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Preference of ABO and Rh Blood Group Distribution among Tobacco Users of Coimbatore, South India

Vivek Marimuthu, Steffi Sesurajan, Bhuvaneswari Mani and Sudha Sellappa*
Department of Biotechnology
School of Life Sciences, Karpagam University,
Coimbatore (TN); India

Abstract : This study was undertaken to find out the trend of blood group distribution (ABO and Rh) among tobacco users. The subjects were 372 male and 28 female tobacco users ranging in age from 20 to 51 years. They were classified **into three categories according to their tobacco habits: smokers, chewers and snuffers. The association between tobacco habits and blood group was evaluated using** $\div^2$ analysis. The frequency of distribution of blood groups was 37.25 %(B), 33.5 %(O), 23% (A) and 6.255% (AB) respectively. In this study, blood group B was found to be predominant among the smokers and tobacco chewers. Thus, we conclude that, blood group phenotype B is associated with a substantially increased risk for tobacco addiction.

Key words : ABO blood group, Rh typing, Tobacco.

Introduction

The ABO blood grouping is based on antigenic property of red blood cells (RBC) and is the most widely investigated erythrocyte antigen system for all populations. The distribution of ABO and Rh blood group varies from race to race. The ABO blood group distribution varies in different geographical and ethnic groups, and socio-economic groups (Beardmore *et al.*, 1983). The blood group frequency in North India is B followed by O, A and AB (Bhasin *et al.*, 1992).

The ABO blood type, a factor of individual's genetic makeup, has been associated with many diseases. There are reports suggesting an association between blood groups and various diseases due to the lack of expression of ABO blood group antigens, but the susceptibility to a number of diseases has been linked with a person's ABO phenotype (Reid *et al.*, 1990). Various cancers including gastric, neurological, salivary gland, colon, uterus, ovary, pancreas, kidney, bladder and cervix are associated with blood group A (Arid *et al.*, 1953; Henderson *et al.*, 1993, Gunjan *et al.*, 2007), and consistent relation to O blood group in skin and melanoma (Karakousis *et al.*, 1986) has been reported.

Many research demonstrates the similarities between the blood group and smoking habits of twins, differences in physique temper, and liability to accidents between smokers and non smokers. Earlier studies have shown variations in blood group frequency and found that blood group B was more common among non-smokers than smokers. They also found a higher proportion of rhesus negative persons among the small number of occasional smokers (Geoffrey *et al.*, 1964).

India is the second largest consumer of tobacco products in the world. It is amazing that basically no work has been focused on blood group association in varying tobacco habits. Tobacco smoking and blood group would release a spate of papers on this topic (Bhojani *et al.*, 2009); but research on tobaaco chewing has not been so far done. So, present study was undertaken to observe the frequency of blood groups among different tobacco product users from South India.

Materials and Methods

The present study comprises of ABO blood typing among tobacco users from Coimbatore City, Tamilnadu, South India. A total of 400 blood samples of tobacco users were collected by finger prick method. The study population comprised 288 individuals who regularly smoke cigarette /bidi (smokers), 25 individuals who chew betel quid with tobacco/ areca nut and tobacco (chewers) and 87 individuals who regularly snuff tobacco (snuffers). Before collecting the sample, each subject was interviewed about his lifestyle, food consumption, and health status. The informed consent was obtained.

Blood grouping was done by standard slide method, a drop of each of the monoclonal anti-sera (Anti A, Anti B and Anti D) (manufactured by Span Clone Diagnostics (P) Limited, India) were taken on glass slides. The subject's blood cells whose blood group is to be

* **Corresponding author :** Dr. Sellappa Sudha, Department of Biotechnology, School of Life sciences, Karpagam University Coimbatore-641021 (TN); India; E-mail: *sudhasellappa@yahoo.co.in*

determined was mixed with each serum separately with the help of separate glass rods. Blood groups were determined on the basis of agglutination reaction. When agglutination occurred with anti D, then the group was considered as Rh (+) ve. If there was no agglutination, it was considered as Rh (-) ve blood.

Results

The frequency of ABO blood groups of 400 tobacco users are shown in Table 1. A higher frequency of blood group B and O and a lower frequency of blood group A and AB in the smoking and tobacco chewing groups were noticed respectively. The frequency of blood group O (x^2=0.028) and A (x^2=0.429) was significantly lower in subjects than group B (x^2=3.6974). The frequencies of the three major blood groups O, A and B were compared in the three tobacco consumer groups which were taken in pairs. The frequency of group B was significantly higher in the subjects with smoking habit than in the subjects with tobacco chewing and the subjects with tobacco snuffing habit. These three differences were significant at the 5% level (Table 2).

Discussion

To date no particular blood group has been found to be associated with tobacco product usage. We would certainly have suggested there is small differences of blood-group frequency among different blood groups and between different tobacco habits.

There seemed to be an association between ABO blood groups and the tobacco users grouped by different habits. However, in the present study, male individuals with blood group B+ve were more susceptible to tobacco habits than those with other blood types. Our findings in this study are essentially positive and, in the absence of any previous work on smoking and the human blood groups

Our results are in conflict with those of Cohen and Thomas (1962) that an association between blood group B and smoking may exist generally. It is difficult to distinguish between those who have used tobacco in various forms and ABO blood group. Thus, further classification may be needed when studying the relation between ABO blood groups and tobacco habits. No relation was found in the current study between different forms of tobacco habits and blood groups.

The importance of showing the existence of any differences in blood-group frequency in relation smoking, as was pointed out in the British Medical Journal (Higgins *et al.*, 1963), is clear. Any such differences could reflect a genetic element in the adoption of different smoking habits or heterogeneity of the population in this respect

Table 1: Blood Group distribution among the tobacco users based on gender

Parameters	ABO/ Rh Blood Groups							
	A		B		AB		O	
	Rh^+ VE	Rh^- VE	Rh^+ VE	Rh^- VE	Rh^+ VE	Rh^- VE	Rh^+ VE	Rh^- VE
Male	78	7	132	11	20	1	122	1
Female	7	0	3	3	3	1	10	1
x^2	0.4288		3.6974		0.265532		0.027553	

Table 2: Blood Group Distribution in tobacco users based on their tobacco habits

Blood Groups	Type of Tobacco Habits (n)			Total
	Smoking	Chewing	Snuffing	
A	70	20	2	92 (23%)
B	102	34	13	149 (37.25%)
AB	14	7	4	25 (6.25%)
O	88	26	20	134 (33.5%)

for other reasons. The relation of tobacco habits with blood groups may have variations in the apparent risks of other diseases. Blood group in large scale series are needed to elucidate the relationship between blood group and tobacco users.

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