Original Article

Distribution of ABO Blood Group in Peptic Ulcer Patients in the Ethnic Population of Balochistan

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ABSTRACT

Objective: To find relationship between ABO blood group and peptic ulcer (PU) in the ethnic population of Balochistan.

Study Design: An observational and prospective study.

Place and duration of Study: The study was carried at Bolan Medical College Complex Hospital Quetta for a period of one year.

Patients and methods: 60 peptic ulcer patients confirmed with video endoscope were included. ABO blood group was determined by slide test method.

Result: Out of 60 PU patients 54 were males and 6 females. 18 had blood group O, 24 had group B, 11 had AB and 7 had A blood group. 90% were Rhesus positive. O group was dominant (38.46%) in peptic ulcer patients with antral lesion. In patients having duodenal lesion, B group was prevalent (45.83%). Males were predominant sufferers (75%). The poor and middle class patients were equally affected. The ethnic group Pathan were more affected (36.67%) compared to Baloch and Hazara.

Conclusion: Antral lesions are dominant in O blood group peptic ulcer patients whereas duodenal lesion is common in blood group B. There is a high prevalence in Pathan males. Duodenal lesion is more prevalent compared to antral lesion.

Keywords: Peptic ulcer, ABO blood group.

INTRODUCTION

The pathology of peptic ulcer disease (PUD) was first described by Jean Cruvielhier in 1835 and peptic ulcer was known as La-maladie de Cruvielhier[1]. Genetic and environmental factors play an important role[2]. Stress and pepsin are other important factors[3, 4]. Smoking and diet deficient in Linoleic acid reduces PGE_2 in gastric juice and leads to ulcer[5].

Genetic factor plays a role in the etiology and blood group studies provide a line of evidence. If there is a positive association between a given disease and a particular allele of a well defined genetic locus, the genetically determined trait can be considered important in the pathogenesis of the disorder[1].

There is a strong association of ABO blood groups and certain diseases[6]. The strongest is between duodenal ulcer and blood group O[7]. Specially O group patients of DU are more prone to bleed or perforate[8]. Contrary to this finding in adults, children with chronic DU were not associated with increased incidence of blood group O compared to controls[9]. Similarly cancers of stomach are strongly co related to A group[10]. As a result of this strong relationship between O group and PU patients there is an increase in the incidence of risk by 2.4 times compared to other PU patients with A, AB and B groups[11].

However there is a high prevalence of blood group B in the population of Balochistan[12]. The present study was therefore designed to find out this relationship of ABO blood group in peptic ulcer patients. If proper association is found, this will help in identifying high risk cases where the role of preventive measures will be very important in reducing mortality associated with PU disease.

PATIENTS AND METHODS

This prospective and observational study was carried in the department of gastro-entrology and medicine, Bolan Medical College Complex Hospital Quetta. A detailed proforma was prepared and proper study protocol was designed. Dyspepsia, pain in epigastrium with duration, sex was recorded. For diagnosis of peptic ulcer, endoscopy with video endoscope Petnax SUJNON-EC 200 LR was performed without sedation, using gargles and topical spray. 60 cases, men and women aged 26-70 years were included. ABO blood group was determined according to Dacie[13], by slide test method using antisera by Gamma biological Inc Sanofi diagnostic pasture USA. As only one or two samples were grouped at a time and agglutination was rapid on flat surface, thus slide test method was preferred, no control was used. The agglutination was observed within 5 minutes; in case of doubt agglutination was

checked by viewing the suspension under low power microscope. Blood group control data was used from Balochistan population. The total number was 2000; of these 1260 were males and 740 were females belonging to young and middle age group. They were clinically normal individuals who were randomly selected[12], mostly students and staff members of Bolan Medical College.

Statistical Analysis

Was carried on EPI Info-6 for X^2 (chi square) test and p value was calculated.

RESULTS

The distribution of 60 cases of peptic ulcer, mean age of 47.5 ± 22.5 years. Blood group O was found in 18 patients, group B in 24 patients, while AB was seen in 11 cases and 7 had group A. 90% were Rhesus positive. O group was dominant (38.46%) in peptic ulcer patients with antral lesion. In patients having duodenal lesion, B group was prevalent (45.83%). Males were predominant sufferers (75%). The poor and middle class patients were equally affected. The ethnic group Pathan were more affected (36.67%) compared to Baloch and Hazara.

Table No. 1: Blood Group Prevalence in Peptic Ulcer Compared With Control

Blood group	Control	Peptic ulcer patients	% Increase or decrease on control
O	35%	30%	-5
A	23.2%	11.6%	-11.6
B	31.7%	40%	+8.3
AB	10.1%	18.3%	+8.2

Table No.2: Table showing sum of control and PU patients

Blood group	Control n=2000	Peptic ulcer patients	∑ (sum)
O	700	18	718
A	464	7	471
B	634	24	658
AB	202	11	213
Total	2000	60	2060

Table-3: Expected and Observed values

Blood group	Expected values	Observed values	$\frac{(O-E)^2}{E}$
O1	697.08	700	0.098
O2	20.91	18	3.28
A1	457.28	464	0.036
A2	13.71	7	1.22
B1	638.83	634	0.11
B2	19.16	24	3.71
AB1	206.79	202	0.01
AB2	6.2	11	0.40

X^2 (observed) = 8.864 and $p<0.05$ (chi-square table 2x2, 2 x n)

df= (r-1) (c-1) = 3

In the Chi square table, the df value 3 against C.I. 0.05 = 7.815 (X^2 table)

X^2 (observed) > X^2 (table) shows the relationship is significant.

Table No.4: ABO distribution according to site of lesion

Blood group	O	A	B	AB	Total
Antral lesion	12	3	11	6	32
Duodenal lesion	6	4	13	5	28

Statistical analysis of the data was done using the chi square $p<0.05$ and df = 3. A strong association was found between ABO blood group and peptic ulcer disease when compared to control with significant values shown in (Table-1-3). X^2= 8.864 with a significant $p<0.05$ (Chi square table 2 x 2.2xn) value.

DISCUSSION

The correlation between peptic ulcer and ABO blood group has been studied in different parts of the world [14, 15, 16]. The present study like other studies have shown that relationship exists between ABO blood groups and peptic ulcer. The antral lesion was dominant in O blood group which is in accordance with others.

Bacterial colonization and inflammatory response may be influenced by expression of ABO blood group antigens and blood group O was represented higher among peptic ulcer patients[17]. The adherence to the gastric epithelial cell is mediated by fucosylated blood group antigens associated with blood group O phenotype, suggesting that it might explain the higher frequency of peptic ulceration in patients with blood group O[18].

Thus O group patients are about 35% more likely to develop PU compared to other blood groups. The O group patients of PU have been shown to have hypersecretory ulcers[19].

Association between blood group O with H *pylori* is controversial. Some workers believe in the presence of fucose which is the immuno dominant sugar of H-antigen of blood group O. Adhesins of H *pylori* that bind fucose have been identified[19]. However others have failed to find association between ABO and secretor status[20]. Carefully controlled studies are still required to establish the relationship between ABO blood groups and PU. If this relationship is established, high risk cases can be identified and preventive measures against PU can be undertaken to minimize the mortality and morbidity related to complication of PU. There may be a possibility that other blood groups have some ulcer inhibitory factors which needs to be explored.

CONCLUSION

Blood group O is associated with antral ulcers of stomach. Duodenal lesions were more common in blood group B. The blood group B patients specially of the ethnic group "Pathans" suffering from dyspepsia must be identified and advised diet control and other preventive measures for control of complications of ulcers.

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