PATTERN OF PRESENTATION FOR ORAL SUBMUCOUS FIBROSIS

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ABSTRACT

Oral submucous fibrosis (OSF) is a chronic, progressive, debilitating condition affecting oral mucosa with recognized high risk of transformation into malignancy. Areca nut, betel quid, and gutka consumption are the established primary culprits culminating in chronic irritation leading to inflammation and fibrosis of exposed mucosa. The aim of the study was to describe the pattern of presentation for oral submucous fibrosis (OSF) patients who were seen in dental OPD at Dow International Medical and Dental College, Ojha campus, Karachi during one year (January 2015 to January 2016). Data pertaining to patient demographics, oral habits, clinical history and presentation were gathered and analyzed using SPSS 16.0. OSF was seen mostly during third decade of life with a strong male predilection (male to female ratio 5:1). The predominant complaint at presentation was trismus followed by stomatitis. Majority of the patients indicated a positive history of certain oral habits. More than half of the patients presented in stage 3. A small percentage of patients also reported with unknown etiology suggesting a possible role of genetics in pathogenesis. Increasing incidence in younger adults, particularly men from low socio-economic status should alarm the healthcare providers to target their preventive programs at this population. An incurable, progressive disease like OSF needs more efforts to prevent than cure particularly when the causative agents are established and widely available in the market.

Key Words: OSF, oral, fibrosis, premalignant, precancerous, areca nut, betel quid, gutka.

INTRODUCTION

Oral submucous fibrosis (OSF) is a chronic, progressive condition attributed chiefly to areca nut (betel nut) chewing and carries significant potential for malignant transformation (2-8%). Combination of both mechanical as well as chemical trauma contributes to the pathogenesis. The repeated micro trauma and irritation from prolonged areca nut usage results in chronic inflammation of the subjected mucosa. Latter is associated with reduced vascularity and dense fibrosis owing to elaboration of various cytokines and growth factors which not only stimulate sub-mucosal collagen deposition but also renders oral epithelium vulnerable to carcinogens present in both areca nut and tobacco. Several alkaloids leach out from areca nut and alter fibroblast function reducing their ability to degrade and remodel collagen. Increased synthesis and reduced degradation of collagen is the principal underlying process contributing to OSF.

Multiple risk factors have been advocated to bear causative role in etiology of OSF, including chilies consumption, malnutrition, areca nut chewing, genetic predisposition, altered salivary composition, autoimmunity, and collagen defects. Areca nut/betel quid use, a habit native to and prevalent in Indian subcontinent has been established as the most significant risk factor contributing to OSF development. Several studies have disregarded tobacco (chewable as well as smoked) to play a vital contributory role in the development of OSF. Several staging and grading systems exist that rely on clinical and histo-pathological findings.

In 1995 Lai DR et al. described a classification system based on mouth opening measured as inter-incisal distance. Later same year Khanna and Andrade, proposed a different classification taking into consideration the clinical features (disregarded in earlier Lai DR et
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al, classification), histological findings, as well as extent of mouth opening. In 2011, More et al \(^{11}\), introduced a clinical staging taking further into consideration the presence of palpable fibrous bands. In 2014 Patil et al \(^{12}\), introduced a new grading system for OSF taking into consideration for the first time extent of cheek flexibility.

**METHODOLOGY**

A cross-sectional hospital-based study was conducted using hospital records of one year duration (January 2015 – January 2016) from the Department of Oral Surgery at Dow International Medical and Dental College, Ojha campus.

Every OSF patient who visited the oral surgery department at Dow International Medical and Dental College, Ojha campus during the defined time period was included in the study regardless of his/her age, gender, and presenting complaint. Complete clinical history including demographic details, oral habits (frequency, duration and type), presenting complaint, mouth opening, stomatitis, and difficulty in speech and eating was noted from hospital records into specifically designed case record forms. Presence of palpable fibrous bands, loss of elasticity, and limitation in mouth opening were the criteria used to establish the diagnosis. \(^{13}\) More’s staging system was used to stage the disease progression.

Clinical staging of OSF according to More’s categorization is as follows:

Stage 1 (SI): Stomatitis and/or blanching of oral mucosa.

Stage 2 (S2): Presence of palpable fibrous bands in buccal mucosa and/or oropharynx.

Stage 3 (S3): Presence of palpable fibrous bands in multiple oral sites.

Stage 4 (S4): OSF with another premalignant condition or oral carcinoma.

Functional staging:

M1: Interincisal mouth opening \(\geq 35\) mm.

M2: Interincisal mouth opening \(25 \geq \text{opening} < 35\) mm.

M3: Interincisal mouth opening \(15 \geq \text{opening} < 25\) mm.

M4: Interincisal mouth opening \(< 15\) mm.

SPSS version 16.0 was used to calculate and analyze descriptive statistics for studied variables.

**RESULTS**

Total of 117 patients with OSF visited the oral surgery outpatient department (OPD) at Dow International Medical and Dental College during the study period. The patients were divided into 6 groups based on their age (Table 1).

Greatest prevalence in both genders was recorded in third age group (20-29 years) with overall prevalence of 52%. Second highest prevalence was noted in second age group (10-19 years) at 22.9% overall prevalence. Mean age at presentation in men (n=97) was 27.08 ± 10.43 (range 12-51 years), whereas mean age for women (n=20) was 20.33 ± 5.0 (range 14-31 years).

Majority (83.33%, n=97) of the study participants were males and only 16.67% (n=20) were females with a lower mean age at presentation recorded among females when compared with men (Table 2). Trismus was the predominant complaint at presentation (n=65) with 56.25% prevalence, followed by complaint of both trismus and stomatitis (n=37), 31.25%. Only 12.5% (n=15) participants presented with chief complaint of stomatitis (Table 3).

Difficulty with phonation was reported by 22.9% of the participants, whereas a remarkable 72.9% reported difficulty in eating owing to both restricted mouth opening and intolerance to spices. Most frequently recorded stage at presentation was 3 (52%), followed by 4 (28%), and 2 (18%) with greatest involvement recorded over buccal mucosa (64%), followed by palate (47%) and lips (24%) (Table 4).

Majority of the participants (97%) reported history of gutka and/or betel quid consumption alone or in combination with tobacco, niswar, etc. Many participants (75%) indulged in oral habits (gutka/betel quid/areca nut/niswar/tobacco) 3 or more times per day. Negative history of potentially associated oral habits was noted in 3% of the participants who were then classified under unknown etiology.

**TABLE 1: AGE-WISE CLASSIFICATION OF THE PARTICIPANTS WITH OSF**

<table>
<thead>
<tr>
<th>Age /years</th>
<th>No. of participants (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-19</td>
<td>26</td>
<td>22.2%</td>
</tr>
<tr>
<td>20-29</td>
<td>60</td>
<td>51.2%</td>
</tr>
<tr>
<td>30-39</td>
<td>14</td>
<td>11.9%</td>
</tr>
<tr>
<td>40-49</td>
<td>10</td>
<td>8.5%</td>
</tr>
<tr>
<td>&gt;50</td>
<td>7</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

**TABLE 2: GENDER DISTRIBUTION OF OSF PATIENTS**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number (n)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>97</td>
<td>83%</td>
</tr>
<tr>
<td>Female</td>
<td>20</td>
<td>17%</td>
</tr>
</tbody>
</table>
TABLE 3: DISTRIBUTION BASED ON CHIEF COMPLAINT

<table>
<thead>
<tr>
<th>Presenting complaint</th>
<th>Number (n)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trismus</td>
<td>65</td>
<td>56%</td>
</tr>
<tr>
<td>Trismus &amp; stomatitis</td>
<td>36</td>
<td>31%</td>
</tr>
<tr>
<td>Stomatitis</td>
<td>16</td>
<td>13%</td>
</tr>
</tbody>
</table>

TABLE 4: STAGE DISTRIBUTION OF OSF PATIENTS

<table>
<thead>
<tr>
<th>Stage</th>
<th>Number (n)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>II</td>
<td>21</td>
<td>18</td>
</tr>
<tr>
<td>III</td>
<td>60</td>
<td>52</td>
</tr>
<tr>
<td>IV</td>
<td>34</td>
<td>28</td>
</tr>
</tbody>
</table>

DISCUSSION

First described by Schwartz in 1952, oral submucous fibrosis is a debilitating precancerous disease prevalent in Asia, particularly in India and Pakistan where areca nut / gutka consumption is remarkably high. Among Asians, it is one of the most commonly encountered precancerous conditions recorded in oral cavity. Areca nut, ranked fourth in most commonly consumed social drugs after nicotine, ethanol, and caffeine, has been established as the most important risk factor for OSF. This study found a small percentage of participants (3%) with negative history of exposure to established risk factors (areca nut / gutka / niswar / betel quid). The etiology remained unknown suggesting a possible genetic cause. Yadav et al., published a report in 2010 rejecting the role of genetics in solely causing OSF. Chaudhuri SR et al., demonstrated a possible enhanced risk of OSF with polymorphisms in CYP1A1 and CYP2E1. Y Hu et al., published a study on the gene expression profile of OSF reporting 716 up regulated genes and 149 down regulated.

OSF has been reported with wide variations with respect to age and gender by various studies. Our study showed a high preponderance in men with male to female ratio of 5:1. The finding was consistent with the findings of Hazarey et al., who reported male to female ratio of 4.9:1, Shah et al., with ratio of 1.8:1, and Chatterjee et al., with 2.5:1. On the contrary, some studies have also reported a female predominance with male to female ratio as low as 1:13. The difference could most likely be due to cultural variations in areca nut/betel quid/tobacco/gutka consumption by women in male dominated societies.

Frequency (per day) of gutka / betel quid use was higher in men (4 times or more on average) when compared with women (average 2 times per day), which could be associated with the male predominance observed as well as higher stage at diagnosis recorded in men compared with women.

Despite the significant morbidity associated with OSF and risk of malignant transformation (2-8%), the patients were reluctant to give up their habit. Oral cavity of many Asians from low to middle class background remains a breeding ground for OSF and oral squamous cell carcinoma.

A significant percentage (22.9%) of affected individuals were from a younger (10-19 years) age group. This was consistent with the findings of Gupta et al., who reported greatest prevalence of both areca nut use and OSF in individuals below 35 years of age. Rising incidence in younger population should raise red flags for the public health workers in both government and private sectors to curb this vice of gutka / areca nut / betel quid usage. In the present study trismus was the predominant presenting complaint (56%) followed by stomatitis alone (13%) or in combination with trismus (31%). Findings of current study were consistent with those of Pandya et al., who reported 37.2% cases with trismus and 25.9% with stomatitis.

Majority of the participants in current study (80%) had reported in stage III or IV of the disease with greatest involvement recorded over buccal mucosa (64%). Findings of the present study were consistent with those reported by Pandya et al., who reported greatest prevalence (46.8%) of grade III disease followed by grade II (31.3%). Buccal mucosa was reported as most commonly involved site (20.8%), consistent with the findings of this study. Kiran et al., on the contrary reported lower stage at presentation (91.2% in stage I or II) than the present study.

CONCLUSION

Oral Sub-mucous Fibrosis (OSF) is a significant oral health concern particularly in men (but also in women) from low socio-economic status and a rising concern in younger age group. Gutka/betel quid /areca nut /tobacco consumption were recognized as definite risk factors essential for OSF pathogenesis, but a small percentage of OSF recorded in patients without oral habit history merits further study into possible etiological role of genetics. Late stage at presentation and lack of awareness were recognized as significant contributory factors to morbidity and malignant transformation warranting efforts to raise awareness among public about seeking professional help with early symptoms. OSF cannot be cured, only further progression of fibrosis can be prevented with strong compliance of the patient, which is morbidly lacking in many gutka addicts. Diligent preventive efforts are needed by public and private healthcare sectors to raise awareness.
REFERENCES


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CONTRIBUTIONS BY AUTHORS
1 Hira Salam: Introduction writing / methodology
2 Shaheen Ahmed: Results / data analysis
3 Mohsin Wahid: Editing, correction, proof reading
4 Mehak Irshad: Concept, data collection