

# Relationship of ABO Blood Groups in patients with Oral Cancers

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Present study was designed to find the association of ABO blood groups with oral cancers. In this study 50 diagnosed cases of oral cancers and 50 healthy controls were selected. ABO blood grouping, complete blood examination was performed in all these subjects. Out of 50 patients 16 were blood group A, 11 group 'B', 8 group 'AB' and 15 belong to group 'O' as compared to controls who were, 14, 15, 3, 18 for blood groups A, B, AB and O respectively. Conclusions: No relationship is found between Oral Cancers and ABO Blood groups.

**Keywords:** Oral cancer, ABO blood groups

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<sup>1</sup>. 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<sup>2</sup>.

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<sup>3</sup>. 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<sup>4</sup>.

In South East Asia, more than 10<sup>3</sup> new cases of oral cancers are reported annually, accounting for about 40% of all cancers compared to the 2-5% reported in western countries<sup>5</sup>. 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<sup>6</sup>. It commonly presents as an indolent ulcer. Commonest sites of the lesion are anterior 2/3<sup>rd</sup> 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<sup>7</sup>.

## Materials and Methods:

Fifty (50) diagnosed patients of oral cancers were selected from different teaching hospitals of Lahore while fifty healthy control subjects were also included in the study. 2ml of venous blood was collected aseptically in a sterile tube containing 1.5 mg/ml dry ethylene diamine tetra acetic acid (EDTA) for ABO blood grouping.

**ABO blood grouping:** The presence or absence of A and B antigens on red blood cells was determined by slide and tube methods using anti-A and anti-B sera. The technique adopted was that described by Dacie and Lewis<sup>8</sup>. Chi square test and 'p' value was used to analyze the results and data in the present study. ABO blood grouping and Secretor status of control and patients are shown in table 1. Statistically the differences between experimental and control groups in respect of ABO blood groups and secretor status was not significant ( $p > .05$ ).

Table 1: Association of ABO blood groups & secretor status of Oral Cancer patients with controls

Group	Oral-Cancers (n=50)			Controls (n=50)		
	Total	Secretors	Non-Secretors	Total	Secretors	Non-Secretors
A	16 (32%)	9(56.3)	7(43.7)	14 (28%)	10(71.4)	4(28.6)
B	11 (22%)	6(54.5)	5(45.5)	15 (30%)	12(80)	3(20)
AB	8 (16%)	5(62.5)	3(37.5)	3 (6%)	3(100)	0
O	15 (30%)	8(53.3)	7(46.7)	18 (36%)	14(77.8)	4(22.2)

\*Percentage values are in parenthesis.

Association of blood group B with oral cancer  $p > 0.05$  (non-significant)

Association of blood group O with oral cancer  $p > 0.05$  (non-significant)

## Discussion:

In the present study of 50 oral cancer patients, blood groups A, B, O and AB were 32%, 22%, 30% and 16% respectively, while in control subjects, A 28%, B 30%, O 36% and AB were 6%. No significant relation was noted between ABO blood groups and oral cancer cases when compared with controls. Pardhan et al (1970)<sup>9</sup> noted that A,

B, O and AB were 22.94%, 37.77%, 33.17% and 6.12% respectively in controls and 23.20%, 40.80%, 26.40% and 9.60% respectively in oral cancer patients. They observed an increase in frequency of blood groups B and AB, and a decrease in group O in oral carcinoma cases. A study conducted by Lamey et al (1994)<sup>10</sup> on oral cancer patients showed that 22.8% were group A, 28.8% B, 6% AB and

42.4% O. They did not find any significant relation between ABO blood groups of patients and controls. Bryne et al (1991)<sup>11</sup> showed the relation of ABO blood groups with 101 oral cancer patients. They reported that 49.5% cases belonged to blood group A, 39.6% group O, 5.9% group B and 5% group AB. The distribution of ABO blood groups for the patients was compared with a population sample. They did not find any relation with ABO blood groups.

#### References:

1. Lloyd KO. The chemistry and immunochemistry of blood group A, B, H, and Lewis antigens: Past, present and future. *Glycocong J* 2000; 17: 531-41.
2. 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.
3. Xin X, Morten B, Petter F, Clausen A, Bryne M. Prognostic value of H antigen in oral tongue carcinomas. *Laryngoscope* 1999; 109: 1474-80.
4. 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.
5. 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.
6. Hindle I, Downer C, Speight PM. The epidemiology of oral cancer. *Br J Oral Maxillofac Surg* 1996; 34: 471-76.
7. Hutchison IL. Improving the poor prognosis of oral squamous cell carcinoma. *Br Med J* 1994; 308: 669-70.
8. Dacie JV, Lewis SM. Red Cell blood group antigens and antibodies. In: Dacie JV, Lewis SM (Ed). *Practical Haematology* 8<sup>th</sup> edn: Churchill Livingstone 2004: 446-64.
9. 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.
10. Lamey PJ, Douglas PS, Napier SS. Secretor status and oral cancer. *Br J Oral Maxillofac Surg* 1994; 32(4): 214-17.
11. Bryne M, Thrane PS, Dabelsteen E. Loss of expression of blood group antigen H is associated with cellular invasion and spread of oral squamous cell carcinomas. *Cancer* 1991; 67: 613-18.