Relationship of Secretor Status in patients with Oral Cancers

S JAMIL M TAYYAB T TASNEEM *N A SALEEM A R BUTT M FAROOQ*
Department of pathology, Post Graduate Medical Institute, Lahore
Correspondence to Dr. Sajid Jamil, PGMI, Lahore.

Present study was designed to find the association of secretor status with oral cancers. In this study 50 diagnosed cases of oral cancers and 50 healthy controls were selected. Secretor status on saliva sample was performed in all these subjects. 39 (78%) subjects were secretors and 11 (22%) were non secretors in control group. 28 (56%) patients with oral cancers were secretors and 22 (44%) were non secretors. **Conclusions:** Oral cancer was found to be associated with non-secretor status.
Keywords: Oral cancer, Secretor status.

Pre- transfusion blood grouping and cross matching helps to avoid a fatal consequence of mismatch transfusion. The antigens of the ABO system are an integral part of the red cell membrane and many tissues throughout the body. They are also found in plasma and 'other body fluids[1]. Some people possess the ability to secrete ABH (O) antigens in the saliva; they are referred to as secretors whereas others who lack such ability are known as non-secretors [2]. The saliva, as well as other body fluids of about 80% of the population contains ABO (H) blood group antigens[3]. Blood group antigens normally present on the epithelial cell surfaces, have been reported as reduced or lost in neoplastic epithelium, and this loss may provide a marker for malignant change[4].

It has been demonstrated that certain blood group antigens are over expressed in various human carcinomas. These antigens have been suggested to be involved in cell migration, cell differentiation, cell invasion, apoptosis and cell proliferation. These findings are of diagnostic and prognostic significance[5]. It was noted that A and H antigens were absent in oral squamous cell carcinoma from blood group A persons, whereas some blood group antigens were over expressed. Therefore blood group antigens may serve as prognostic markers of malignant development in oral epithelium[6].

In South East Asia, more than 10^5 new cases of oral cancers are reported annually, accounting for about 40% percent of all cancers compared to the 2-5% reported in western countries[7]. A premalignant lesion such as leukoplakia, erythroplakia, lichen planus and submucous fibrosis commonly precedes oral cancers. Betel quid chewing, tobacco smoking, alcohol, nutritional status, gender and age are also important factors associated with increased risk of oral cancer[8].It commonly presents as an indolent ulcer. Commonest sites of the lesion are anterior 2/3rd of the tongue, floor of the mouth and inside of cheek. Ninety percent of oral cancers are squamous cell carcinomas, remaining are adenocarcinomas arising from minor salivary glands[9].

Materials and Methods:

A total number of 50 diagnosed patients of oral cancers were selected from different teaching hospitals of Lahore. Fifty healthy control subjects were also included in the study. **Collection of saliva:** One ml saliva was collected from each subject in a wide mouth plastic bottle, which was later shifted to a test tube. The test tube was placed in a boiling water bath for ten minutes. Saliva was centrifuged at 1700 rpm for 10 minutes. The supernatant was separated in a vial. Secretor status was carried out on this supernatant saliva. **Secretor Status:** Agglutination inhibition test was done for determination of ABH secretor status. Saliva was added to anti-A, anti-B and anti-H sera. If saliva contained A, B or H antigens, then anti-A, anti-B and anti-H react with these antigens respectively, and were neutralized. The sera and saliva mixture was then tested with A, B or O cells to see whether the antibodies had been neutralized. If agglutination was inhibited it indicated that saliva contains the corresponding A, B, or H antigens[3]. Chi square test was used to analyze the results and data in the present study.

Results:

Secretor status of patient group and control subjects is shown in table 1. Statistically the difference is significant when oral cancers and control groups were compared ($p<.01$) in non-secretors.

Table 1: Relationship of Secretor status and Oral Cancers

Groups	Oral-Cancers (n=50)		Controls (n=50)	
	=n	%age	=n	%age
Secretors	28	56	39	78%
Non-secretors	22	44	11	22%

Association of non-secretors with oral cancer (P value: <.01(Significant)
Association of secretors with oral cancer (P value: >.05 (Non-Significant)

Discussion:

In this study, 46% of carcinomas were arising from the buccal mucosa, which has been reported to be the affected site in 23% of cases in a report of PMRC[10]. Lamey et al[11] observed that 35% of oral carcinomas arise from this site, while Pradhan et al[12] suggested it to be in 51%. Our study is quite similar to the observations made by Lammey et al[11] regarding value of 16% of tongue; PMRC[10] noted 42.1% of cases of carcinoma arising from this site. Pradhan et al[12]

found it to be 36%. We have noted 12% of alveolus involvement in our study, where as Lammey et al[11] reported it 23% and Pardhan et al[12] 5.2%.

It is considered that blood group substances are protective in nature, based on their physical, chemical and immunobiological properties. These antigens may play some role in the causation or prevention of oral lesions due to the constant flow of saliva. Thus, secretion of blood group substances in secretors may be beneficial (Pradhan et al[12]. Patient's secretor status is a risk factor for susceptibility to oral cancer. In the present study 28 (56%) patients were secretors and 22(44%) non-secretors, while in controls 39 (78%) were secretors and 11(22%) non-secretors. A significant association of non-secretors among oral cancer patients was noted ($p<0.01$). However Pardhan et al[12] noted no significant difference in secretor status of oral cancer patients and controls. Lammy et al[11] also did not find secretor status as a risk factor for oral cancer in their study.
The currently developing interest in the secretor status and oral cancers require further studies, which may reveal the basis of this association.

References:

1. Lloyd K0. The chemistry and immunochemistry of blood group A, B, H, and Lewis antigens: Past, present and future. Glycocong J 2000; 17: 531-41.
2. King MJ. Blood group antigens on human erythrocytes-distribution, structure and possible functions. Biochim biophys Acta 1994; 1197: 15-44.
3. Dacie JV, Lewis SM, Waters AH et al. Red Cell blood group antigens and antibodies. In: Dacie JV, Lewis SM (Ed). Practical Haematology 8th edn: Churchill Livingstone 1995: 446-64.
4. George DI, Hanks CT, Lopatin DE. The expression of the epithelial blood-group substances: normal and malignant tissues. J Dent Res 1980; 59(11):2014-20.
5. Xin X, Morten B, Petter F, Clausen A, Bryne M. Prognostic value of H antigen in oral tongue carcinomas. Laryngoscope 1999; 109: 1474-80.
6. Dabelsteen E, Clausen H, Holmstrup P, Reibel J. Premalignant and malignant oral lesions are associated with changes in the glycosylation pattern of carbohydrates related to ABH blood group antigens. APMIS 1988; 96: 813-19.
7. Paterson IC, Eveson JW, Prime S. Molecular changes in oral cancer may reflect etiology and ethnic origin. Eur J Cancer oral oncol 1996; 328(3): 150-3.
8. Hindle I, Downer C, Speight PM. The epidemiology of oral cancer. Br J Oral Maxillofac Surg 1996; 34: 471-76.
9. Hutchison IL. Improving the poor prognosis of oral squamous cell carcinoma. Br Med J 1994; 308: 669-70.
10. Pakistan Medical Research Council Cancer Study Group. Frequency of malignant tumours in seven canters of Pakistan. JPMA 1977: 335-39.
11. Lamey PJ, Douglas PS, Napier SS. Secretor status and oral cancer. Br J Oral Maxillofac Surg 1994; 32(4): 214-17.
12. Pradhan S, Pardhan AC, Singh KN. Blood groups in relation to oral cancer with special reference to secretion of ABH group specific substances. Indian J Med Res 1970; 58: 65-69.