Is There an Association Between ABO Blood Groups and Type 2 Diabetes Mellitus?

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ABSTRACT

Background: Type 2 diabetes mellitus (T2DM) is inherited genetically. There may be an association with blood group as blood group is predetermined genetically. Methods: Two hundred and thirty one (231) diabetic patients are included in the study. Diabetic patients were taken from Endocrine clinics, and the distribution of blood group among apparently healthy blood donors at Department of Immunohematology and Blood Transfusion (IHBT) was taken as control population. Blood grouping were done by slide agglutination method. Data obtained were statistically analyzed by Chi-square test to find out whether there is any association of T2DM with blood group and the results were expressed as percentage. Results: Our study showed no statistically significant association of T2DM with blood group (p-value=0.81). The percentages of blood group O, A, B and AB in T2DM and control are respectively (31.16% & 34%) (30.73% & 32%), (25.10% & 23 %) and (12.98% & 9%). Conclusion: The present study showed no significant association of ABO blood groups with T2DM.

Keywords: ABO Blood group, Association, T2DM.

INTRODUCTION

Globally the prevalence of diabetes mellitus is increasing speedily and is attaining epidemic magnitude.¹ ² ³ Currently the prevalence of T2DM is estimated to be around 285 million and it is assume to grow to 438 million by 2030.³ ¹² Younger adults in economically productive age groups of developing countries are the main section to be affected.³ ¹² Diabetes leads to significant morbidity and premature death in large number afflicted of person affected.¹ ² ³ Life style changes in the form of dietary modification and regular exercise have shown to be effective tool to prevent development of diabetes in high risk populations.⁵ ⁶ Individuals belonging to certain blood groups have shown predisposition for certain diseases. Gastric cancer is commoner among individuals with A blood group,⁵ but gastric and duodenal ulcers is commoner among individuals with O blood group.⁶ Familial predisposition of T2DM is reported to range between 30% and 70%.⁹ Genetic background thus has a role in the pathogenesis of type 2 diabetes mellitus, although environmental factors playing a big role in the final outcome.¹⁰

MATERIALS AND METHODS

The diabetic patients in this study were recruited from Endocrine OPD, RIMS, Imphal. Any patient with Type 2 diabetes who gave informed consent was recruited. Individuals were considered to be diabetic if they fulfilled American Diabetes Association cut-off or those patients already on glucose lowering medication.¹¹ Thorough physical examination and routine blood test was performed as per standard guidelines for diabetic patients. Blood sample was collected for ABO grouping and Rh typing. Distribution of blood group among apparently healthy blood donors at Department of

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RESULTS

Table 1: Comparative distribution of ABO blood group between type 2 diabetic and healthy controls

<table>
<thead>
<tr>
<th>Blood Groups</th>
<th>Normal Controls n (%)</th>
<th>Type 2 diabetes Patients (%)</th>
<th>Chi square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>96 (32.0)</td>
<td>71 (30.73)</td>
<td>3.06</td>
<td>0.3825</td>
</tr>
<tr>
<td>B</td>
<td>79 (26.3)</td>
<td>58 (25.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>25 (8.3)</td>
<td>30 (12.98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>100 (33.4)</td>
<td>72 (31.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>300 (100)</td>
<td>231 (100)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the present study two hundred and thirty one (231) type 2 diabetic patients were recruited, out of which, 93 were females and 138 males. The median age of the diabetics was 50 years (range 20-70 years).

The comparison of ABO blood group between type 2 diabetic and healthy controls is shown in table-1. Data collected for T2DM as well as controls are expressed as percentage and analysed using SPSS version 22. Comparison between diabetics and healthy controls was done using Chi-Square test to find out whether diabetic patients had a predisposition to certain blood group. P-value < 0.05 was considered significant.

In our study, there was no predilection of any particular ABO blood group with T2DM. Among the diabetic O blood group constituted (31.16%) followed by A blood group (30.73%), B blood group (25.10%) and AB blood group (12.98%) among patients with T2DM (Table). Similarly, among healthy controls, blood group O was the most prevalent (33.4%), followed by group A (32%), B blood group (26%) and AB blood group (8.3%).

DISCUSSION

In our present study When blood groups is statistically analysed among 231 T2DM and 300 voluntary blood donors (controls) statistically significant association is not found. Among T2DM patient blood group O constitute 31.16% blood group A 30.73%, blood group B 25.10 % and blood group AB 12.98 %. Among control group blood group O constitute 33.4 % blood group A 32%, blood group B 26 % and blood group AB 8.3 %.

Similar to our study non association of blood group and T2DM was found by Rahman and Koley. Again Jassim found significantly higher occurrence of blood group O than other groups among T2DM patients compared to controls. Waseem et al. showed a lower percentage of blood group A and B among T2DM patients compared to controls, however, the percentage of blood group AB was higher among diabetics compared to controls.

CONCLUSION

Our study could not find association of blood group with T2DM. This in contrast to some studies which have shown a higher percentage of certain ABO blood group with T2DM. The difference in the result from these studies may be due to ethnic background of our study sample.

REFERENCES


