Notes

Submucous Fibrosis of the Oral Cavity: 1. Clinical Features

by P. N. WAHI, V. L. KAPUR, USHA K. LUTHRA *and* M. C. SRIVASTAVA, *Departments of Pathology and Dentistry, S. N. Medical College, Agra, India*

Submucous fibrosis of the oral cavity has in recent years been reported as a pathological entity in several studies from India. The only reports from other countries are those of Schwartz,[a] who described the entity in Indians settled in East Africa, and Su [b] from Taiwan. The condition appears to be confined to people of South-East Asian origin. In spite of the numerous publications, no well-defined clinical picture of submucous fibrosis is yet recognized.

This paper embodies the results of a study of 273 cases of precancerous oral lesions collected from the dental out-patient department of the S. N. Hospital, Agra, India, of which 104 cases (38%) were diagnosed as submucous fibrosis. In addition there were 27 cases in which submucous fibrosis was associated with other lesions. The patients were subjected to a thorough clinical examination of the oral cavity. All lesions were diagnosed as submucous fibrosis on histological examination.

Symptoms and population studied

Table 1 lists the clinical features of the cases.

Most of the patients (83.6%) came with dental complaints. Only in 21 patients (20.1%) were there symptoms referable to mucosal involvement, i.e., increased sensitivity to chillies and soreness of mucosa. Histories of recurrent vesicle formation were obtained from 14 patients (13.4%).

Males predominated in the present series (70 males and 34 females), the male : female ratio being 2:1. The youngest patient was 16 years and the oldest 70 years of age, with a peak frequency between 40 and 44 years. The age distribution for the male and female patients is given in Table 2.

Of the 104 cases of submucous fibrosis studied, 89 were in Hindus and 15 in Muslims. Analysis as to sex and religion shows a slight preponderance of females among the Muslim patients (Table 3). However, the number of Muslim patients is too

TABLE 1
SYMPTOMS IN 104 CASES OF SUBMUCOUS FIBROSIS [a]

Symptoms	No. of cases	Percentage
Dental complaints	87	83.6
Increased sensitivity to chillies	20	19.2
Soreness of mucosa	8	7.7
Trismus	4	3.8
Nodule	3	2.9
White patch	2	1.8
Ulceration	1	0.9

[a] Some patients had more than one symptom

TABLE 2
AGE DISTRIBUTION IN CASES OF SUBMUCOUS FIBROSIS

	Age (years)		
	Males	Females	All cases
Mean	40.6	40	40.5
Standard deviation	14.0	12.4	13.2
Range	26.6-54.6	27.6-52.4	27.4-53.7
Median	40	38	40
Standard error of mean	1.7	2.1	1.3

TABLE 3
DISTRIBUTION OF CASES OF SUBMUCOUS FIBROSIS ACCORDING TO RELIGION AND SEX

Religion	Sex		Male : female ratio
	Males	Females	
Hindu	63	26	2.4 : 1
Muslim	7	8	0.8 : 1
Total	70	34	2 : 1

[a] Quoted by Sirsat, S. M. & Khanolkar, V. R. (1962) *Indian J. med. Sci.*, **16**, 189.
[b] Su, I. P. (1954) *Arch. Otolaryng.*, **59**, 330.

TABLE 4
CLINICAL DIAGNOSIS IN CASES OF SUBMUCOUS FIBROSIS ACCORDING TO PREDOMINANT SITE OF INVOLVEMENT

Predominant site of involvement	Total No. of cases	Clinical diagnosis					
		Submucous fibrosis	Leukoplakia	Melanoplakia	Ulcer	Syphilitic palate	Growth
Palate	53	41	9	2	—	1	—
Buccal mucosa	46	18	17	7	3	—	1
Tongue (anterior 2/3)	3	—	1	—	2	—	—
Gingivae	1	—	1	—	—	—	—
Lip	1	—	1	—	—	—	—
Total	104	59	29	9	5	1	1
Percentage	100	58.6	26.2	8.6	4.8	0.9	0.9

small to warrant any conclusion as to the relative frequency.

Clinical diagnosis

Table 4 gives the clinical diagnosis according to the predominant site of involvement.

Of the 104 cases of submucous fibrosis diagnosed on biopsy, this condition was correctly interpreted clinically in 59 cases (58.6%). The accuracy of clinical diagnosis varied with the site of involvement. Of the 53 cases with predominant involvement of the palate, 41 cases (77.3%) were clinically diagnosed as submucous fibrosis, while only 18 cases (39.1%) of the 46 involving the buccal mucosa were so diagnosed. None of the cases with involvement of tongue, lips or gingivae was clinically diagnosed as submucous fibrosis.

The distribution of the cases according to the predominant site of involvement is shown in Table 5. The palate and/or buccal mucosa were the sites of maximum involvement and gingivae and lips of the least.

Palate. The palate was principally involved in 53 cases (51.3%) and in another 7 cases it was involved in association with the buccal mucosa. The involvement was diffuse and bilateral in all but one case, in which only the right half of the hard palate and the right half of the anterior portion of the soft palate were involved.

The surface of the lesion was smooth in 38 cases, granulated in 19 cases, speckled in 2 cases, ulcerated in 1 case and blanched and streaked in 1 case. The colour was white in all except 9 cases. Of these,

TABLE 5
ANATOMICAL DISTRIBUTION OF LESIONS IN CASES OF SUBMUCOUS FIBROSIS

Predominant site of involvement	No. of cases	Percentage
Palate	53	51.3
Buccal mucosa [a]	46	44.2
Tongue	3	2.7
Gingivae	1	0.9
Lip	1	0.9

[a] Seven cases had associated involvement of palate.

8 cases showed scattered blackish foci, while in 1 case the lesion was of greyish black colour.

Lesions were hypertrophic in 35 cases and atrophic in 18 cases. Induration was present in all but 10 cases. The movement of the soft palate was restricted in 24 cases. In the 4 cases associated with trismus, firm indurated bands were felt in the retromolar region, extending from the soft palate towards the buccal mucosa.

Buccal mucosa. In 46 cases the buccal mucosa was the predominant site of involvement. Of these, 7 cases also had an associated involvement of the palate. In 60% of the cases there was bilateral involvement. The extent of mucosal involvement varied from small, focal, pale, streaked or puckered areas to extensive, diffuse, white indurated lesions involving the whole buccal mucosa and even extending to adjoining areas. The lesion was hypertrophic

TABLE 6
DISTRIBUTION OF CASES OF SUBMUCOUS FIBROSIS ACCORDING TO PREDOMINANT SITE OF INVOLVEMENT AND CLINICAL GROUP

Predominant site of involvement	Total No. of cases	Group I		Group II		Group III	
		No.	%	No.	%	No.	%
Palate	53	15	28.3	30	56.6	8	15.1
Buccal mucosa	46	27	68.4	11	26.1	3	6.5
Tongue	3	—	—	1	33.3	2	66.7
Gingivae	1	—	—	1	100	—	—
Lip	1	—	—	1	100	—	—

in 36 cases and atrophic in 8 cases. The surface was smooth in 20 cases, blanched and streaked in 12 cases, speckled in 8 cases, ulcerated in 4 cases, and papillary and fissured in 1 case each. The colour of 33 cases was white, in 10 it was white with blackish foci and in 3 it appeared greyish black.

Restriction of mucosal mobility was evidenced by puckering and marked wrinkling at the angles of mouth on attempting complete opening of the mouth in 11 cases, and by inability to pinch the mucosa and move it on the underlying tissue in 29 cases. In all cases of the former group, the commissural area of the buccal mucosa was involved.

Tongue. In three cases the anterior two-thirds of the tongue was mainly affected. All three were associated with the complaints of intolerance to seasoned and spicy food and a mildly annoying pain in the tongue. In one case the lesion was white, atrophic and indurated, with a fissured surface which involved the left half of the anterior two-thirds of the tongue. In the other two cases nearly the whole of the dorsum of the tongue was involved, with white atrophic lesions having a granular surface. There was marked restriction of the mobility of the tongue in these two cases.

Gingivae. In the case encountered with gingival involvement, there was a diffuse, white, smooth, atrophic, indurated lesion on the labial and buccal aspects of the lower gingiva.

Lips. The vermilion area of both lips was involved in the only case with lip involvement seen. The lesions were ill-defined, diffuse, atrophic, indurated and white in colour. There was extension of firm white streaks on to the upper and lower labial mucosa. The rest of the oral mucous membrane appeared normal.

Classification

On the basis of clinical features, severity and extent of involvement it has been possible to classify the cases of submucous fibrosis into the following three clinical groups.

Group I. Usually there are no symptoms referable to the mucosal involvement. The lesion affects one or other commonly involved anatomical site, is focal in character, shows pallor or whitish coloration, wrinkling of mucosa, and minimal induration.

Group II. Cases may present symptoms of soreness of the mucosa or increased sensitivity to chillies. The lesion is diffuse, white, extensive, and indurated, involving one or more anatomical sites.

Group III. Symptoms mainly due to restricted mobility, such as trismus, stretching at angles of mouth, inability to protrude the tongue and altered pronunciation, are present. Firm submucosal bands can be palpated. The surface may be fissured or ulcerated.

Table 6 shows the distribution of cases in the three clinical groups according to the principal site of involvement.

In group III, palatal involvement would appear to be more common than that of the buccal mucosa, while in group I involvement of the buccal mucosa was more common. However, the cases in the individual groups are too few to be subjected to statistical analysis.

The distribution of cases by sex in the three clinical groups is shown in Table 7.

The male : female ratio shows a preponderance of males in group I and group II, while females predominate in group III. The χ^2 test could not be applied, owing to the small number of male cases in group III.

TABLE 7
DISTRIBUTION OF CASES OF SUBMUCOUS FIBROSIS IN THE THREE CLINICAL GROUPS BY SEX

Clinical group	Male	Female	Male : female ratio
I	36	11	3.3 : 1
II	31	13	2.4 : 1
III	3	10	0.3 : 1
Total	70	34	2 : 1

Associated lesions.

In addition to these 104 cases, 19 cases of submucous fibrosis were associated with leukoplakia, 4 cases with melanoplakia and 4 with epidermoid carcinoma, as shown by histologic examination.

Discussion

This paper deals with the clinical study of 104 cases of submucous fibrosis which were confirmed histologically. Male patients predominated in this series. This is at variance with the reports of Joshi,[c] DeSa [d] and Sirsat & Khanolkar,[e] who found a nearly equal distribution of cases among the males and females, and also with those of Schwartz,[a] Rao & Raju,[f] Rao [g] and Pindborg et al.,[h] who have reported a definite preponderance in females. Sharan [i] and Su [b] found a predominance of males in their study. The present series consisted of early cases, only 58.6% of which could be diagnosed clinically. In our study a predominance of females was found in clinical group III, the male : female ratio being 0.3 : 1 (Table 7). The reported female preponderance may be due to selection of clinically recognizable cases by other workers.

The preponderance of females among the Muslim patients is interesting in view of the high incidence of oral cancer in Muslim females.[j]

Wide age-ranges have been described for cases of submucous fibrosis, e.g., 10-58 years [e] and 10-60 years.[c] DeSa [d] reported maximum incidence in the second and third decades. The average age in this series for all the cases of submucous fibrosis was 40.5 years, 40.6 years for males and 40 years for females. Pindborg et al.[h] reported an average age of 53.6 years for males and 37.7 years for females.

Clinical recognition of the condition is not always possible. The cases may be variously diagnosed as submucous fibrosis, leukoplakia, melanoplakia, syphilitic palate, non-specific ulcer or growth. A definite diagnosis is possible only after a histological examination. On analysis of the case records it was found that focal white lesions were frequently diagnosed clinically as leukoplakia and those with a blackish coloration as melanoplakia. However, this was not supported by the histological diagnosis.

It is interesting that the clinical assessment of cases involving the palate was correct in 77.3% of the cases, in contrast to 39.1% in cases involving the buccal mucosa (Table 4). This may be due to more severe involvement of the palate than of the buccal mucosa; Table 6 shows an apparently large number of cases with lesions of the palate in clinical group III as compared to those of the buccal mucosa. It may also be due to the emphasis in the previous publications on the involvement of the palate in submucous fibrosis, [c, d, e, h] or else to the fact that the palate is an uncommon site for leukoplakia.[k]

The association of cancer with submucous fibrosis has been reported in four out of 85 cases by Sirsat & Khanolkar,[e] and in one-third of his cases by Paymaster.[l] In the present series carcinoma was found in 3% of the cases. All of these were squamous-cell carcinomas.

In the present study, 14.5% of the cases of submucous fibrosis were associated with leukoplakia. Pindborg et al.[h] have reported association with leukoplakia in 15.7%-38% of their cases. In addition, 3% of the cases of our series showed melanoplakia with submucous fibrosis. Thus the over-all association of submucous fibrosis with other precancerous and malignant lesions was 20.5% in this study, a figure large enough to stimulate further study as to the nature and etiology of the condition.

[c] Joshi, S. G. (1953) *Indian J. Otolaryng.*, 4, No. 3, p. 1.
[d] DeSa, J. V. (1954) *Ann. Otol. (St. Louis)*, 66, 1143.
[e] Sirsat, S. M. & Khanolkar, V. R. (1962) *Indian J. med. Sci.*, 16, 189.
[f] Rao, R. V. & Raju, P. R. (1954) *Indian J. Otolaryng.*, 6, 81.
[g] Rao, A. B. N. (1962) *Brit. J. Surg.*, 50, 23.
[h] Pindborg, J. J., Chawla, T. N., Shrivastava, A. N., Gupta, D. & Mehrotra, R. M. L. (1964) *Acta odont. scand.*, 22, 679.
[i] Sharan, J. (1959) *Indian J. Path. Bact.*, 2, 150.
[j] Wahi, P. N., Kehar, U. & Lahiri, B., unpublished data, 1963.
[k] Wahi, P. N., Arora, S., Shrivastava, M. C., Kehar, U. & Bodkhe, R. R. (1961) *Indian J. Path. Bact.*, 4, 189.
[l] Paymaster, J. C. (1956) *Cancer (Philad.)*, 9, 431.