Papers

Oral submucous fibrosis – a study of 26 cases at General Hospital Ratnapura

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Abstract

Oral submucous fibrosis (OSF) is an insidious chronic disease of the oral mucosa. It is commonly seen in the Indian sub continent. The condition may involve a wide age range and there is a recent trend of increasing incidence in the younger age groups. Disease process may show a pan-oral involvement resulting in progressive circum-oral fibrosis. Patients may experience a restriction in their ability to open the mouth and to move the tongue. OSF is a known premalignant condition with a significantly high risk of malignant transformation over a period of time. The exact aetiology of the disease remains obscure in spite of much research. Thirty-six patients presenting with evidence of oral submucous fibrosis were managed over a period of 18-54 months. A clinical staging and a management policy was established to treat this group of patients. Degree of mouth opening was the criterion used to monitor the outcome of the interventions. Different forms of local and systemic steroids were used. This conservative management strategy yielded reasonably good results although the numbers studied are insufficient to draw firm conclusions.

Introduction

Oral submucous fibrosis (OSF) is an insidious chronic disease of the oral mucosa. Any part of the oral mucosa could be involved in the disease process and occasionally the fibrosis may extend to involve the pharynx and the upper part of the oesophagus. It resembles scleroderma but is limited to the oropharyngeal region and is essentially a local and regional involvement. It is not a multi system disease[1].

The term "submucous fibrosis", to describe this fibrotic condition of the oral mucosa, was first proposed by Joshi in 1953 while Pindborg et al preferred the name 'juxta-epithelial fibrosis'[2,3].

This disease is commonly seen in the Indian subcontinent. The incidence reaches as high as 4 in every 1000 adults in rural India[4]. Occasionally it has been found to exist among some Europeans living in Hyderabad and among Indian immigrants to the United Kingdom[5-7]. The condition has also been reported in Caucasians[8,9].

Aim

To study patients with submucous fibrosis prospectively, to stage them according to severity at presentation and to assess the outcome of interventions.

Materials and methods

Thirty-six patients with histologically confirmed oral submucous fibrosis attended the Maxillofacial Unit of the General Hospital Ratnapura during the period 1991 – 1993. To facilitate the establishment of a management policy, we graded the disease on the patient's ability to open the mouth and on the presence of clinical/histological evidence of malignancy. The classification adopted in our unit for patients with histologically proven submucous fibrosis was as follows.

Stage 1: Mouth opening > 30mm (measured as inter-incisal/inter-alveolar/incisor-alvelar distance)
Stage 2: Mouth opening 20 - 30 mm
Stage 3: Mouth opening < 20mm
Stage 4: Presence of histologically proven malignancy

Of these thirty-six patients, six patients had histologically proven squamous cell carcinomatous ulcers at the time of initial presentation. This group of patients belonged to Stage 4 and was treated along the conventional lines of treatment for oral malignancy. Hence they are excluded from this study.

Among the remaining 26 patients 17 were males while 9 were females. The age range spanned between 18 years and 57 years with a peak incidence in the fourth decade for both sexes. The majority was of Sinhalese ethnic descent.

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All 26 patients admitted chewing betel while 23 of them included arecanut in to the quid. Eighteen of them used tobacco while eleven, included slaked lime into the quid. Six patients were regular smokers while four stated that they smoked occasionally. Biopsies of five patients (two in stage 3 and three in stage 2) had mild to moderate degree of epithelial dysplasia while one patient in Stage 3 had epithelial dysplasia of a moderate to severe degree.

All patients were screened for anaemia and those who needed were treated with appropriate heamatenics to achieve a minimum haemoglobin level of 10g/dl. There was clinical evidence of presence of oral candidiasis in eight patients and they were treated with miconazole oral gel for a period of 6-8 weeks. All patients were reviewed at three monthly intervals or more frequently as and when the symptoms or the treatment demanded a review. The period of follow up varied from 2-5 years from initial presentation. All were counselled on the need to abstain from chewing betel and arecanut and from smoking. They were also advised to reduce the spices in their diet. This advice was repeated at every review visit. The following regime was adopted to manage the established submucous fibrosis.

Stage 1 Patients received intermittent short episodes of topical steroid mouth washes (dexamethasone 1 mg dissolved in 100 ml of water) as and when they complained of burning sensation. No systemic steroids were used for this group of patients.

Stage 2 Patients received a short tapering course of steroids. (10mg tds x 3 days, 10mg bd x 3 days, 10mg mane x 3 days, 5mg mane x 3 days).

Patients with palpable intra-oral fibrous bands received intra-lesional hydrocortisone (100 mg dissolved in 2 ml of lignocaine injections at weekly intervals for 6 weeks).

Stage 3 In addition to the therapy in Stage 1 and 2 all these patients had intra-lesional hydrocortisone (injected into the fibrous bands or into the buccal mucosa). Oral steroids were supplemented with intramuscular methyl prednisolone acetate 80 mg at monthly intervals for 6 months.

All patients were screened for diabetes mellitus and for a history of peptic ulcer prior to administering oral steroids. One patient in Stage 3 had elevated fasting blood glucose and he was spared from systemic steroids except for the intra-lesional hydrocortisone.

Results

None of the patients in stage 1 developed significant further restriction in mouth opening ability nor evidence of developing clinical/histological oral malignancy. The compliance for abstaining from betel chewing was reasonably good but for smoking it was doubtful. The use of spices appeared to continue unless the severity of the burning sensation precluded them from enjoying it. There was no regularity in the improvement in their ability to tolerate spices. This symptom tended to resolve with topical steroid mouth-wash and on many occasions recurred over a varying period of time.

Two patients in Stage 2 had progressive restriction in mouth opening and one of them stepped into the Stage 3, twenty two months from the initial presentation. Another patient developed a squamous cell carcinoma on the left commissure of the mouth, sixteen months into the follow-up.

Two patients in Group 3 developed sqamous cell carcinoma, one on the right lateral border of the tongue and the other on the mandibular retro-molar pad on the left hand side. This development was observed 22 months and 30 months respectively following the initial presentation. Two patients, including the one who developed the carcinoma of the tongue had progressive fibrosis and restriction in mouth opening while the other two maintained a stable mouth opening during the follow up.

Two patients who developed progressive restriction in stage 2 and the patient in stage 3 with progressive fibrosis underwent surgery to improve mouth opening. Surgery consisted of incising and releasing of the fibrous bands, extraction of the last two maxillary molar teeth, resection of the tip of the mandibular coronoid process and insetting of two island mucosal flaps (based on the greater palatine vascular pedicle) from the hard palate into the inner lining of the cheek. They were followed up over a period of 6 - 20 months and apart from an initial relapse accounting for about 10-15% the mouth opening achieved at surgery appeared to hold on. Pliability of the transplanted tissue remained satisfactory.

Discussion

Oral submucous fibrosis occurs in a wide age range and appears to peak between the second and fourth decades.[3] There is evidence of a recent increase in OSF in younger age groups in India.[10] There is no apparent difference in the involvement among males and females.

Clinically the onset of submucous fibrosis is often insidious. Most patients notice a burning sensation

on consuming spicy food and this intolerance to spices may show a gradual increase over a period of time. Early lesions present as a blanching of the oral mucosa, imparting a marble like appearance. Almost any part of the oral mucosa can be involved but the majority of the changes occur in the buccal mucosa, retromolar trigone, tongue and in the soft palate. Some patients demonstrate blotchy melanotic pigmented patches in the oral mucosa. With the progression of the disease the mucosa becomes increasingly stiff and the patient experiences a restriction in his ability to open the mouth and to move his tongue. Fibrous band could be palpated in the cheeks running vertically or in a circum-oral pattern.

Histology usually shows the presence of juxta-epithelial fibrosis along with epithelial atrophy and loss of rete ridges. There is diminished vascularity in the subepithelial connective tissue along with the presence of dense bundles and sheets of collagen with hyalinization. Binnie and Cawson demonstrated the replacement of the normal pattern uniform sized bundles of fibrils by an excess of fine immature fibrils and interfibriller matrix[11]. A varying degree of non specific chronic inflammatory cell infiltrate is also seen. Epithelium may also show intracellular oedema, hyperplasia, hyper keratinization and even epithelial dysplasia[12,13].

Aetiology of oral submucous fibrosis remains unknown in spite of much research. It is likely to be the result of local irritation produced by a dietary constituent. Srisat and Kholker, through animal experiments, postulated chillies, a common ingredient in the diet in the Indian subcontinent to be the principal aetiological factor[14]. Betel nut and in particular the arecanut which contains arecoline (an alkaloid) is incriminated by many workers.[15] This theory is supported by a discovery of higher levels of copper in OSF tissue specimens when compared to normal tissue. Arecanut has a high copper content and chewing arecanut for 5 - 30 minutes significantly increases soluble copper in the whole mouth fluids[16]. Copper stimulates fibrogenesis by producing an up-regulation of lysyl oxidase activity. An immunohistochemical study on OSF tissue demonstrated an increased presence of HLR-DR positive cells and CD4 cells in the epithelium, juxta-epithelium and in the lamina propria in OSF tissue specimens. This increased numbers of immunocompetent cells suggest an ongoing cellular immune response leading to a possible imbalance of immunoregulation and alteration in local tissue architecture[17].

OSF is a well recognized premalignant condition. Paymaster found one third of the cases of OSF Bombay developed oral squamous cell carcinoma[18]. Pindborg and Zachariya endorse the premalignant potential of OSF[13]. The incidence of epithelial atypia in OSF has been reported to be as high as 13 per cent[3]. It is believed that the atrophic epithelium in OSF becomes more vulnerable to carcinogens. Murti reported a malignant transformation rate of 10 per cent in OSF[19]. Jagged edges of teeth and of oral appliances may cause trauma to the oral mucosa and concentrate carcinogens, facilitating the penetration to induce carcinogenesis in succeptible cells[20].

OSF once established appears to be irreversible. Management centres around close monitoring on possible malignant transformation while maintaining the best possible mouth opening and alleviating the troublesome burning sensation. OSF patients should be counselled to refrain from practising habits which are likely to enhance the development of oral malignancy. Epithelial integrity must be maintained by treating underlying anaemia and by eliminating all sources of local tissue trauma. Recently anti-oxidant therapy has come into focus. Significantly low levels of total glutathione and Vitamin A, C and E in OSF patients has been reported[21]. Production of oxygen free radicals and superoxides have been implicated in carcinogenesis. Antioxidants have been shown to counteract this process.

Interferon-gamma (IFN-gamma) a known antifibrotic cytokine has been used to improve the mouth opening in the treatment of oral submucous fibrosis[22]. Rao reported satisfactory results using a combination of both local and systemic steroids[12]. In our study the use of steroids gave better results in patients with minimal circum-oral fibrosis. The beneficial effects of steroids appear to diminish in advanced stages of the disease. However the numbers involved in this study is inadequate to arrive at firm conclusions. Many surgical procedures have been described to improve mouth opening. These include skin grafting, palatal flap interposition and grafting with buccal fat pad. Surgery must be used with caution in selected cases since it always has a risk of creating scars and further fibrosis.

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