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ORIGINAL ARTICLE

The Relationship Between Blood Groups And Dermatophytoses Of Men In Karbala City

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ABSTRACT

Objective: The current study aims to investigate of the relationship between dermatophytoses and blood groups in men.

Methods: 37 men patients with dermatophytoses who visited the hospitals in the holy province of Karbala were diagnosed with the clinical manifestations of them by dermatologists specialists in these hospitals, and blood samples were obtained in the laboratory and the ABO examination for them to know their blood groups and Rh.

Results: Patients are men aged 3 to 80 years. The age group 16-28 years is the highest among the patients, reaching 62.16%. All patients were Rh positive (Rh⁺). People with blood group O are the most likely to develop dermatophytoses, with 43.23% of patients with blood group B 32.43% and A 16.22% , while the blood group AB is the lowest and 8.11%.

The clinical manifestations of dermatophytoses were the most common among the others. The number of patients was 16 patients with tinea pedis most of them from blood groups B and O, followed by tinea capitis which reached 9 patients most of them blood group O. The statistical analysis showed that tinea pedis was significantly correlated with blood groups B and O , and tinea capitis significantly correlated with blood group O, and the rest of the clinical manifestations showed no significant correlation with any of the blood groups.

Conclusion: That there is a relationship between infection of dermatophytoses and blood groups, specifically between tinea pedis, tinea capitis with blood groups B and O.

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INTRODUCTION

Dermatophytes are a group of closely related fungi that have the capacity to invade keratinized tissue (skin, hair and nails) of humans and other animals to produce an infection, dermatophytosis, commonly referred to as ringworm. Infection is generally cutaneous and restricted to the nonliving cornified layers because of the inability of the fungi to penetrate the deeper tissues or organs of immunocompetent hosts^{1, 2}. These fungi are classified into three genera, *Trichophyton*, *Microsporum* and *Epidermophyton*, based on the formation and morphology of their conidia (structures of asexual reproduction)³. The transmissions of dermatophytes

occur by direct contact with infected animals and humans or by indirect contact with contaminated fomites⁴.

The influence of dermatophytosis on some biochemical profiles and hematological parameters was investigated using standard methods in dermatophytic pupils in various schools in Nigeria⁵. In another study ,the authors investigated the relationship between cutaneous mycosis and ABO blood group ,though blood typing with identification of isolated dermatophytes. These result suggested that there is statistical evidence that these individuals are more susceptible to superficial mycosis⁶.

Studies involving cell wall of dermatophytes have demonstrated that the fungus *Trichophyton mentagrophytes*, *Trichophyton rubrum* and *Epidermophyton floccosum* have glycoproteins that are antigenically similar to human erythrocyte isoantigen A⁷, according to the authors individuals that have these erythrocytic antigens would be more susceptible to development of generalized dermatophytosis and resistant to treatment than individuals devoid of these antigens.

MATERIALS AND METHODS

Collection of Samples

The samples were collected from hospitals in the holy city of Karbala and private clinics for 37 patients with dermatophytosis infections after being diagnosed with the disease and his knowledge by a physician specialist dermatology and then was drawing blood from a vein of the patients in the lab where we used both of the syringe, tornica, sterile and cotton and then the samples preserved in tubes anticoagulant EDTA⁸.

Examination of Blood Groups and Rh

After that was done ABO and Rh tests using a glass slide method as follows⁸.

- 1- Processing glass slide and put it drops spaced ,one of the solution (Anti A) At a party slide and point of the solution (Anti B), the point of the solution (Anti D).
- 2- Place a drop of the blood sample of the patient on each solution, and then stirred the mixture in with the stick, and then wait a little 1-2minutes.
- 3- Look at the following possibilities:
 - a. If given clusters or clumps with a solution anti A, and also gave clumps with anti B be blood type AB.
 - b. If given clusters or clumps with a solution anti A, and did not give up any clumps with a solution anti B be blood type A.
 - c. If you have not given any clusters or clumps with a solution anti A, and give the clumps with a solution anti B be blood type B.
 - d. If you have not given any clusters or clumps with a solution anti A, as well as also not given clumps with a solution B be blood type O.
 - e. If given clusters or clumps with a solution anti D, be Rh⁺.
 - f. If you have not given any gatherings with a solution anti D, be Rh⁻

Statistical Analysis

Statistical analysis included Chi Square (X^2). 0.05 is the level of probability that used to identify a significant differences⁹.

RESULTS

In this study, 37 patients with dermatophytoses who visited hospitals in the holy city of Karbala, aged between 3 to 80 years old, were obtained. The results in Table 1 show that the age group 16-28 was the most susceptible to dermatophytoses infections as the

percentage of this group was 62.16%, followed by the 3-15 age group where the percentage of this age group was 24.33%.

Table 1. The percentage of dermatophytoses men patients numbers according to ages

Age (Year)	Number of Patients	Percentage %
3 – 15	9	24.33
16 – 28	23	62.16
29 – 41	1	2.70
42 – 54	3	8.11
55 – 67	0	0.00
68 – 80	1	2.70
Total	37	100

The results in Figure 1 showed that there was a relationship between the infections of dermatophytoses and blood groups in men. Patients of the blood group O were the most susceptible to dermatophytoses infections with 43.24% of the study sample, followed by patients of blood group B with 32.43%. Patients of blood group A were 16.22%, while AB blood group patients were the lowest with 8.11%.

It should be noted that all the samples studied in this study had Rh positive (100% Rh⁺).

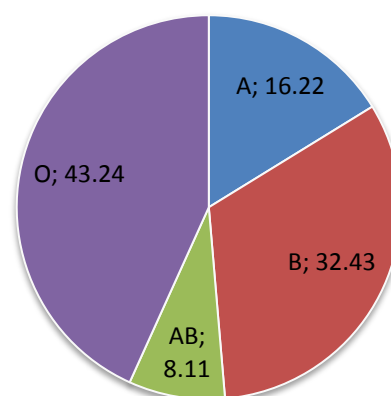


Figure 1. The Percentage of Blood Groups of Dermatophytoses Men Patients.

The results of the statistical analysis in this study showed that the infection of dermatophytosis is associated with the blood groups in men and by using the test of Qi square at the significant level 0.05.

The results showed that there was a significant difference between the clinical manifestations of dermatophytoses and blood groups. The results of the statistical analysis showed that tinea pedis was the most significant relationship with the blood groups, where blood groups B and O were the most affected by this clinical manifestation, followed by tinea capitis also had a significant correlation with the blood group O, as this group is the most vulnerable to this clinical manifestations. The other clinical manifestations showed no significant correlation between them and the blood groups, Table 2.

Table 2. Blood groups of clinical manifestations of dermatophytoses men patients

Clinical manifestation	Blood Group				Total	X ² Calculate
	A	B	AB	O		
Tinea Cruris	0	2	0	2	4	4
Tinea Corporis	0	1	1	1	3	1
Tinea Pedis	2	7	1	6	16	52**
Tinea Capitis	3	0	1	5	9	21**
Tinea Unguium	1	1	0	2	4	2
Tinea Burbae	0	1	0	0	1	3
Total	6	12	3	16	37	11.12**

X² (0.05, 3): 7.815 ; ** refer to significant differences

DISCUSSION

Several researchers have studied the relationship between blood group and dermatophytoses. Through study in Thi-Qar province, the authors investigated the relationship between dermatophytosis and ABO groups through blood typing and identification of isolated dermatophytes on 54 individuals¹⁰, found more frequent in individuals belonging to blood group A. Even through the authors have found higher number of patients belonging to blood group A infected by *T. mentagrophytes*, these results suggest that there is no statistical evidence that these individuals are more susceptible to dermatophytosis¹¹. This results differ of the found by Balajee *et al*¹¹ suggested that individual from group A are more susceptible to dermatophyte fungi infections once they found an increased percentage of patients belonging to this blood group.

This results differ of the found by Balajee *et al*¹¹ found high incidence of dermatophytosis infected individuals belonging to blood group A, and from those 89.9% presented chronic dermatophytosis with persistent lesions for more than five years was found. Similarly Gamborg-Nielson verified higher incidence of individuals belonging to this blood group and infected with the fungus *Trichophyton mentagrophytes*⁵.

Through our study in Karbala city hospitals, we found that men patients of blood group O are the most infected with dermatophytoses. the results of statistical analysis showed that only tinea pedis was the most significant relationship with blood group O. our results differs from the recent results that mentioned above and these may belong to the difference in geographical area and also result from that the number of our cases are fewer and limited to only men.

In another study in Babylon the authors investigated the relationship between superficial mycosis and ABO blood group, though blood typing with identification of isolated dermatophytes. They concluded that *T. mentagrophytes* was isolated from 53.8 % of the patients belonging to blood A, 33.8% of the patients to group O and 15.3 % to group B. *Epidermophyton floccosum* was seen in 23.4% group A, 65 % group O and 13.2% group B. The relationship of cutaneous candidiasis with blood group O was found to be 45.5% ,group A 34.1% ,group B 18.9% and only 1.2 % group AB ,while in pityriasis versicolor, blood group O was found in 74% of the cases, group A in 13.9% ,group B in 10.7% and AB only

found in 1.4 % of the cases. These result suggested that there is statistical evidence that these individuals are more susceptible to superficial mycosis⁶, from this study they found that most of patients with blood group O infected with the fungus *E. Floccosum* in comparison to the current study, we found that most of patients with blood group O infected with *T. pedis*. This difference in result may be belong to the difference in number of cases, that their cases 456 and our cases only 37 patients, and also their study include both sexes (male and female) but in the current study, it limit to men only. As a result, in our study we found that there isn't relationship between infection dermatophytoses and blood groups, except between tinea pedis and blood group O.

In January – June 1996 in primary school children age 6-14 years comprising 4050 boys in Nablus district in the Palestinian area, fourteen primary school located in rural, urban and refugee camp areas were surveyed in this study, seventy five (1.0%) mycological proven cases of tinea capitis were detected. tinea capitis is more in age 6-10 years¹², in our research in 2017 in Karbala hospitals in age 3-80 years in 37 men only 9 from them appear tinea capitis in X² calculate 21 that rang is similar to the source, but the difference can be found in the age only, in the source it was 6 - 10 while in our research 3 - 80 have tinea capitis.

CONCLUSIONS

We can conclude from the current study that male patients of the blood group O are the most infected with dermatophytoses, and that all patients with dermatophytoses are Rh⁺ type. That there is a relationship between infection of dermatophytoses and blood groups, specifically between tinea pedis and blood groups B and O on the one hand, and on the other hand between tinea capitis and blood group O.

RECOMMENDATIONS

We recommend conducting other studies that include hematological parameters more than the parameters studied in the present study, in addition to studying the biochemical and immunological parameters of patients with dermatophytoses infections, and establishing more precise and specialized relationships.

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