DISTRIBUTION OF BLOOD GROUPS AMONG SYPHILITIC ABU DHABIANS IN THE UNITED ARAB EMIRATES

M. FARID* T. H. SALLAM* S. EL SHIEMI* AND M. J. AL-JAMAL†

Summary

ABO and Rh blood groups among 54 syphilitics were determined. A significantly increased incidence of syphilis in persons with blood groups B and AB was observed; significant decrease in those having groups A and O. A significant decrease in the incidence of syphilis was also observed in Rh negative subjects. These results suggest a possible relationship between the inheritance of blood groups and the natural defence mechanism against syphilis.

Introduction

With the discovery of blood groups and the great advance established in its study, many workers have tried to find out a possible relationship between the distribution of these groups and the incidence of various diseases. Early, a strong correlation between neoplasms and blood groups was reported by Alexandre[1], Johansen[2], Aird et al[3], McConnell et al[4] and Helmbold[5]. The relationship between peptic ulceration and blood groups as a significant association was reported by Wallace[6], Aird et al[7] and Clarke et al[8,9]. Race and Songer [10] reported a relationship between blood group A and pernicious anaemia as well as between this blood group and diabetes mellitus. Toxaemias of pregnancy were found to be more common in women with blood group O (Pike and Dickins[11]) than other blood groups.

In the field of Dermatology and Venereology, possible association between blood groups and different diseases have been also sought. These included a relation between lichen planus and blood group A, between pemphigus and seborrhoeic dermatitis, and blood group B and between vitiligo and blood group AB (Clendenning and Boyer[12].) A strong evidence of a relationship between xeroderma pigmentosum and blood group O was reported by El-Hefnawi et al[13]. As regards venereal diseases, it has been reported that there is increased risk of gonococcal infection in subjects with blood group B (Foster and Labrum[14].)

The concept that natural immunity against syphilis does exist, is based on several observations. Thus, the species variation towards infection by syphilis is well known (Gueft and Rosahhen[15], Turner and Hollander[16], Schell et al[17].) In an epidemiological study, Von Worssowetz[18] observed that about 50% of contacts to primary and secondary syphilis did not become infected.

* Faculty of Medicine, Ain Shams University, Cairo, Egypt.

† Military Hospital, Abu Dhabi, P.O. Box 309.

Address for reprints: Dr. M. Farid M.D., Faculty of Medicine, Ain Shams University, Cairo, Egypt, (Dermatology Dept.)

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Generally, it is possible that a genetic link exists between the inheritance of blood groups and that of the natural defence mechanisms against certain infections.

This work was planned to study the possible existence of such a link in patients with syphilitic infection.

Material and Methods

Fifty four patients (53 males and 1 female) having syphilis and of local nationality served as the material for this study. They were collected from Abu Dhabi hospitals in the years 1978 and 1979. Their ages ranged between 13 and 50 years. The diagnosis was based on clinical, bacteriological and serological examinations. The group consisted of 36 patients with primary lesions and 18 with secondary lessions.

The control group was obtained from a previous work done on normal subjects of the same nationality by Kamel et al[19].

The ABO blood groups and Rh typing were determined by the tube and slide methods of Dacie and Lewis[20].

Results

Tables 1 and 2 summarize the data on distribution of ABO and Rh blood groups among controls and patients respectively. Comparison between the proportions given by the control group and those given by the syphilitics was done by calculating the value of Z according to the equation described by Sarhan et al[21].

The comparison has shown that there is a susceptibility to syphilitic infection in subejcts with blood groups B and AB and a decreased susceptibility to syphilitic infection in subjects with blood groups A and O. A decreased susceptibility of Rh negative subjects to syphilitic infection was also observed. All these findings were statistically significant at 1% level ($P < 0.01$).

TABLE 1

Distribution of ABO Blood groups among controls and patients

Group	Control		Patients	
	No.	%	No.	%
A	208	33.34	14	25.93
B	86	13 78	17	31.48
AB	12	1.92	2	3.70
O	318	50.96	21	38.89
Total	624	100	54	100

TABLE 2

Distribution of Rh Groups among controls and patients

Group	Control		Patients	
	No.	%	No.	%
Rh positive	577	42.47	52	96.3
Rh negative	47	7.53	2	3.7
Total	624	100	54	100

TABLE 3

Difference in the distribution of blood groups among syphilitics in relation to normal controls

Group	Value of Z	Significance	Nature of Change
A	3.5	Significant at 0.01	Decrease
B	11.06	Significant at 0.01	Increase
AB	13.39	Significant at 0.01	Increase
O	5.40	Significant at 0.01	Decrease
Rh –ve	19.15	Significant at 0.01	Decrease

Discussion

The results obtained through this study show clearly that subjects with blood groups B and AB are more susceptible to syphilitic infection than those with other groups. On the other hand, subjects who are Rh negative show decreased susceptibility to syphilitic infection.

These results point to a possible genetic link between the inheritance of blood groups and the natural defence mechanism against infection. Clarke[22] had suggested that the level

of natural antibodies in man might be different in various ABO types. It may be assumed that our A and O genotyped persons have the highest degree of such natural defence against syphilis and the B and AB genotyped persons have the lowest. Thus, blood groups inheritance may be associated with the inheritance of certain immunological features which are characteristic in a particular subject. It can be inferred that the high resistance against syphilis found in A and O grouped subjects is inherited with their ABO pattern and the reverse is true regarding subjects with blood groups B and AB.

The association between B and AB blood groups as indicating increased susceptibility to syphilis is important as they are inherited on one and the same principle. AB grouped person must have one of his parents with B agglutinogen in red blood cells.

The greater resistance of Rh negative subjects against syphilitic infection was similar to observed data in the case of other infections. El-Shiemy et al[23] observed that leprosy is not found in Rh negative subjects on the basis of a study on 396 patients with leprosy. In the field of oncology, McConnel et al[4] found a decreased incidence of lung carcinoma among Rh negative subjects. These observations might mean that the Rh negative subjects are more resistant to certain pathological conditions despite the hazards they meet with in infancy.

From this study, it is concluded that exposure to treponema pallidum is not the only factor deciding the occurrence of syphilis. Subjective factors also play a role. Inheritance of blood groups and consequent inheritance of certain immunological features are among the important factors incriminated in this respect.

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