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Review

Clinical Staging of Oral Submucous Fibrosis : A Review

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Abstract
Oral submucous fibrosis (OSF) is a prevalent premalignant condition of the oral cavity, with insidious_onset. Diagnosis of this condition is based on variable clinical features, including mucosal blanching, burning sensation, hardening of the mucosa and presence of characteristic fibrous bands that are associated with gradually increasing inability to open the mouth. Various researchers in the field of dentistry have categorized different stages of OSF. This paper is intended to incorporate all the stages of OSF defined in the literature to date.

Introduction

Oral submucous fibrosis (OSF) is an insidious chronic condition that can affect any part of the oral cavity and sometimes even the pharynx. Although occasionally preceded by and/or associated with vesicle formation, OSF is always associated with juxta-epithelial inflammatory reaction followed by fibro-elastic changes to the lamina propria with epithelial atrophy leading to stiffness of the mucosa and causing trismus and inability to eat (1). This condition occurs predominantly among Indians and South-east Asians (2). Shrusrutha_in ancient medicine described a condition similar to OSF as "vidari", under the umbrella of mouth and throat diseases (3). In 1952, Schwartz (4) described a condition of the oral mucosa as "atrophia idiopathica mucosa oris", with the term OSF coined by Joshi in 1953 (5). Consumption of chilli, nutritional deficiencies, chewing of arecanut, genetic susceptibilities, altered salivary constituents, autoimmunity and collagen disorders have been suggested as potential contributors to the pathogenesis of this condition (6). The sites most frequently affected by OSF in the oral cavity are the buccal mucosa, and retromolar area, followed by the soft palate, palatal fauces, uvula, tongue and labial mucosa. Depending on maximal interincisal mouth opening, symptoms, and palpable fibrous bands, many authors have divided OSF into different clinical stages.

Staging

Wahi et al. (7) classified OSF into three clinical groups on the basis of clinical features, severity and extent of involvement.

Group I : Usually there are no symptoms referable to mucosal involvement. The lesions affect one or other commonly involved anatomical sites, are focal in character, show pallor or whitish coloration, wrinkling of mucosa and minimal induration.

Group II : Cases might present symptoms of soreness of the mucosa or increased sensitivity to chilli. The lesions are diffuse, white, extensive and indurated, involving one or more anatomical sites.

Group III : Symptoms are mainly due to restricted mobility such as trismus, stretching at the angles of the mouth and altered pronunciation. Firm mucosal bands can be palpated, and the surface might be fissured or ulcerated.

Ahuja and Agrawal (8) classified submucous fibrosis clinically based on the extent and type of fibrosis.

Class I : Localized fibrous bands in the cheek extending from the superior to inferior vestibular fornix on one or both sides. In order of frequency, these bands are usually located on the lips, in the premolar region and in the second molar region.

Class II : Generalized diffuse hardening of subepithelial tissues. This hardening usually extends from the cheek and hard palate to the soft palate, uvula and

pillars of the fauces. In occasional cases, the hardening might extend to the mucous membrane lining the pharynx.

Class III : Combination of the above two types, where the fibrous bands are associated with a generalized diffuse form of submucous fibrosis.

Bhatt and Dholakia (9) clinically grouped patients into three grades.

Grade I : Comprising mild and early cases with very slight fibrous bands and little closure of the mouth.

Grade II : Cases with moderately pronounced symptoms of disease and fibrous banding extending from the cheek to the palate area.

Grade III : Cases show excessive amounts of fibrous banding involving the cheek, palate, uvula, tongue and lips and narrowed mouth opening.

Gupta et al. (10) clinically classified four stages of submucous fibrosis according to the increasing intensity of trismus.

I. Very early stage : Complaints of burning sensation in the mouth or ulceration without any difficulty opening the mouth
II. Early stage : Along with symptoms of burning sensation, complaints of slight difficulty opening the mouth.
III. Moderately advanced stage : Marked trismus, to the extent that the patient cannot open their mouth more than two finger-widths. Associated difficulties with mastication are apparent.
IV. Advanced stage : Patient is undernourished, anemic and shows marked trismus and/or other symptoms, as mentioned above.

Mathur and Jha (11) classified clinical features of OSF into three stages.

Stage 1 : Early OSF

a. Mild blanching
b. No restriction in mouth opening.
c. No restriction in tongue protrusion, measuring from mesio-incisal angle of an upper central incisor to the tip of the tongue when maximally extended with mouth at maximal opening.
d. Burning sensation only on ingesting spicy foods, hot liquids, etc.

Stage 2 : Moderate OSF

a. Moderate to severe blanching
b. Mouth opening reduced by 33%, tongue protrusion reduced by 33%, and flexibility also demonstrably decreased.
c. Burning sensation even in absence of stimuli.
d. Presence of palpable bands.
e. Lymphadenopathy, either uni- or bilateral.
f. Demonstrable anemia on hematological examination.

Stage 3 : Severe OSF

a. Very severe burning sensation, patient unable to perform day-to-day work.
b. More than 66% reduction in mouth opening, cheek flexibility and tongue protrusion. In many cases, the tongue may appear fixed.
c. Ulcerative lesions may appear in cheek.
d. Thick palpable bands.
e. Lymphadenopathy evident bilaterally.

Khanna and Andrade (12) categorized OSF into different stages, as follows.

Group I : Very early

- normal mouth opening
- burning sensation
- excessive salivation
- acute ulceration and recurrent stomatitis

Group II : Early cases

- mouth opening : 26-35 mm (interincisal opening)
- soft palate and faucial pillars as the areas primarily affected
- buccal mucosa appears mottled and marbled, with dense, pale, depigmented and fibrosed areas alternating with pink normal mucosa
- red erythematous patches
- widespread sheets of fibrosis

Group III : Moderately advanced

- mouth opening : 15-25 mm (interincisal opening)
- trismus
- vertical fibrous bands can be palpated and are firmly attached to underlying tissue
- patient unable to puff out the cheeks or whistle
- soft palate - fibrous bands seen to radiate from the pterygomandibular raphe or anterior faucial pillar in a scar-like appearance.
- lips - atrophy of vermillion border

- unilateral posterior cheek involvement with only ipsilateral involvement of the faucial pillar and soft palate, and mouth opening reduced to 15-18 mm.

Group IV (a) : Advanced cases
- stiffness/inelasticity of oral mucosa
- trismus
- mouth opening : 2-15 mm (interincisal opening)
- fauces thickened, shortened and firm on palpation
- uvula seen to be involved, as a shrunken, small and fibrous bud
- tongue movement restricted
- papillary atrophy (diffuse)
- lips - circular band felt around entire mouth
- intraoral examination is difficult

Group IV (b) : Advanced cases with premalignant and malignant changes
- oral submucous fibrosis and leukoplakia
- oral submucous fibrosis and squamous cell carcinoma

Haider et al. (13) studied 325 patients suffering from OSF. The purpose of their study was to stage the severity of disease (functional staging) using an objective measure (interincisal opening) and to study the relationship of this staging to clinical staging. They staged the disease both clinically and functionally.

Clinical Staging :
Stage 1 : faucial bands only
Stage 2 : faucial and buccal bands
Stage 3 : faucial and labial bands

Functional Staging :
Stage A : mouth opening, 13-20 mm
Stage B : mouth opening, 10-12 mm
Stage C : mouth opening, <10 mm

They concluded that bands are common at the posterior region in mild cases of OSF and are more likely to also be found anteriorly as the disease increases in severity.

Aziz (14) divided OSF subjects into four groups.
Group 1 : Early OSF without trismus (maximum interincisal opening (MIO)>35 mm)
Group 2 : Mild to moderate disease (MIO, 26-35 mm)
Group 3 : Moderate to severe disease (MIO, 15-25 mm)
Group 4a : Severe disease (MIO<15 mm)
Group 4b : Extremely severe, malignant/premalignant lesions noted intraorally

Kerr et al. (15) proposed a disease grading system in five grades.
Grade 1 − Mild : any features of the disease triad for OSF (burning, depapillation, blanching or leathery mucosa) may be reported − and interincisal opening >35 mm
Grade 2 − Moderate : the above features of OSF + interincisal opening limited to 20-35 mm
Grade 3 − Severe : above features of OSF + interincisal opening<20 mm
Grade 4A − OSF + other potentially malignant disorder on clinical examination
Grade 4B − OSF with any grade of oral epithelial dysplasia on biopsy
Grade 5 − OSF + oral squamous cell carcinoma

Conclusion

OSF shows a gradual onset and might take years to develop along with the other features described by various authors. The most important, outstanding and reliable feature of OSF is the presence of palpable fibrous bands in the buccal mucosa, along with other characteristic features such as diffuse blanching of the mucosa, occurrence of hyperpigmented areas adjacent to zones with loss of pigment, loss of tongue papillae and leathery consistency of the mucosa. Furthermore, the patient might suffer from a burning sensation aggravated by spicy foods, dryness of the mucosa or hypersalivation and trismus.

OSF patients should be periodically investigated for different parameters to assess changes in the mucosa as well as changes at the cellular level. Long-term follow up is essential.

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