

Association of Various Forms of Tobacco Consumption with Premalignant and Malignant Lesions of Oral Cavity – A Hospital Based Study in Tripura

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I. Introduction

Tobacco is considered to be one of the most important etiological factor for development of Oral cancer. It was Christopher Columbus who first discovered tobacco and there after it was widely used in Europe. Later Spanish and Portuguese sailors carried this tobacco to other parts of world. Initially tobacco is known as a plant with medicinal values and was used in various forms like tobacco ointments, pastes, mouth rinses etc., to treat various maladies [1] Subsequently, it was discovered that tobaccos possess various harmful substances. Numerous chemical compounds are identified in both smoked as well as non-smoking form of tobacco. They act not only as irritants and toxins, but are also potential carcinogens. Nicotine which is an alkaloid is mainly responsible for addiction, whereas tobacco-specific nitrosamines, polycyclic aromatic hydrocarbons, and many others are most potent carcinogens (2). Oral cavity cancer accounts for approximately 3% of all malignancies and is a significant worldwide health problem. Most oral malignancies occur as squamous cell carcinomas (SCCs); Despite remarkable advances in treatment modalities, the 5-year survival rate has not significantly improved over the past several decades and still hovers at about 50-60% [3]

Many oral SCCs develop from premalignant conditions of the oral cavity. A wide array of conditions have been implicated in the development of oral cancer, including leucoplakia, erythroplakia, palatal lesion of reverse cigar smoking, oral lichen planus, oral sub-mucous fibrosis, discoid lupus erythematosus, and hereditary disorders such as dyskeratosis congenital and epidermolysis bullosa. Early detection of Oral cancer is of critical importance because survival rates remarkably improve when the such malignancies are identified at early stage. The use of tobacco has been well established as a significant risk for the development of oral squamous cell carcinoma (SCC) and other premalignant lesions. Up to 80% of patients with oral SCC have used tobacco products, and the risk of developing malignancy is 5-9 times greater in smokers than non-smokers. [4]

II. Aim And Objectives

1. To study different patterns of clinical presentation of oral pathologies amongst tobacco users
2. To study whether there is a relationship of premalignant and malignant conditions of oral cavity with Tobacco uses.

III. Materials And Methods

A prospective observational, cross sectional study was conducted in tertiary health care center of Tripura, a North Eastern states of India between May 2016 and May 2018. All patients above 18 years of age presented with symptoms of Oral cavity and a positive history of tobacco usage in any form were selected for the study.

Inclusion criteria- All suspected cases of premalignant and malignant condition of oral cavity with history of tobacco consumption was considered for the study irrespective of sex, caste, religion, duration and severity of disease.

Exclusion criteria

- Oral ulcers without history of any form of tobacco uses
- Already treated patients of Malignancy of Oral cavity coming for follow up or presenting with recurrence.
- Patients not giving written consent.
- Patients with Less than 18 years of age.

Subjects were divided into four groups: A. Smoking form (conventional), B. Smokeless form, C. Reverse smokers, D. Combined form (smoking and smokeless forms) irrespective of age, sex, caste, religion, occupation, duration and the severity of the disease. All cases were included as per census sampling method.

Patients with suspected lesions underwent thorough clinical examinations and investigations including cytological examination and radiological investigations required as per merit of the case. Fig 1 - showing a case of leukoplakia of floor of mouth and fig 2 - showing another case of ulceroproliferative lesion of Tongue. All patients were subjected to Histopathological examination and cases which were confirmed for either Premalignant and malignant condition of oral cavity were included in the study.



Fig.1- Leukoplakia of floor of mouth



Fig.2-Ultero-proliferative growth of lateral border of tongue

Fig-3 showing histopathology of a Leukoplakic lesion over floor of mouth showing marked dysplasia and Fig 4- showing histopathological features of squamous cell carcinoma in a case of ulcerated lesion of tongue.

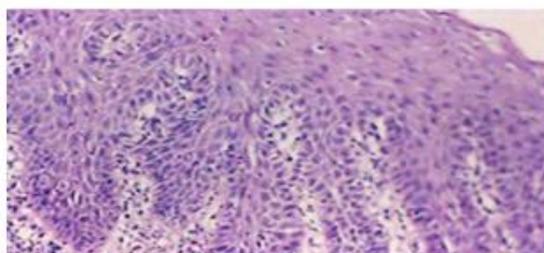


Fig. 3 – Leukoplakia lesion showing severe dysplasia of showing Squamous epithelium (X 400 H & E Stain)

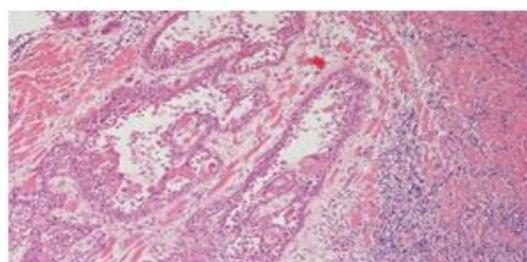


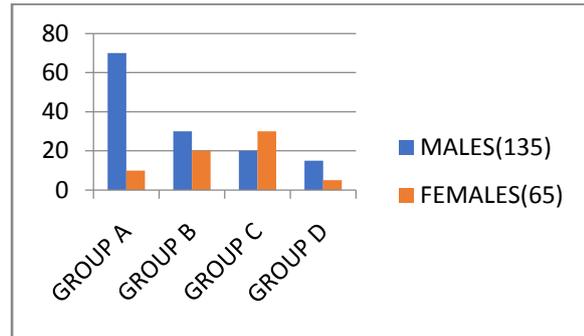
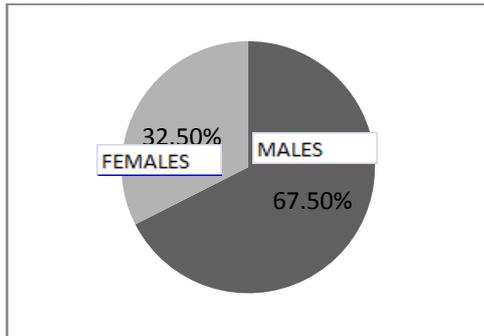
Fig. 4 – Ultero proliferative growth of tongue Squamous cell carcinoma (X400, H&E)

STATISTICAL ANALYSIS: The data was entered in master chart and analyzed using SPSS 16 statistical package. P value were calculated wherever applicable using fisher's and chi square test.

IV. Results

During the study period total 200 patients were included in the study between the age of 18-78 years with a median age of 52 years of which 135 were males and 65 were females (**Chart- 1**).

CHART 1- SHOWING GENDER DISTRIBUTION CHART 2- GROUP DISTRIBUTION OF TOBACCO USERS



Out of 135 males 70 were conventional smokers(group A), 30 were using smokeless form (group B), 20 were doing reverse smoking (group C) and 15 patients were in group D(combined).Out of 65 female tobacco users 30 were Group C, 20 were Group B, 10 were group A and 05 were Group D(**Chart-2**)

Out of 200 patients who were presented with suspected oral lesions and were using tobacco in any of the form, 25 patients were confirmed for premalignant lesions and 40 were confirmed for malignancy by histopathology (**Chart-3**). Most of the 40 diagnosed cases of malignancy were squamous cell carcinoma. Out of 25 diagnosed premalignant lesions 12 were found to be leucoplakia. (**Chart-4**)

CHART 3- PROPORTION OF PRE MALIGNANT AND MALIGNANT LESION

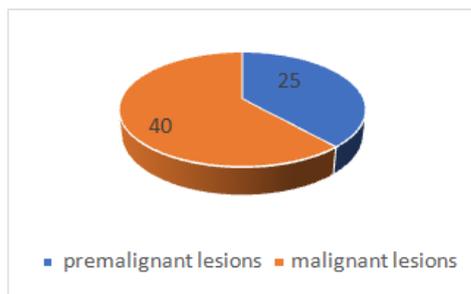
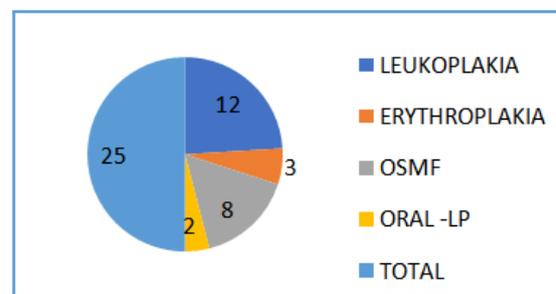


CHART NO 4-DISTRIBUTION OF PREMALIGNANT CONDITIONS



For smoking (conventional form of smoking) form p value calculated was 0.032 and for smokeless form it was found to be 0.04 showing strong statistical significance. Out of 40 positive cases of malignancy, maximum association were found to be with smokeless form of tobacco, i.e. 68.6%.

V. Discussion

In the present study there is a male preponderance in both conventional type and smokeless type, a finding, which was in accordance with studies conducted by Saraswathi *et al.* (5), and Ray *et al.* (6), whereas Female predominance was seen in studies conducted by Lima *et al.* (7)

Out of 65 female patients in the present study, most of them (46.15%) were reverse smokers. This finding was similar with studies conducted by Mehta *et al.* (9), and Ramulu *et al.* (10).

Female predominance in reverse smoking category observed in this study may be due to associated social stigma of conventional smoking for females, to take precautions against splashes of water may put off chutta when fishermen and women are at work in the water, to prevent hot ashes falling on their children and cloths and a few even considers it as a treatment for toothache

High incidence oral pre-malignant and malignant condition associated with reversed smoking may be attributed to smoke emitted from chutta is in direct contact to oral mucosa. This emitted smoke is responsible for high concentration of alkaline pH in oral mucosa, which facilitates absorption of substances like nicotine alkaloid, reducing sugars, and nitrogen.

VI. Conclusion

From the present study it can be concluded that there is a strong association observed between tobacco consumption and pre-malignant - malignant lesions in oral cavity. It is also observed that reverse smoking, form of smokeless tobacco habit is common in females of this region and are more prone to develop

malignancy as compared to use of other forms of tobacco .In comparison to northern part of India, where increase incidence of Oral cavity malignancy is mainly related to gutka and zarda, in this part of the country, chewing of beetle nut quid appears to be more often responsible for it. Therefore, from now onwards, much efforts should be given to educate individuals and masses regarding the potential risk factors of non-smoking tobacco abuses, in addition to smoking of tobacco in order to control tobacco related malignancy of oral cavity.

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