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ABO BLOOD GROUP;

FREQUENCIES OF ABO BLOOD GROUP IN T2DM IN TERTIARY CARE, PAKISTAN

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ABSTRACT... Objectives: To determine frequencies of ABO blood group in T2DM in tertiary Care, Pakistan. **Study Design:** Descriptive, Cross-sectional study. **Place:** Conducted in the department of medicine, Ghulam Muhammad Mahar Medical Teaching Hospital (GMMMC). **Duration:** From January 2016 to July 2016. **Methods:** With consent of patients having T2DM of both genders and 30-70 years of age. Non-probability, Consecutive sampling was used. Total of 196 patients were enrolled during this time period. After taking consent, blood samples taken from peripheral vein for blood grouping were sent to the Central Laboratory GMMMC. Laboratory technician determined blood group using standard techniques. All this information was collected through a self-structured Performa. **Results:** Participants in our study were from age range 30 to 70 years with mean age of 53.26 ± 7.28 years. Out of the 196 patients, 110 (56.1%) were female and 86 (43.9%) were male. The prevalence of blood group A, B, AB and O in patients with ischemic stroke was found to be as of following; 34 patients having blood group A (17.3%), 74 patients having blood group B (37.8%), 18 patients having blood group AB (9.2%) and 70 patients having blood group O (35.7%) respectively. Stratification was also done on gender basis. 75.5% (n=148) had positive family history. **Conclusion:** Blood group B +ve was the most prevalent blood group in T2DM in our study.

Key words: Diabetes, Risk Factor, Association, ABO Subtype.

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INTRODUCTION

With prevalence ranging from 7.6% to 11% in 2011, type II Diabetes Mellitus (DM) is one of the most common preventable diseases in Pakistan.[1] With a trend that shows that prevalence may rise upto 67% from 2010 to 2030 in the prevalence of DM in lower middle-income countries, it is becoming a global public health threat.[2] Family history of DM, ethnic background, and age above 40 years are the unavoidable risk factors that may lead to DM.[3] Overall obesity as well as increased abdominal girth is a major avoidable risk factor of DM. The risk of type 2 diabetes starts at a lower BMI for Asians than for Europeans. Physical inactivity coexisting with or independent of obesity has crucial influence on the risk of developing type II DM. Over nutrition with consumption of refined foods, high fatty and low fibre diet coupled with sedentary lifestyles also contribute to the risk of DM. Other risk factors include psychological stress, depression, cigarette smoking, hypertension, and hyperlipidemia.[3,4] Emerging risk factors of DM include persistent exposure to organic pollutants, diseases associated with increased iron load such as β-thalassemia, chronic hepatitis B carriers[3], both short and long sleep duration[5], and elevated levels of C-reactive protein (CRP) and interleukin 6 (IL-6).[6] Another interesting association of the risk of developing type II diabetes mellitus is with ABO and Rhesus blood groups which are still under investigation. In view of this association, the results from the first largest cohort showed that the individuals with the O blood group had the lowest risk of developing type 2 DM and blood group A or B had higher risk. As far as the Rhesus factor was concerned; A+, A−, B+ and AB+ blood groups showed a higher risk of developing DM as compared to O− group. Overall greatest risk was seen in blood group B+.[7] Many other smaller studies have been conducted with debatable results. In an Indian study, statistically significant

association was seen between blood groups AB and A and DM[8], while an Iranian study reported blood group O+ to be the most frequent and AB− as the least frequent blood groups among its diabetic population.[9] In contrast, a Saudi study showed blood group B+ to be the highest risk while blood group O+ to be at the lowest risk of evolving into type 2 DM.[10]

In a recent large-scale Malaysian study conducted among diabetics, blood group B was associated with highest blood glucose levels and AB with the lowest one.[11] However, in another recent study conducted among known diabetics; O+ was the most prevalent blood group[12], which is contrary to another older local study conducted among known diabetics where blood group B was the most prevalent and O was the least prevalent.[13]

There is still a lot of potential for quality and strong studies in determining an association between blood group and occurrence of DM. Not only global, local data is also inconsistent and contradictory. Large scale, multicentric studies among known diabetics are required to establish coherent results which will help identify another significant risk factor of DM. Individuals with blood groups prone to DM can then be sequentially monitored for signs of DM and counselled for earliest interventions in terms of lifestyle modifications to prevent either the disease itself or its miserable complications in the long term.

METHODS

This was a descriptive, Cross-sectional study, conducted in the department of medicine, Ghulam Muhammad Mahar Medical Teaching Hospital, Sukkur from January 2016 to July 2016 with consent of patients having T2DM of both genders and 30-70 years of age. Non-probability, Consecutive sampling was used. Total of 196 patients were enrolled during this time period.

Of these 196 patients with T2DM that came to GMMMC, fulfilling the inclusion/exclusion criteria was selected. After taking consent, blood samples taken from peripheral vein for blood grouping were sent to the Central Laboratory GMMMC. Laboratory technician determined blood group using standard techniques. All this information was collected through a self structured Performa. All data were processed and analyzed using computer based software program SPSS version 22.0 for windows. Numerical variables like age have been presented by calculating as mean and standard deviation. Qualitative data like gender, ABO blood group have been presented by calculating frequency and percentage.

RESULTS

Participants in our study were from age range 30 to 70 years with mean age of 53.26 ± 7.28 years. Out of the 196 patients, 110 (56.1%) were female and 86 (43.9%) were male. (Table-I).

The prevalence of blood group A, B, AB and O in patients with diabetes mellitus was found to be as of following; 34 patients having blood group A (17.3%), 74 patients having blood group B (37.8%), 18 patients having blood group AB (9.2%) and 70 patients having blood group O (35.7%) respectively (Table-II). Stratification was also done on gender basis. 75.5% (Table-III) (n=148) had positive family history (Table-IV).

Gender	Frequency	Percent
Female	110	56.1
Male	86	43.9
Total	196	100.0

Table-I. Gender demographics

Blood Group	Frequency	Percent
A -ve	4	2.0
A +ve	30	15.3
AB -ve	2	1.0
AB +ve	16	8.2
B +ve	74	37.8
O -ve	10	5.1
O +ve	60	30.6
Total	196	100.0

Table-II. Frequency of ABO blood group in T2DM

Blood Group	Female	Male
A -ve	4	0
A +ve	18	12
AB -ve	0	2
AB +ve	6	10
B +ve	40	34
O -ve	8	2
O +ve	34	26
Total	110	86

Table-III. Frequency of ABO blood group in T2DM gender wise

Family History	Frequency	Percent
No	48	24.5
Yes	148	75.5
Total	196	100.0

Table-IV. Family history of TD2M

DISCUSSION

The data that shows relationship between the allocation of the ABO blood types and diseases is contradictory as some studies show that there is no relationship while other studies support it. The relationship of blood groups with certain diseases is evidently established and it can be said that blood groups has a major function in certain diseases for example, peptic ulcer and gastric cancer[14], where as some studies show no relationship between ABO blood group with those diseases, including DM. Although it is unexpected that the date of diabetes with ABO blood groups is insufficient and thus shows no relationship but there is an indication of optimistic relationship as well.

Participants in our study were from age range 30 to 70 years with mean age of 53.26 ± 7.28 years. The prevalence of blood group A, B, AB and O in patients with diabetes mellitus was found to be as of following; 34 patients having blood group A (17.3%), 74 patients having blood group B (37.8%), 18 patients having blood group AB (9.2%) and 70 patients having blood group O (35.7%) respectively. The most prevalent blood group sub type among T2DM in participants was B +ve. Kamil M in 2010 in his study showed blood group B was most common in T2DM (35.71%) and lowest frequency was AB (14.28%). This study was in agreement with the results of our study. Similar studies in Italy and Trinidad showed similar result with positive association of blood group B and T2DM.[15,16] Another study suggested that people with blood group B have greater risk of developing T2DM and blood group O has lowest risk.[17] However there are studies that shows positive association of T2DM with blood group A.[18,19] Gestational diabetes is more prevalent in patients with blood group AB.[20] Rahman in a study based on population in Bangladesh showed no association between ABO blood groups and DM.[21] In our study Blood group B was dominant in both males and females in contrast to Kamil M[11] study that showed blood group B dominant in female while blood group O dominant in males, however the difference was not significant.

The limitations of the study were our inability to remove all confounding factors. Although we controlled for many risk factors for diabetes mellitus, but factors such as smoking status, use of medication, High LDL-C, hypertension status was not taken which might have affected the power of study. A larger multi centric study and comparison with control is needed to further consolidate the result of my findings.

CONCLUSION

Blood group B was most dominant in our study. People with blood group B should be paid attention in young age for signs of diabetes and should be regularly screen. Further large scales studies shall be concluded for establishing strong association between ABO blood group and T2DM.

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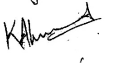
AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Altaf Ahmed Shaikh	Conception, Data collection and manuscript writing.	
2	Khalil Ahmed Sanghro	Data collection, data analysis and manuscript review.	
3	Anam Altaf	Data collection and manuscript writing.