surfaces of the tongue. The floor of the mouth is the second most common intraoral location. Less common sites include gingiva, buccal mucosa, and hard palate.[5]

Gingival oral squamous cell carcinoma

Previous studies reported that approximately 10% of all malignant tumors of the oral cavity occur on the gingiva.[1,10] Among these, gingival squamous cell carcinoma (GSCC) group accounts for 6.3% of all the oral carcinomas between the ages of 36 and 65 years and up to 91.4% in patients older than 66 years.[1]

Gingival involvement with SCC is the most prevalent one, followed by verrucous carcinoma and adenocarcinoma, with lymphoma and Kaposi sarcoma being far less prevalent.[3]

These tumors arise more commonly in edentulous areas, although they may develop at sites where teeth are present. It is generally agreed that carcinomas of the

mandibular gingiva are more common than those of the maxillary gingiva, and 60% of those are located posterior to the premolars.[1]

It is mainly seen in female older than 50 years. However, some investigators have reported a higher incidence in male.[10]

Clinical presentation

Clinical presentations of SCC of the gingiva can be quite variable, presenting as an area of ulceration or as an exophytic, granular, or verruciform growth, so they can easily be misdiagnosed as benign tumors or other inflammatory responses due to the variable appearances.[1]

The tumor arises more commonly in the edentulous area, although it may develop at the site in which teeth are present. The attached gingiva is more frequently involved than the free gingiva.[8]

Clinical appearance, site and extent of the gingival carcinoma may be complex. In fact, the site is frequently not localized to the alveolar gingiva alone. Clinical site and extent of the gingival carcinoma have been studied for 70 cases by Totsuka Y et al[11] and showed alveolar gingiva alone (30.0%), buccal gingiva (44.3%), and lingual gingiva (25.7%). Furthermore, Iwaki et al[12] compared the image findings of panoramic and intraoral radiography with the histopathology of the excised specimen, and showed that the evaluation by both panoramic and intraoral radiography was difficult for detecting tumor invasion into the cortical bone of either the buccal or lingual plate alone.[13]

Since the gingiva is a common site of calculus formation and microorganism collection (in 1 mm of dental plaque, more than 108 bacteria are present), it is the most susceptible site for long-term chronic irritation and inflammation.[1]

Differential diagnosis

Carcinoma of the gingiva is an insidious disease that is usually painless and is often misdiagnosed as one of the many inflammatory lesions of the periodontium such as pyogenic granuloma, periodontitis, papilloma, or even fibroid epulis (inflammatory hyperplasia). Gingival carcinoma typically arises from keratinized mucosa in a posterior site, most often in the mandible, where it often destroys the underlying bone structure, causing tooth mobility.[10]

In early stages, the lesion often closely simulates advanced periodontitis, associated with minimal pain, and may lead to a diagnostic delay. Because of the proximity of the underlying alveolus, early bone invasion is a frequent occurrence.[3]

Prognosis of gingival squamous cell carinoma

The prognosis with gingival carcinomas depends on the histological subtype (grade) and clinical extent (stage) of the tumor.[1]

Gingival SCC has a relatively poor prognosis, because the differential diagnoses, periodontitis and osteomyelitis, are difficult to exclude. As such, gingival SCC is usually diagnosed late, following invasive procedures such as extraction or curettage. Previous data (Kusukawa et al[14] and Suzuki et al[15]) suggest that the risks of gingival SCC recurrence, cervical lymph nodes metastasis, and distant metastases are increased in patients with history of tooth extraction.[16]

It has been reported that factors affecting the outcome of gingival SCC included extraction history, primary tumor size, bone invasion, neck node metastasis, pathologic stage, perineural invasion, and negative surgical margins.[16]

The type of mandibular bone invasion such as invasive or pressure type may also influence the prognosis of patients with carcinoma of the lower gingiva.[13]

The clinical course of early squamous cell carcinoma of oral tongue (OTSCC) is fairly unpredictable. For the majority of patients, surgical perioral excision of the primary tumor would be adequate treatment to cure the disease.[17]

Early detection of SCC is vital as the prognosis is directly related to the size of the lesion. Lesions measuring less than 1 cm are amenable to cure and have a long-term prognosis. Thus, it is prudent to biopsy any unexplained lesion which remains after 2 weeks following removal of any suspected etiologic agent to avoid unnecessary delay in diagnosing such conditions. The overall survival rate for GSCC is about 54%.[3]

This lesion affecting the gingiva is very often confused with inflammatory conditions affecting the periodontium; hence, it is of paramount importance that the lesion should be diagnosed early to initiate treatment, prevent metastasis, and thereby improve the prognosis.[3,18]

Simiantonaki et al[19] observed the effect of pro-inflammatory stimuli (lipopolysaccharides) on tumor cell-mediated induction of endothelial cell adhesion molecules in vitro. Their findings indicated that pro-inflammatory stimuli of bacteria may play a crucial role in tumor metastasis. Thus, poor oral hygiene associated with chronic inflammation may promote the development and invasiveness of oral cancers. However, the relevance of this needs further study.[1]

CONCLUSION

At times, clinical presentation of diseases may be misleading. There are always a percentage of mysterious

cases that turn out to be different from what they appear to be. Many a times, we are too quick to dismiss persistent lesions without further investigations and doing so could result in failure of diagnosis of a potentially life-threatening disease like gingival squamous cell carcinoma as the worldwide survival rate of this condition is rather disappointing.

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