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Clinico-Pathological Experience of Oral Submucous Fibrosis in a tertiary care hospital in Nepal: A Descriptive Cross-sectional Study

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ABSTRACT

Introduction: Oral submucous fibrosis (OSF) is a chronic disease associated with both significant morbidity (including pain and reduced oral opening) and an increased risk for malignancy. This study aimed to determine the clinical and histopathological profile of oral submucous fibrosis (OSF) patients attending B.P. Koirala Institute of Health Sciences, Dharan, Nepal.

Methods: A descriptive cross-sectional study was conducted among 34 patients with Oral Submucous Fibrosis from the out-patient department (OPD) of the Department of oral medicine and radiology, BPKIHS for a period of one year. After clinical staging of the disease, biopsy was taken and thus histological grading was done. Data analysis was done by using Statistical Package for the Social Sciences version 26.0. Point estimate at 95% Confidence Interval was calculated along with frequency and proportion for binary data.

Results: Among the 34 patients with OSF, 29 (85%) were males and 5 (15%) were females. The mean age was 31.5 ±12.4years. The majority of the respondents were consuming commercial preparation of areca nut; the median frequency of commercial preparation consumption was 4 packets per day and the median duration of exposure was 7 years (Range = 1-40). 47% of the patients were smokers. 52.9% of the patients were under Grade 2 clinically and functionally but 59% were Grade III histologically.

Conclusion: Our study describes the clinicopathological profiling along with dysplasia of OSF comparable to studies from other south east Asian countries.

Introduction

Oral submucous fibrosis (OSF) is one of the potentially malignant disorders caused by areca nut use and is associated with both significant morbidity (including pain and reduced oral opening) and an increased risk for malignancy.[1,2] Oral Health-related quality of life is highly affected among OSF patients.[3] Histopathology in OSF may show normal to hyperplastic, atrophic, or dysplastic changes of the overlying epithelium. To date, the disease incidence in Nepal with the appropriate value is not known. Studies have shown a significant association between areca nut and the occurrence of OSF.[5] There are four alkaloids explicitly arecoline, arecaidine, guvacine, and guvacoline which have been recognized in areca nuts. Among these, arecoline is the intoxicating alkaloid that has a major role in the pathogenesis of OSF.[5,6] Although the habit of chewing areca nut and its commercial preparations is common among the people in the Terai belt of Nepal,7 interventional programs have neither been adopted nor evaluated so far. The present study aimed to assess the clinical and histopathological components of OSF along with the degree of dysplasia in the patients attending the B.P.

Koirala Institute of Health Sciences a tertiary care center in eastern Nepal.

Methods

A hospital-based descriptive cross-sectional study was conducted among 34 patients clinically diagnosed with OSF attending the department of Oral Medicine & Radiology, College of Dental Surgery (CODS), BPKIHS, after obtaining ethical approval from the Institutional Review Committee (IRC), B.P. Koirala Institute of Health Sciences (Reference number: IRC/507/01501/2020).

The purposive sampling technique was used to recruit the patients from the out-patient department of Oral medicine and radiology, BPKIHS. Clinical History and Histopathological Examination: After eliciting a relevant history, the diagnosis was made and classified according to Kerr et al classification.[1] This classification is an extensive one and defines all the clinical, functional, and histological characteristics. The clinical characteristics are defined by the disease triad, the functional characteristics, and findings on clinical examination, which are referred to as grade 1, grade 2, grade 3, and grade 4A. But Grade 1, 2, and 3 here define the functional characteristics. Punch biopsy (5 mm) was performed from buccal mucosa in all study patients. The histological characteristics were graded according to Pindborg and Sirsat classification.[8] The grades of dysplasia according to International Agency for Research on Cancer (IARC) 2005 guideline.

Statistical analysis: Data was entered in Microsoft Excel 2016 and analyzed in Statistical Package for the Social Sciences version 26.0. Point estimate at 95% Confidence Interval was calculated along with frequency and percentage for binary data.

Results

Of the 34 cases, 85% were male with a mean age of 31.5 (+12.4) years with a maximum number of participants falling under the age of 20-29 years. The multiple responses on the exposure risk associated with OSF showed that the overwhelming majority of patients were consuming commercial preparation of areca nut. On clinical examination, all the patients fulfilled the disease triad with the majority having pallor in the soft palate, uvula, and the faucial pillars. The most common presentation was the burning sensation associated with the intake of spicy food in 25 of the 34 patients.

The classification of disease depicted that 52.9% were under Grade 2 clinically and functionally but 59% were Grade III histologically (i.e., moderately advanced stage). The total disagreement between functional grading and histological grading was 16 cases where 3 cases were diagnosed as grade I or grade II histologically but functional grading showed grade III. Similarly, the remaining 13 cases were diagnosed as grade III histologically while being diagnosed as grade I and II functionally. The disagreement between the discordant pair was found to be statistically significant as shown by Mc Nemar-Bowker Test (P=0.038) as shown in Table 1. Also, the agreement between the functional and histological diagnosis was also assessed by kappa statistics which showed poor agreement (k=0.221; p-0.073), as described in Table 1. The association between the degree of dysplasia and the histological grading is represented as the frequency in Table 2.

Table 1. Functional and histological Grades in OS patients (Data presented as frequency) (n=34)

Functional grade	Histological grade			Total (n=34)
	Grade I	Grade II	Grade III	
Grade 1	1 (33.3%)	0	2 (66.67%)	3 (100%)
Grade 2	0	10 (47.6%)	11 (52.4%)	21 (100%)
Grade 3	1 (10%)	2 (20%)	7 (70.0%)	10 (100%)
Total	**2**	**12**	**20**	**34**

Table 2. Distribution of histopathological grading with the degree of Dysplasia (n=34)

Histological grade	Dysplasia grade			Total (n=34)
	No dysplasia	Mild dysplasia	Moderate dysplasia	
Grade I	1 (50.0%)	1 (50.0%)	0	2 (100%)
Grade II	2 (16.7%)	7 (58.3%)	3 (25.0%)	12 (100%)
Grade III	2 (10.0%)	13 (65.0%)	5 (25.0%)	20 (100%)

When exposure risks of OSF were compared, there was no significant increase in risk of higher grade of OSF both clinically and histologically with increase in duration of exposure (p=0.26 and 0.86 respectively). There was one case which turned into squamous cell carcinoma during the study period of one year

Discussion

Oral Submucous Fibrosis is one of the most intensively studied oral health issues in south East Asia. Our hospital-based incidence was 0.27%, unfortunately, we lack a nation-wide data. The present study included 34 patients with the preponderance in the younger age group. The prevalence of the disease is clearly related to habitual arecanut/quid chewing. It is a proven etiological agent so far. [1,9-10] Our population had an early and a higher level of exposure as reported in recent literatures [11-13]. However, it contrasts with Pindborg's experience14 four decades back which can be attributed to age, level of exposure, social circumstances and popularity of commercial preparations of arecanut like Gutkha, Zarda, Pan masala etc. [3,12,15-17]

Though, there was a non-significant association between the duration of exposure and severity of disease, however, the median duration of exposure was highest in clinical grade 4A which can be directly correlated with the dose-dependent phenomenon as reported by Zhang et al.[18]

Clinical staging is basically done with symptoms triad (burning, depapillation, blanching) and degree of mouth opening.1 Patients present with features of burning sensation, progressively leads to stiffness of the oral mucosa, trismus and inability to eat. All our patients had restriction in mouth opening as presenting complaint. It not only signifies the level of exposure but also on the educational and socioeconomic status of the participants can be presumed.[15] Most patients with mild symptoms may be reluctant to seek medical help.

Histopathology in OSF is yet another challenge and it explains the fibroblastic response within the tissue, its collagen, blood vessels, and the inflammatory cells.[19] Our experience with histopathology of the buccal mucosa revealed unusual characteristic changes in the epithelium as well as connective tissue in all cases. The degree of fibrosis may be different at different sites. Thus, clinico-pathological profiling of the disease is implicated to know the disease process in depth, the degree of dysplasia and malignant transformation, if any.

There was no clear association between functional grading and histological grading in the present study which is consistent with previous studies.[12-13,16, 20] Tupkari et al 2007 in their study found that histological findings were consistent with clinical grades of the disease but could not be correlated to the degree of mouth opening, which is again similar to our findings. The classification system and site of biopsy used by them is different from ours.

The buccal mucosa was selected for biopsy as it is accessible and all patients had fibrous bands at the site.[21] All patients with potentially malignant disorders (clinical grade 4A) were diagnosed as grade II and III histologically, which can be attributed to the prevalence of oral potentially malignant disorders along with OSF in later stage of disease.

The degree of dysplasia, which is the gateway to malignant transformation, is yet another important aspect in oral potentially malignant disorders. The degree of dysplasia directly affects the prognosis of disease and hence in its management. Most of our original research pertaining to histology of OSF do not address the degree of dysplasia which we have incorporated in the present study. But the degree of dysplasia did not correlate significantly with the clinical and histopathological grade in the present study. This may again be attributed to the heterogenous nature of the disease.[22]

Conclusion

Thus, the clinico-pathological profiling along with degree of dysplasia in OSF is imperative in routine practice. This enables us to know the disease process in depth and can also modify the treatment plan. It further helps to prevent the fatal consequences of this potentially premalignant disease.

Conflicts of Interest None

Financial Disclosure None

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