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RESEARCH ARTICLE
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ASSOCIATION OF DIABETES MELLITUS WITH ABO BLOOD GROUP IN THE POPULATION IN AND AROUND DIBRUGARH

Dr Rwitusmita Bharali[1*], Dr. Horshajyoti Chutia[2]

[1*]Asstt prof, Department of Physiology, AMCH Dr Rwitusmita Bharali, Dr. Horshajyoti Chutia, Phone number-9435410006 Email:-rwitu.smita@gmail.com
[2]Asstt prof, Department of Physiology, AMCH Phone number-9859775600 Email:-drhorsha09@gmail.com

***Corresponding Author:-** Dr Rwitusmita Bharali
*Asstt prof,Department of Physiology,AMCH Phone number-9435410006 Email:-rwitu.smita@gmail.com

ABSRACT:-
Background:-Diabetes mellitus an emerging global epidemic, is a multifactorial syndrome having a strong genetic connection.ABO blood group antigen which is a genetically determined variable also plays a important role in understanding inheritance pattern and disease susceptibility.The previous studies reported that there are various associations between particular ABO phenotypes and an increased susceptibility to disease. The rationale behind this study was that there might be an association between the ABO blood group and diabetes mellitus and based on result we can identify the susceptible and adopt some preventive measures to decrease the burden of disease in society.
Materials and method:-499 individuals were recruited in the study.Out of which 249 were diabetic individual and 250 were control.
Result;-Using blood group O as reference the odds ratio was calculated to see the association of different ABO blood group with diabetes mellitus .It was found that Blood group B showed a five times increase risk for development of diabetes mellitus.
Conclusion:-The present study shows a significant relationship between blood group B and type 2 diabetes mellitus

KEYWORDS: Diabetes mellitus type2 ,ABO blood groups,Association

INTRODUCTION:-

Diabetes mellitus a multi-factorial disease is recognized as a serious public health concern with a considerable impact on human life and health expenditures. About 830 million people worldwide have diabetes, the majority living in low-and middle-income countries[1]. More than half of people living with diabetes are not receiving treatment. Both the number of people with diabetes and the number of people with untreated diabetes have been steadily increasing over the past decade.
The etiology of diabetes mellitus is complex and involves inter-actions of genetic, immunological and environmental factors[2]. Human chromosome 1q21-q23showed associated linkage to type-2 Diabetes mellitus[3]. The phenotypic "ABO" blood groups are inherited antigenic substances which have genes that are mapped at 9q34.2 region where genetic alteration is common[4].
Blood group antigens, which are hereditary determined ,play a pivotal role in understanding genetics, inheritance pattern, and disease susceptibility. It was reported that there are various

associations between particular ABO phenotypes and an increased susceptibility to disease[5]. Diabetes mellitus and blood groups are interrelated because of the wide genetic immunologic basis in both[6].The rationale behind this study was to establish the interrelation between type 2 diabetes mellitus and ABO blood group system.

Materials and methods:-

The present cross sectional was carried out among 499 individuals ,out of which 249 were individuals having type 2 Diabetes Mellitus and 250 were apparently normal individuals. Individuals were considered to be diabetic if they fulfilled American Diabetes Association cut-off or those patients already on glucose lowering medication[7] Thorough physical examination and routine blood test was performed as per standard guidelines for diabetic patients. The risk and benefit of the study was explained to all subjects and informed written consent was obtained. An approval from institutional committee was obtained.

Only Rh positive individuals were included in the study. A detailed history of all the subjects was taken. Relevant past history, family history, any drug history, personal history like smoking, alcoholism and occupational history was taken. The blood samples were collected by finger prick with sterile lancet and after cleaning the puncture site with 70% ethyl alcohol. A drop of monoclonal Anti A, Anti B, Anti D was added to a drop of finger prick blood on clear slide and mixed well. Results of agglutination were recorded.

The data was analysed using Microsoft excel and Statistical package of Social Sciences (SPSS version 20.0). Categorical data analysis for comparison of percentages was performed with chisquare contingency table analysis. The association of blood group with type 2 diabetes mellitus was estimated by calculating odds ratio from logistic regression models using blood group O and controls respectively as reference group after adjustment for various covariates. A p value of <0.05 was considered statistically significant.

Result and observation:-

The study population consisted of 249 diabetic individuals and 250 normal individuals.The table 1 shows the distribution of different blood groups in the control group.It shows that in the control group maximum individuals are of blood group O (57.2%) followed by blood group B(26.8%). The table 2 shows the distribution of different blood groups in the diabetic group.In the diabetic group, blood group B is maximum.

Using blood group O as the reference group, the association between blood group and diabetes mellitus was estimated using odds ratios and 95% confidence intervals from logistic regression models. The results as shown in table 4 indicated that B has the highest risk.It is shown that blood group B has 5 times risk(OR-5.336,95% CI 8.096-3.517) and blood group A has 3 times risk (OR-3.889,95%CI-7.417-2.039)

Table 1:-Showing the distribution of different ABO blood groups in control group

Blood group	Number of individuals	% of individuals
A	19	7.6
AB	21	8.4
B	67	26.8
0	143	57.2

Table 2:-Showing the distribution of different ABO blood groups in the diabetic group

Blood group	Number of individuals	% of individuals
A	31	12.45
AB	8	3.21
B	150	60.3
0	60	24.09

Table 3:-Showing the association between diabetes mellitus and ABO blood group

	OR	CI (Lower)	CI (Upper)	p value
A	3.889	2.039	7.417	<0.001
AB	.908	.381	2.164	.827
B	5.336	3.517	8.096	<0.001
O (Reference)				

Discussion:-

The present study reinforce the hypothesis that there is strong inter-relationship between type 2 diabetes mellitus and ABO blood group.This study shows a five times increase risk of diabetes mellitus in individuals with blood group B,which in consistence with the studies of Meo et al [8], Qureshi et al[9] . Study by Fagherazzi et al observed that blood groups A or B were at higher risk of T2DM compared with those with O blood group. There was no association with the AB group. There was no difference in type 2 diabetes mellitus risk between Rhesus positive and negative groups.[11]

Muhammad Kamil et al[10] in Malaysian population suggest that there was a negative association between ABO blood groups A and O with DM type 2, with A and O group having less chances of diabetes. Blood group B was more common in diabetic men, whereas blood groups A and B were higher in diabetic women compared with non-diabetic healthy population. But in the population of Pakistan[12], Iraq[13] and Japan[14], it was blood group O that has the highest distribution among diabetics. Significant association between blood group B and diabetes was reported in a research conducted in Iran, which is consistent with other investigations[15].

Conclusion:-

The present study shows a strong association between blood group B and type 2 diabetes mellitus. Individuals with a high risk profile can be screened for T2DM on a frequent basis and they can be made aware of the importance of a wellbalanced diet and regular exercise for the prevention of obesity and T2DM.

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