IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 13, Issue 12 Ver. V (Dec. 2014), PP 115-117
www.iosrjournals.org

Abo And Rh Blood Group Distribution And Correlation In Adult Rheumatoid Patients

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Abstract

Background : *Blood group had been shown to correlate with some of the diseases. Earlier studies with rheumatoid arthritis (RA) patients had shown no significant correlations with ABO and Rh blood groups. We again endeavored to study for any correlations between blood groups and RA disease activity and disability it caused to the patients.*

Aim & Objectives : *To determine the distribution of ABO & Rh blood group in patients with RA and to correlate the severity of RA with blood group phenotypes.*

Material And Methods : *First 100 eligible RA patients attending the Rheumatology Clinic, RIMS, Imphal were studied. Their disease activity score (DAS-28 score), health assessment questionnaire (HAQ) score were circulated. ABO grouping and Rh typing were done. The healthy blood donors were taken as controls. Statistical analysis was done using SPSS version 16.*

Results & Observations : *92 female patients and 8 male patients (F:M = 11.5:1) were studied. The mean age was 46.67+ 9.82 years. Out of the 100 RA patients 32% had A+ve blood group; 32% B+ve; 28% O+ve and 8% AB+ve showing similar distributions of blood groups among healthy controls (blood donors). There was significantly ($p<0.05$) high DAS-28 score in A+ve and AB+ve RA patients. Significant ($p<0.05$) moderate to severe disability score in O+ve RA patients found in A+ve and severe disability score in O+ve patients.*

Conclusions : *This study shows no significant correlation between ABO-Rh blood groups and RA. However, there are significant correlation between blood groups and disease activity and patient disability scores. Further studies are suggested.*

Key words: Blood group, Rheumatoid arthritis, Autoimmune disease, DAS, HAQ

I. Introduction

After discovery of the ABO Blood group by Landsteiner in 1901, many attempts were made to find associations between blood group antigens and many diseases. Blood group had been studied as a risk factor for many diseases like peptic ulcer and carcinoma of stomach[1], periodontal disease[2], diabetes mellitus[3], ischemic heart disease[4] and pernicious anaemia[5].

There is increasing evidence that blood group substances especially those of ABO and Rh system play a role in the causation of disease or in the protective mechanism against it[6].It is of interest to examine whether the increased immunological reactivity of rheumatoid arthritis (RA) patients would be expressed not only in the incidence of pathological antibodies but also in an increased formation of naturally occurring antibodies. Studies had been done earlier to establish a relationship between RA and blood group with conflicting results but no study to correlate severity of RA with blood groups. So, the present study was taken up to evaluate association of ABO and Rh blood group with RA and also the severity of the RA with the blood groups.

Aims And Objectives

1) To determine the distribution of ABO and Rh-D phenotypes in patients with Rheumatoid Arthritis (RA).
2) To correlate the severity of RA with the blood group phenotypes.

II. Materials And Methods

It is a cross sectional study carried out in the Department of Medicine (Rheumatology Clinic) in collaboration with the Department of Immunohematology and Blood Transfusion (IHBT), RIMS, Imphal, Manipur (India) for a period of two years from October 2012 to September 2014. Healthy blood donors attending the IHBT Department were taken as controls.

Inclusion criteria:

Diagnosed case of RA (by 2010 ACR/EULLAR criteria) with or without treatment, above 18 years of age.

Exclusion criteria:

1. Patients below 18 years of age.
2. Patients with other autoimmune diseases.
3. Immunodeficient or immunocompromised patients.

The first 100 diagnosed and eligible cases of RA who attended the rheumatology clinic and willing to participate were selected for the study. They were properly investigated and the disease activity score (DAS-28) and health assessment questionnaire (HAQ) were done for all the patients. They were also examined for any associated complications (disease or drug related) and other co-morbidities.

ABO blood grouping and Rh-D typing were done for every patient by saline and tube method.(both cell and serum grouping).

Statistical analysis was done using SPSS version 16. Test of significance was done with Chi-square test and a p-value of <0.05 was taken as significant.

III. Results And Observation

Out of those 100 RA patients 92 were females and 8 males, the age ranged from 20-70 years with maximum patients in the age group of 41-50 years (44%). The mean age and standard deviation was 46.67± 9.82 years. Co-morbidities (like hypertension, diabetes mellitus, thyroid disorder, anemia, and osteoporosis) were present in 32% of cases.

The distribution of different blood groups among RA patients shown in Table 1 was not significantly different from that of the normal controls (as per RIMS data). Total number of patients with their respective ABO, Rh blood groups and the different DAS-28 values are shown in table-2. A (+)ve and AB(+)ve had significantly high ($p<0.05$) DAS-28 score than the other blood groups.

sThe relation between different blood groups and Indian HAQ score is shown in Table 3. A(+)ve blood group had more number of patients with moderate to severe disability and O+ve blood group was more in those with severe disability. These findings were found to be statistically significant (p-<0.05).

IV. Discussion

In this study, females constituted majority of the respondents (92%), giving a female to male ratio of 11.5 :1 , different from a study by Agarwal, et al[7] . Most of the patients were in the age group of 41-50 years (44%) in consistence with the findings of Kvein et al[8]

According to the unpublished data of blood donors attending IHBT Department, RIMS Hospital, Imphal, O(+)ve is the most common (34%) blood group followed by A(+)ve (32%), B(+)ve (23%), AB(+)ve (9%) and Rh (-)ve groups (2%).

In our study A+ve (32%), B+ve (32%) were the most common blood groups in patients with RA followed by O+ve (28%), AB+ve (8%) showing no significant differences from the normal distribution of blood groups among healthy controls (blood donors). This is similar to studies by Stoia et al[9], Kornstad et al[10], Cohen et al[11], Baxter et al[12]. There was no Rh –ve blood group among the RA patients , however Cohen et al[11] showed significant correlation of RA with absence of Rh D antigen. Contradictory to the findings by Wood et al[13] where increased frequency of AB group and decreased O group were found among RA patients, we got more patients with O +ve (28%) than AB +ve group (8%). These may be because of the small sample size.

Disease activity score was assessed using DAS-28 score. 54% of patients had high DAS 28 score of >5.1, 44% had moderate score of 3.2-5.0 and only 2% had a low score of <3.2 (Table 1). This cannot be explained fully but may be the patients with some disease activity attend the Rheumatology Clinic of the hospital. A+ve and AB+ve blood group RA patients had significantly ($p<0.05$) high DAS-28 score than other blood groups. These groups were having significantly active disease with more restriction to daily activities and changing modalities of disease modifying anti-rheumatic drugs (DMARD) treatment.

Disability score was assessed with Health Assessment Questionnaire (HAQ) score. Majority (66%) of the patients had moderate to severe HAQ score and 18% of the patients had severe to very severe score (Table 3). A+ve blood group patients had more moderate to severe HAQ score and O+ve patients had more severe disability score which were statistically significant($p<0.05$).

Table 1: Distribution of Blood groups among RA patients and normal Controls (not statistically significant).

Blood Group	RA Patients (%)	Normal Controls (%) IHBT, RIMS Data
A+ve	32	32
B+ve	32	23
AB+ve	8	9
O+ve	28	34
Rh –ve	0	2

Table 2: Relation between ABO AND Rh typing with DAS-28 score**.**

ABO and Rh typing	DAS-28 Score			Total	Chi-Square test
	Low <3.2 (%)*	Moderate >3.2-5.0 (%)*	High >5.1 (%)		
A+ve	0 (0.0)	6 (18.8)	26 (81.2)	32 (100.0)	
B+ve	2 (6.2)	20 (62.5)	10 (31.2)	32 (100.0)	
AB+ve	0(0.0)	2 (25.0)	6 (75.0)	8 (100.0)	**p-0.000**
O+ve	0(0.0)	16 (57.1)	12 (42.9)	28 (100.0)	
Total	**2 (2.0)**	**44 (44.0)**	**54 (54.0)**	**100 (100.0)**	

*Cells were clubbed together for analysis.
(DAS – Disease Activity Score)

Table 3: Relation between Blood group and HAQ Score.

ABO and Rh typing	HAQ Score			Total	Chi-Square test
	Mild-Moderate 0-1(%)*	Moderate-Severe 1-2(%)*	Severe-Very Severe 2-3 (%)		
A+ve	2 (6.2)	24 (75.0)	6 (81.2)	32 (100.0)	
B+ve	6 (18.8)	26 (62.5)	6 (18.8)	32 (100.0)	
AB+ve	2 (25.0)	6 (75.0)	0 (0.0)	8 (100.0)	**p-0.000**
O+ve	6 (21.4)	16 (57.1)	6 (21.4)	28 (100.0)	
Total	**16 (16.0)**	**66 (66.0)**	**18 (18.0)**	**100 (100.0)**	

*Cells were clubbed together for analysis.
(HAQ : Health Assessment Questionnaire)

V. Conclusion

The present study showed no significant differences in the frequency of ABO-Rh blood groups in Rheumatoid arthritis patients compared to normal healthy population. However, there were significant correlations between ABO-Rh blood group and disease activity and disability scores. Further studies need to be done to confirm these important correlations.

References

[1]. Doll R, Swynnerton BF, Newel AC. Observations on blood group distribution in peptic ulcer and gastric cancer. Brit Med J 1960; 1: 31-35.
[2]. Vivek S, Jain J, Simon PS, Battur H, Supreetha S. Association of ABO Blood Group and Rh Factor with Periodontal Disease in a Population of Virajpet, Karnataka: A Cross-Sectional Study. J Int Oral Health. 2013 Aug; 5(4): 30-34.
[3]. Qureshi MA, Bhatti R. Frequency of ABO blood groups among the diabetes mellitus type 2 patients. J Coll Physicians Surg Pak 2003; 13: 453-455.
[4]. Lufullah, Bhatti TA, Hanif A, Shaikh SH, Khan BZ, Bukshshi IA. ABO blood group distribution and Ischaemic Heart Disease. Annals 2011; 17(1): 36-38.
[5]. Editorial. British Medical Journal. Blood Groups and Diseases. Br Med J. 1956; 29:757-758.
[6]. Garraty G. Dezik W, Issitt PD, Lubin DM. Terminology for blood group antigens and genes – historical origins and guidelines in the new millennium. Transfusion 2000; 40: 477-489.
[7]. Agarwal S, Mishra R, Aggarwal A. Aanemia in Rheumatoid Arthritis: high prevalence of iron deficiency anaemia in Indian patients. Rheumatol Int. 2006; 26(12): 1091-1095.
[8]. Kevin TK, Uhliq T. Odegard S, Heiberg MS. Epidemiological aspects of rheumatoid arthritis: the sex ratio. Ann NY Acad Sci 2006; 1069: 212-222.
[9]. Stoia I, Ramneantu R, Poitas M. Blood group ABO and Rh (D) factor in rheumatic diseases. Ann Rheum Dis 1967; 26: 332-333.
[10]. Kornstad AMG, Kornstad L, Goldberg D; Blood Group in rheumatoid arthritis. Nature 1965; 206: 836-837.
[11]. Cohen AS, Boyd WC, Goldwasser S, Cathcart ES, Heisler M. Correlation between rheumatic diseases and Rh blood groups, Nature 1963; 200: 1215- 1216.
[12]. .Baxter A, Izzat MM, Jasani MK, Mc Andrew R. The ABO and Rh (D) blood group in rheumatoid arthritis. Acta Rheum Scand 1968; 14: 79-82
[13]. Wood JW, Kato H, Johnson KG, Uda Y, Russel WJ, Duff IF. Rheumatoid arthritis in Hiroshima and Nagasaki, Japan: Prevalence, incidence and clinical characteristics. Arthritis Rheum 1967; 10: 21-31.