

Brief Article

ABO blood groups comparing obsessive-compulsive disorder and depression

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(Received: 11Jan 2014; Revised: 8Feb 2014; Accepted: 9Mar 2014)

Abstract

Introduction: The history of studies on blood groups dates back to early 20th century. Studies have demonstrated that certain blood groups dictate tendencies toward physical or psychiatric illnesses. The present study aimed to find out the frequency of ABO and Rh blood groups in obsessive-compulsive disorder.

Methods: In this survey, descriptive study with convenient samples, male/female patients who attended our psychiatry clinics with OCD (n=200) and depression (n=201) diagnosis, were enrolled according to DSM IV-TR criteria. Group one included two hundred patients with OCD (41 male and 159 female; mean age: 32.86 years) and second group consisting of two hundred and one patients were used for ABO/Rhesus (Rh) blood group antigen typing.

Results: The ABO blood group phenotype distribution in OCD and depression subjects were respectively as follow: 31% (29.9%) for group A, 21% (22.9%) for group B, 40% (36.8%1) for group O and 8% (10.5%) for group AB. Rh positivity was found in 87% (85.6%1) of patients. Also, According to the Iranian Red Cross (2004), blood groups in OCD and depressive group were not significantly different from the distribution in the total Iranian population (chi-square=1.87, DF=6, p=0.93).

Conclusion: According to our results, there were no differences in ABO-Rh blood groups distribution among OCD and depressive patients and normal population.

Declaration of Interest: None.

Keywords: ABO blood group type, Obsession, Compulsive, Behavior.

Introduction

Blood type is determined by heredity and the time of conception (1). Blood type is one factor that never changes in the body. Utilizing blood types as an indicator not only of precursors of illness but also of emotional illness could be a valuable diagnostic tool for health psychologist. The ability

to anticipate chronic illness or life stressors involves learning ways to gain control over one's health (2).

Knowing an individual's physical and emotional predisposition would assist in that area.

Researchers have stated that blood type O is related to a high rate of anxiety. Type O has a propensity toward certain illness, knowing one's blood type may assist in identifying possible health risks, both medically and emotionally for a blood type O patient (3,4).

Investigations have assessed the role of blood groups with regards to psychiatric disorder (5).

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Boyer demonstrated that blood type might influence psychiatric symptoms. He showed that subjects with blood type A scored higher than those with type O on the obsessive-compulsive and psychoticism factors (5).

Neumann et al. found that individuals of blood type A demonstrated higher levels of depression, anger, and anxiety than those of blood type O, using a small sample size (6).

Rinieris et al. suggested that patients with either obsessive-compulsive neurosis or hysteria demonstrate a higher incidence of blood phenotype A and a lower incidence of blood phenotype O, as compared to a representative sample of the general population (7,8).

Also, in another study Rinieris et al. demonstrated a greater incidence of obsessional personality traits in blood groups A, B and AB than in Blood Group O using 600 participants. The researchers determined that blood group O might be associated with personality traits hindering the development of obsessive-compulsive symptomology (9).

Investigations have assessed the role of blood groups with regards to anxiety, anger, phobia, depression, neurosis, temperament, and personality traits (10,12).

Marutham and Prakash found blood type B individuals to have higher neuroticism scores compared to blood types O and A on the Eysenck Personality Inventory (13).

The ABO system is arguably the most clinically important of the 29 established blood group systems (14). A single genetic locus on chromosome 9 controls ABO glycosyltransferase activity (15).

Data on frequency distribution of ABO-Rh blood groups in obsessive-compulsive disorder (OCD) in Iran are not available. We aimed to investigate the

distribution of ABO-Rh blood groups in these patients.

Methods

In this survey, descriptive study with convenient samples, patients who attended our psychiatry clinics with OCD (group one) and depression (group two) diagnosis, were enrolled according to DSM IV-TR criteria. Group one including two hundred patients with OCD (41 male and 159 female; mean age: 32.86 years) and second group consisting of two hundred and one patients. Third group including 200 subjects were chosen randomly from general population without history of psychiatry disorder (control group).

Written informed consent was obtained from all the participants and then blood samples were used for ABO/Rhesus (Rh) blood group antigen typing.

In our study, exclusion criteria included existence of others medical and psychiatry comorbidities.

After informed consent, blood drop was taken by needle bite on index finger. For the ABO and Rh tests, a drop of blood was placed on clean slides.

A drop of each of the antisera, anti A, anti B and anti D (from Blood Research and Fractionation Co) was added and mixed with each blood sample. Blood groups were determined on the basis of agglutination.

For the statistical evaluation of our findings the chi-square test was used. Analysis was carried out using SPSS 16.0 for windows (SPSS Inc, Chicago, IL USA).

Results

In the ABO blood group, the most common

Table 1. Comparison frequency of ABO blood groups in OCD and depressive patients and general population

| Groups | ABO Blood group | | | | Statistic chi-square |
|--------------------|-----------------|---------|-----------|-----------|--|
| | O | A | B | AB | |
| General population | 75(37.5%) | 60(30%) | 49(24.5%) | 16(8%) | X ² =1.87 Df=6 Sig=(0.93) |
| OCD | 80(40%) | 62(31%) | 42(21%) | 16(8%) | |
| Depressive | 73(36.5%) | 60(30%) | 46(23%) | 21(10.5%) | |

Phenotypein obsessive-compulsive patients was O (40%) followed by A, B and AB. The frequency of Rh blood groups 87 % and 13% positive and negative respectively. There is no significant relationship between ABO and Rh blood groups and obsessive-compulsive disorder.

Also, the most common phenotypein depressive patients was O (36.5%) followed by A, B and AB. The frequency of Rh blood groups 85.6 % and 14.4% positive and negative respectively.

The most common phenotypein control group was O (37.5%) followed by A, B and AB. The frequency of Rh blood groups is 90% positive and 10% negative.

According to the Iranian Red Cross (2004, blood type distribution), the Iranian population’s blood groups are distributed as follows: A represents 30.25%, B represents 24.36%, AB represents 7.77%, and blood group O represents 37.62%, (13).

An estimated 89.92% of the Iranian population is Rh-positive and 10.08% is Rh-negative.

The comparison frequency of ABO blood groups in OCD and depressive patients and general population are presented in Table 1.

For the statistical evaluation, chi-square test was performed to compare the number of subjects within OCD group to the number that would be expected in the general population. The

distribution of blood groups in OCD group was not significantly different from the distribution in the total Iranian population (chi-square=1.87,DF=6,P=0. 93).

Also, chi-square test was performed to compare the number of subjects within OCD group to the number that would be expected in the depressive population. The distribution of blood groups was not significantly different from the distribution in the depressive population (chi-square=1.21, DF=3, P=0.75).

Conclusion

Our study is the first published article in Iran to examine the relationship between blood type and OCD.

A higher frequency of blood type O and lower frequency of blood type AB and higher frequency of Rh-positive were founded in our patients with obsessive-compulsive disorder.

Karl Landsteiner discovered blood groups, for which he received the Nobel Prize forphysiology of medicine in 1930. Landsteiner classified blood groups as A, B, AB, and O.

This discovery led him to identify the four main blood groups of A, B, AB, and O and later the Rhesus, or Rh, factor in blood type (16).

Blood groups antigens are hereditary, which ABO alleles are on the 9th chromosome. Antigens of ABO and Rh system are placed on the surface of erythrocyte and other cells as membrane antigens, which dissolved in urine, feces, milk, saliva and plasma. In addition, serum has strong antibodies against antigens, which are not placing on the surface of erythrocyte (17,20).

The present study found that in obsessive patients, O blood group had the highest frequency (40%). Also, chi-square test showed there is no significant relationship between ABO blood groups and OCD, but Boyer in two samples of psychiatric patients showed that patients with blood type A scored significantly higher than those with blood type O on the obsessive compulsive and psychoticism factors (5).

Moreover, Rinieris showed that patients with either obsessive-compulsive neurosis demonstrate a higher incidence of blood phenotype A and a lower incidence of blood phenotype O (7,8).

An increasing amount of evidence indicates that individuals of differing blood groups have extremely different responses to the same stressor. Equally surprising, the genetics of blood group also appear to alter your susceptibility to developing certain neuropsychiatric disorders.

Evidence indicates the gene that controls blood type expression is probably also linked to and controls inheritance of the genes that code for the activity of dopamine-beta hydroxylase, catechol-O-methyl transferase, and arginosuccinate synthetase. Coincidentally, these are all enzymes that influence our neuro-hormonal response to environmental factors (21).

We think that ABO and Rh antigenic structure may be different in other regions and nations, and the influence of blood type on symptom

expression may be mediated by cell membrane characteristics, influenced in part by blood type.

Clearly, propensity for illness is due to a combination of various factors, which include but are not limited to the biochemistry of the human body.

The foundation of blood type and its relation to psychiatric and physical illness requires more research given the conflicting data found.

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