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Oral Submucous Fibrosis and its Correlation with Oral Cancer

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Abstract
Background: oral submucosal fibrosis is common in betal nut and tobacco chewers in our region. Is this a premalignant condition or not, to find out this we took this study into consideration**.**
Aims and objectives: To study the etiopathology, symptomatology, clinicopathological findings of oral submucous fibrosis.
To study the stage of oral submucous fibrosis and its correlation with oral cancer.
Material and methods: This study consists of 50 random cases of oral submucous fibrosis attended general surgery and ENT OPD during 1 year period, in J.A. Group of Hospitals, Gwalior (M.P.)**.**The patients were examined for any general disease and a detailed local examination was carried out.
Results: The salient features of the observations in the present study were as follows:-The maximum number of cases i.e. 22 (44%) were from the age group between 31-40 years.In sex distribution of OSF males were affected more than females in ratio of 4:1 which was similar to most of the previous studies. Religion wise, Hindu & Muslim communities were mostly affected.Burning senstation in mouth was the most common symptom. Other symptoms were trismus, ulceration, pain in throat & TM joint, anklyglossia, dysphasia and pain in ear.16 cases were pan masala chewers which was the most common chewing habit in present study.Recently introduced pan masala has predilection for young age with causation of sub mucous fibrosis in short duration. Most of the patients present themselves for medical aid when disease was advanced (clinical state II). Anemia was found in 20 cases (40%) as shown by low hemoglobin percentage (<10gm) in those cases. Eosinophils were raised in 10 cases (20%). One case (2%) showed invasive squamous cell carcinoma of buccal cavity and one had cellular dysplasia. Clinical and histological correlation was done in all cases showing evidence of submucous fibrosis histologically.
Conclusion: Disease is probably a premalignant condition but needs further evaluation.

Keywords: submucosa fibrosis, premalignant condition, oral cancer.

Introduction

Oral submucous fibrosis is a chronic, progressive, and irreversible disease of oral cavity with multifactorial aetiology. It affects oral, oropharyngeal, and at times oesophageal mucosa. A study [1] in 1952 gives the description of this disease, while joshi [2] in 1953 coined the term oral submucous fibrosis.Incidence is 0.5% with range of 0.2-1.2% in different regions of country [3].

Males are affected more than females. most patients appear in young to middle age group.

The exact aetiology of OSF is unknown but study done by various authors [4-13] Suggest that OSF MAY BE developed due to various irritants like chillies, areca and betal nuts, deficiency of vitamins and minerals, may be due to genetic or environmental factors and Ig levels may also be altered in this disease.

It is characterized by inflammation and progressive fibroblastic changes of submucosal tissue (lamina propria and deeper connective tissue) resulting in mucosal rigidity and progressive inability to open the mouth [14, 15]. Patients may be asymptomatic and detected only by chance during routine dental checkup. As the disease progresses, fibrous tissue forms arches extending from the anterior pillars and tonsillar fauces into the soft palate and buccal mucosa. When palpated from outside, the cheek feels tough and thickened, the soft palate shows restricted mobility and has a hard rubbery feel. The uvula is small and distorted. In advanced disease, thick inelastic fibrous bands develop vertically in the cheek. The floor of the mouth becomes pale and thickened and the tongue is reduced in size. Bands encircle the lips and distort their shape. The earliest clinical feature is a burning sensation [12, 16, 17] and discomfort in the oral cavity while eating highly seasoned foods. Gradually various parts of the mouth lose their natural suppleness and related disabilities develop. With involvement of the tongue, speech and associated functions are affected. In advanced cases with progressive inability to open the mouth, whistling, blowing, and sucking movements are affected. There is a positive relation between the incidence of leukoplakia and carcinoma and the occurrence of oral submucosal fibrosis. Its relation to oral submucosal fibrosis as a premalignant factor has not been specifically investigated but in a large survey [18] in India, one third of oral cancer was causally related to this.

Aims & Objectives: To study the etiopathology, symptomatology, clinicopathological findings of oral submucous fibrosis. To study the stage of oral submucous fibrosis and its correlation with oral cancer

Material & Methods: My study consists of 50 random cases of oral submucous fibrosis attended general surgery and ENT OPD during 1 year period in J.A. Group of Hospitals, Gwalior

(M.P.).The patients were examined for any general disease and a detailed local examination was carried out.

Diagnostic criteria: Diagnosis was mainly based on history and clinical examination of patients. A careful history was taken regarding main presenting complaints which were found to be burning sensation, trismus, difficulty in protruding the tongue, blanched leathery floor of tongue. Attention was paid to their personal chewing and dietary habits, like chewing of betal, tobacco, betel nuts, and taking food containing too much of chilies. In general examination special attention was paid to mouth opening, ankyloglossia, and fibrous changes of oral cavity.

Exclusion criteria: Apthous ulcer, Scleroderma, Stomatitis and other diseases affecting to oral cavity. Leukoplakia

General examination: All patients were examined for any systemic disease.

Local examination: A detailed examination of oral cavity and pharynx, carried out for trismus, ankyloglossia and tuff leathery texture of oral cavity.

Examination of oral cavity and pharynx: Condition of mucous membrane noted for pallor vesicle and fibrosis and site and size of fibrosis was noted. OSF cases were clinically categorized in three clinical stages to their ability to open mouth as given below:
Stage I - Mouth opening $\geq$ 45 mm
Stage II - Restricted mouth opening 20-44 mm
Stage III - Mouth opening $\leq$ 20 mm

Investigations
1. Blood examination
- RBC count and haemoglobin for anaemia.
- total and differential W.B.C. count

2. Biopsy
- Biopsies of all patients taken from the representative area of fibrosis in oral cavity

Technique of taking biopsy
Instrument required
- Tongue depressor
- Head light
- Suction tip with suction tube
- Surgical knife: Bard-Parker handle No. 5 with blade No. 15
- Raspatory
- Curved scissors
- Dissecting forceps

Preparation of the patient: Cases were selected after complete examination, and relevant investigations done, consent taken prior to biopsy. On the day of biopsy the patient has given an intramuscular injection of Atropine 2 mg (1 amp.) fortwin 2 cc 45 minutes before the biopsy.

Anaesthesia: Local anaeshtesia was used in all cases. Topical xylocaine 4% with Adrenaline is applied over representative area of fibrosis for five minutes and repeated 2-3 times for 15 minutes. After about 5 minutes of surface anaeshtesia a long incision about 1/4 to 1/2 cm long was made with the help of surgical knife with blade No. 15 at the horizontal, incision made direct from behind forwards. The mucous membrane elevated with the help of respiratory. The incision was made up to such depth so as to include the submucosal tissue. Then the posterior end was cut out with the help of scissors. Care was taken to ensure full thickness of the mucous membrane and the submucosal tissue. The biopsy was send for histopathological examination.

Observation
Following observations were made during the study

Table 1: Age distribution of oral submucous fibrosis

Age group (years)	No. of cases	Percentage
0-10 years	0	0%
11-20	1	2%
21-30	15	30%
31-40	22	44%
41-50	8	16%
51-60	4	8%
61 years and above	0	0

(P value highly significant)

Table 2: Sex distribution of OSF

Gender	No. of cases	%
Male	40	80
Female	10	20
Total	50	100

(P value highly significant)

Table 3: Age & Sex wise distribution of OSF

Age group (yrs)	Male	Female	Total
0-10	0	0	0
11-20	1	0	1
21-30	15	0	15
31-40	16	6	22
41-50	7	1	8
51-60	1	3	4
>60	0	0	0
Total	40	10	50

Table 4: Distribution of symptoms in OSF

Symptoms	No. of cases	Percentage
Burning sensation	42	84%
Trismus	38	76%
Ulceration off and on	32	64%
Pain in throat and TM joint	6	12%
Ankyloglossia	2	4%
Dysphagia	2	4%
Dryness of mouth	2	4%
Pain in corresponding ear	2	4%
Total	50	100%

(P value highly significant)

Table 5: Personal oral habits in OSF

Chewing	No. of cases			Percentage
	Male	Female	Total	
Pan Masala	12	4	16	32%
Cigarette/Bidi smoking	8	2	10	20%
Smoking + pan masala or tobacco	10	0	10	20%
Tobacco	4	4	8	16%
Tobacco + pan masala	6	0	6	12%
Total			50	100%

(Pan masala - Mixture of dry areca nut + tobacco + artificial perfume)

Table 6: Dietary habit

Diet	No. of patient	Percentage
Vegetarian	25	50%
Non-Vegetarian	25	50%
Total	50	100%

Table 7: OSF - Clinical signs

Clinical sign	No. of cases (%)
Changes in colour of buccal mucosa (pale)	50 (100%)
Palpable fibrous bands in oral cavity	50 (100%)
Trisumus	38 (76%)
Pallor of palate	38 (76%)
Pallor of pillar	34 (68%)
Edema	15 (30%)
Atrophy of uvula	10 (20%)
Induration	5 (10%)
Ankylogllossia	2 (4%)
Vesicles	0

(P value highly significant)

Table 8: Areas of fibrosis

S.No.	Area involved	No. of cases	Percentage (%)
1.	Buccalmucosa	40	80%
2.	Palate	36	72%
3.	Faucial	30	60%

Table 9: Stage wise distribution of OSF

Clinical stage	Male	%	Female	%	Total (%)
Stage I	6	12	4	8	20
Stage II	33	66	5	10	76
Stage III	1	2	1	2	4
Total	40	80	10	20	100

(P value highly significant)

Table 10: Hb % in OSF

Hb (gm%)	No. of cases
Upto 8	2
8-10	18
10-12	20
>12	10

Table 11: Percentage of eosinophils

Percentage of Eosonophils	No. of cases	Percentage
0-5	40	80%
6-10	8	16%
11-15	2	4%

Table 12: Depth of OSF

Histopathological changes	No. of cases	Percentage
Restricted to superficial part of mucosa	4	8%
Total mucosa	4	8%
Submucosal tissue	40	80%
Deeper tissue	2	4%

Table 13: Histopathological changes in OSF

Changes	No. of cases	Percentage
Hyperplastic epithelium	49	98%
Capillary dilatation	44	88%
Collagen hyalinisation	42	84%
Mononuclear infiltration	18	36%
Polymorph infiltration	10	20%
Fibroblasts	8	16%
Keratinization	3	6%
Cellular dysplasia	1	2%
Malignant changes	1	2%

Discussion

In present study 1% of population attended ENT OPD having oral submucous fibrosis which is slightly higher than study of Marathe *et al* [3] (0.97%).As far as age is concerned the rate is high in 2nd and 3rd decade of life. In present study the majority of the patients 44% were in the age group of 31-40 yrs. Thus our study is consistent with previous studies [19, 20]. our study show sex ratio of 4, and is consistent with previous studies [3, 21-23] where ratio was 2.3 to 11.Following are the most common symptoms of submucous fibrosis, Burning sensation in mouth, trismus, ulceration, pain in throat and TM joint, ankyloglossia, the other complaints were difficulty in swallowing, dryness of mouth pain in sides of neck and ear Present study shows concordance with previous studies [3, 21, 28]. Majority of studies [19, 21, 23, 25] showing association with common habits of betal nut, pan along with lime and tobacco, arecanut and tobacco or ghutaka chewing which is consistent with our study. Buccal mucosa (80%) is the most common involved site followed by palate and faucial part, our study is similar to other studies [12, 21, 26] in which buccal mucosa is affected in most of the cases. In clinical signs changes in color of buccal mucosa and palpable fibrous bands in oral cavity was present in 100% patients, trismus (76%), atrophy of uvula 20%, pallor of soft palate, pallor of hard palate, caries teeth 26% ankyloglosia4%, and pallor of pillar in 34%. Similar findings was present in previous study, Thus our study is consistent with previous study [3]. Anaemia was recorded in 20 cases in the present study. In these cases the haemoglobin was below 10 gm. Total WBC count was within normal limits in all cases. In 10 cases the eosinophils were, ranging from 5-15%. In present study all cases shows hyperplastic squamous epituilium with 3 cases of keratinization and one case, acanthosis and parakeratosis of surface epithelium with cellular dysplasia is minimal. 15 cases shows submucosal layer oedema. Infiltration of inflammatory cells into submucosal layers are as follows: 10 cases superficial infiltration of polymorphs, 12 cases of focal infiltration of mononuclear cell, 6 cases of mononuclear infiltration into deeper tissue. About 44 (88%) of the cases - show capillary dilatation from mild to moderate degree.8 cases show fibroblast while rest showed dense collagen hyalinization forming bundles. One case reported to have invasive sq. cell carcinoma buccal cavity and one case showed cellular dysplasia. In 8 cases histopathological changes related to superficial part of mucosa. Rest involves all layers of mucosa and varied depth of submucous tissues. our study is similar to past studies [12, 21, 26-28]. Leukoplakia is more prevalent in patient suffering from submucous fibrosis than in the general population [29] (Pindborg 1965), although the incidence varies according to Geographical area. The geographical variation has been seen from province to province but this attributed to their chewing and smoking

habit [8] (Pindborg 1972). This variation is between 7% to 38%. Pathological changes in the overlying epithelium are variable and may include evidence of increased keranisation, epithelial hyperplasia and/or atrophy, and occasionally epithelial dysplasia, with progressive fibrosis, epithelial atrophy is the primary histological feature [26, 29] (Mani & Singh, 1976; Pindborg *et al*., 1965). The concept of "Predisposition" is embodied in hypothesis, advanced originally by Pindborg and Zachariah [29] (1965) and reviewed recently [30] (Pindbord, 1980), to account for the pathogenesis of cancer development in submucous fibrosis. These authors consider that deposition of dense collagen bands and relative diminution in vascularity leads to relative atrophy of the overlying epithelium. Pindborg (1980) [30] suggests that this atrophic epithelium is possibly more susceptible to the carcinogenic components which are often present in the tobacco used in India. Suri, Goldman & Wells (1971) [17] reported a definite, though somewhat limited, carcinogenic potential when areca nut extracts were applied to hamster cheek pouches; further more, when applied in association with tobacco, the areca components seemed to exert a powerful co-carcinogenic effect. In Pindborg JJ, Murthy PR study in 1985 [25, 31] also reinforced the hypothesis that submucous fibrosis is a precancerous condition. Punnya V. Angadi *et al* (1989-2005) [21] find that the malignant transformation rate is 11.7%, which appears to be higher than reported incidence and was seen predominantly in males (87%).In our study one (2%) patient had invasive squamous cell carcinoma along with OSF and one (2%) patient having cellular dysplastic changes showing its relation with oral cancer however study needs longer follow up to calculate malignancy conversion rate in OSF.

Conclusion

Submucous fibrosis is commonly seen in younger age group between 31-40 yr the youngest one was 20 yr old boy.Sex ratio showed male predominance in the ratio of 4:1 (40 male & 10 female).Females were affected in slightly later age group (Avg. 40 yrs) than male (Avg. 31 yrs). Pan masala, smoking and smoking + pan masala are the predilection factors in all the cases either alone or in combination. The burning sensation in the mouth is the most common first symptom. While gradual difficulty in opening the mouth is the second most common symptom which gradually increases with severity of the disease. Paleness of mucous membrane was constant finding in all the patients followed by palpable fibrous bands, trismus and pallor of palate. Buccal mucosa, palate, and tonsillar pillars were affected in this given order. Histological changes show hyperplastic sqaumous epithelium, capillary dilatation and collagen hyalinization with varying amount of cellular infiltration. 1 case (2%) had cellular dysplasia and 1 case (2%) had invasive sqamous cell carcinoma. Disease is probably a premalignant condition but needs further evaluation.

References

1. Schwartz J. Atrophia idiopathica tropica mucosa oris. 11th Int Dental Congress London, 1952.
2. Joshi SG. fibrosis of the palate and pillars. Indian Journal otolaryngel 1953:4:1.
3. Raina C. Clinical profile and serum beta cortotene level in Oral Submucous fibrosis, India J otolaryngo. 2005, 57(3).
4. Caniff JP, Harvey W, Harris M. Oral submucous fibrosis: It's pathogenesis and management, Br dent. J 1986; 160:429-34.
5. Caniff JP, Harvey W. The etiology of oral submucous fibrosis, the stimulation of collegen synthesis by extract of arecanut. Int. J. Oral Surg. 1981; 10(Suppl-1):163-7.
6. Harvey W, Scutt A, Meghjis Caniff JP. Stimulation of human buccal mucosa fibroblast invitro by Betalnut alkaloid. Arch oral Bial 1986; 31:45-9.
7. Joshi SG. fibrosis of the palate and pillars. Indian Journal otolaryngel 1953; 4:1.
8. Pindborg JJ. Is submucous fibrosis a precancerous condition in the oral cavity? Int Dent J. 1972; 22:474-480.
9. Pindborg JJ. Murthy PR - Oral submucous fibrosis as a precancerous condition. Scan J Dent Assoc. 1984; 92:224-9
10. Ramnathan K. Oral submucous fibrosis: An alternative hypothesis as t its cause. Med J Malaysia. 1981; 36:243-5.
11. Rajendran R, Sugthan CK. T cell mediated ad humoral immune responses in oral submucous fibrosis. Cancer. 1986; 58:2628-31.
12. Rao ABN. Idiopathic palated fibrosis. Br J Surg. 1962; 63(50):23-5.
13. Wahi PN, Kapur VL, Luthra VR. Submucous fibrosis of the oral cavity. Clinical feature. Bull WO 1966; 35:789-92.
14. Aziz SR. Oral submucous fibrosis: an unusual disease JNJ dent. Assoc. Spring 1997; 68(2):17-9 (medline)
15. Cox Walker Dm. Oral submucous fibrosis a review: Aust dent. J. 1996; 41(5):294-9 (Medline)
16. Moos KF, Madan DK. Sub mucous fibrosis- Br Dent, J. 1968; 125:313-7.
17. MC Gurk M, Craig GT. Oral Submucous fibrosis - two cases of malignant transformation in Asian immigrants to the united kingdom, Br. J Oral max surg. 1984; 22:56-54.
18. Paymaster JC. Cancer of the buccal mucosa: A clinical study of 650 cases in Indian patients. Cancer. 1956; 9:431-5.
19. Pin Su I. Idioatphic sclreoderma of mouth: Report of three cases. Arch Otolaryngol. 1954; 59(3):330.
20. Hammer JE III, Looney PD, Chused TM. sub mucous fibrosis oral surg 1974; 37:412-21.
21. Punnya Amgadi V. Oral submucous fibrosis: A clinicopathologic review of 205 cases in Indian. Oral Maxillofac Surg 2011; 15:15-19.
22. Kiran Kumar K. Oral submucus fibrosis: A clinicohistopathologial study in channai : Indian Journal, dent. Res. 2007, 18(3).
23. Vanaja Reddy. Oral submucous fibrosis: Correlation of clinical grading to various habit factors. International Journal of Dental Clinics. 2011; 3(1):21-24.
24. Pindborg JJ. Oral submucous fibrosis: a review. An Acat Med Singapore. Sep. 1989; 18(5):603-7 (Medicine).
25. Desa JV. Submucous fibrosis of palate and cheek Annals of otorhinolaryngology 1957; 66(4):1143.
26. Mani NJ. Studies on oral sub mucous fibrosis IV Connective tissue changes. J. Oral medicine. 1977; 32:70-74,
27. Pindborg JJ, Sirsat Oral. submucous fibrosis. Jour Res. 1966; 22:764-79. Khanolkar.
28. Usha Issac. Histopathologic features of oral submucous fibrosis: a study of 35 biopsy specimens. Oral surgery. Oral medicine. 2008; 106(4):556-560, Oct.

29. Pindborg JJ, Chawla. Epithelial changes in oral submucous fibrosis. Acta Odont Scand. 1965; 23:277-285.
30. Pindborg JJ. - Lesion of the oral mucosa to be considered pre malignant and their epidemiology. In machiezie ZC, Dabel steen E, Squier CA (eds) Oral premalignancy lowa, University of lowa press, 1980, 2-12.
31. Murti PR, Bhonsle RB, Pind borg JJ, Daftary DK, Gupta PC, Metha FS. - Malignant transformation rate in oral submucous fibrosis over 17 year period, community dent oral epidermol, 1985; 13:340-1.