ORIGINAL ARTICLE

The Relationship between ABO Blood Groups and Acne Vulgaris

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ABSTRACT

Background and Aim: Studies of associations between various cancers and the ABO blood groups have shown elevated relative risks for some categories of disease. There has so far been no report of an evaluation of the relationship between the ABO blood groups and acne vulgaris. To investigate this association, we conducted a retrospective study of acne vulgaris diagnosed in Turkey.

Material and Methods: All cases were clinically confirmed. Blood information was obtained on 498 individuals with acne vulgaris, and the distribution of ABO and Rh blood type for cases was compared with that of 419 healthy blood donors from the same geographic area.

Results: Patients with group A and B blood groups ratios were higher than the control group, but not statistically significant ($P = 0.325$ and $P = 0.138$). The ratio of the patient group with AB blood group was significantly higher than in the control group ($P < 0.01$). The ratio of blood group O of patient group was significantly lower than in the control group ($P < 0.01$). There were no statistically significant differences between the patient and control groups in the distribution of Rh factor.

Conclusion: Our study showed a significant association of AB and O blood groups with acne vulgaris. Further studies in a larger series on blood group antigens are needed to shed some light on the relationship between these antigens and skin cancer.

Key words: Acne vulgaris, blood, groups

ملخص البحث :

تهدف هذه الدراسة إلى تقصي الارتباط بين فصائل الدم وحالات حب الشباب. قام الباحثون بإجراء دراسة استرجاعية لحالات حب الشباب المؤكدة بإحدى المناطق بتركيا على 341 مريضاً وفصائل الدم ABO و Rhesus مقارنة مع 419 حالة من الأصحاء. أثبتت الدراسة أن نسبة المرضى بفصيلتي A and B كانت أعلى إحصائيا مقارنة مع مجموعة الأصحاء. أما نسبة فصيلة الدم (0) فكانت أقل إحصائيا في مجموعة الأصحاء. ولم توجد فروق إحصائية بين المرضى والأصحاء بالنسبة لفصيلة الدم (RH). وخلصت الدراسة إلى أن هناك فروق إحصائية بين فصائل الدم (ABO) وحالات حب الشباب.

INTRODUCTION

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit. A factor that increases the production of sebum, which is important in the pathogenesis of acne vulgaris, ductal hypercornification, and inflammation is the formation of microorganisms.[1-4] The role of genetic

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susceptibility in the etiopathogenesis of acne vulgaris is unclear, but today's opinion considers the course of acne as genetic.[5,6] In humans, the major blood group antigens are located on the surface of red blood cells and various epithelial cells.

The relationship of cancers with blood groups had been studied in many cancers such as esophagus, cardiac, gastric, lung, laryngeal, hypopharyngeal, salivary gland, gynecologic, colorectal, pancreatic, bone, urinary bladder, ureter, renal, breast, prostate, testicular tumors, and uveal melanoma.[7-11] Some publications have evaluated the relationship between blood groups and skin diseases such as vitiligo, pemphigus vulgaris, discoid lupus erythematosus, oral lichen planus, and skin tumors.[12,13] No publication has been found in the literature that investigates the relationship between ABO blood groups and acne vulgaris. In this study, a retrospective evaluation was performed to determine the relationship between blood groups and acne vulgaris.

MATERIALS AND METHODS

Our study group comprised 498 patients, made up of 341 (68.5%) women and 157 (31.5%) men diagnosed with acne vulgaris, and 419 healthy blood donors in the control group, comprising 303 (72.3%) male and 116 (27.7%) women. Routine blood examination was performed in all patients and controls. Control subjects were selected from healthy people with no history of cardiovascular disease, cancer, chronic degenerative neurologic disease, chronic obstructive pulmonary disease, hepatitis, allergies in general or alcohol abuse.

Blood samples were collected into vacuum tubes containing ethylenediaminetetraacetic acid (Vacutainer, Becton Dickinson, Marseilles, France) from each donor's venous circulation. ABO and Rh blood typing were carried out by the tube method and gel method.

The findings of this study evaluated for statistical analysis and Number Cruncher Statistical System, Statistical Software 2007 and Primary Avionics Software System (Utah, USA) were used. Descriptive statistical methods for evaluating the study data, as well as Student's *t*-test, were used to compare quantitative data between groups. Qualitative comparisons of the data in the Chi-square test and Fisher's exact Chi-square test were used. Statistical significance at $P < 0.05$ level was evaluated.

RESULTS

The mean age of the patients' group was 21.79 ± 6.21. In the control group, the mean age was 53 ± 6.2. The mean age of patients was significantly higher than that of the control group ($P < 0.01$). In the patient group, the proportion of women was statistically significantly higher than males ($P < 0.01$), and in the control group, the ratio of male patients was statistically significantly higher than females ($P < 0.01$). The number of the patients in the A, B, O, AB blood groups were 187 (38%), 99 (20%), 159 (32%), and 53 (10%), respectively. In the control group, A blood groups were 147 (35.1%), 66 (15.7%), 188 (44/9%), and 18 (4.3%), respectively. For the patient group, A and B blood group rate ratios were higher than the control group, but not statistically significant ($P = 0.325$ and $P = 0.138$). For the patient group, the ratio of AB blood group was significantly higher than in the control group ($P < 0.01$).The ratio of blood group O of the patient group was significantly lower than in the control group ($P < 0.01$). There were no statistically significant differences in the distribution of Rh factor between patient and control groups.

DISCUSSION

Acne vulgaris is the most common skin disease in young adults. The major pathogenic factors involved are hyperkeratinization, obstruction of sebaceous follicles resulting from abnormal keratinization of the infundibular epithelium, stimulation of sebaceous gland secretion by androgens, and microbial colonization of pilosebaceous units by *Propionibacterium acnes*, which promotes perifollicular inflammation.[1-4] The etiopathogenesis of acne vulgaris is unclear, but current opinion indicates the possible role of genetic susceptibility.[5,6] The tendency to develop acne runs in families. For example, school-age boys with acne often have other family members with acne. A family history of acne is associated with an earlier occurrence of acne and an increased number of retained acne lesions.[5,6] Some publications have evaluated the relationship between blood groups and skin diseases such as vitiligo, pemphigus vulgaris, discoid lupus erythematosus, oral lichen planus, and skin tumors[12,13] but no publication that assessed the relationship between ABO blood groups and acne vulgaris was found in the literature.

In this study, the ratios of A and B blood groups in the patient group were higher than in the control group, but it was not statistically significant ($P = 0.325$ and $P = 0.138$). In the patient group, the ratio of AB blood

group, was statistically significantly higher than in the control group ($P < 0.01$). The rate of O blood group in the patient group was statistically significantly lower than in the control group ($P < 0.01$).

CONCLUSION

The result of our study shows that the incidence of acne vulgaris was higher in the AB blood group and lower in the blood group O than in the normal population. A, B, H (O) isoantigens are expressed in the stratum corneum, stratum granulosum, the stratum spinosum, acrosyringium, and in the hair follicle keratogenous zones.[14] Particularly, the expression of A and B antigens may contribute follicular hyperkeratinization and etiopathogenesis of acne vulgaris. Further studies on blood group antigens in larger series are needed to elucidate the relationship between blood group antigens and acne vulgaris.

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Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Akhavan A, Bershad S. Topical acne drugs: Review of clinical properties, systemic exposure, and safety. Am J Clin Dermatol 2003;4:473-92.
2. Lee DJ, Van Dyke GS, Kim J. Update on pathogenesis and treatment of acne. Curr Opin Pediatr 2003;15:405-10.
3. Liao DC. Management of acne. J Fam Pract 2003;52:43-51.
4. Letawe C, Boone M, Piérard GE. Digital image analysis of the effect of topically applied linoleic acid on acne microcomedones. Clin Exp Dermatol 1998;23:56-8.
5. Simpson NB, Cunliffe WJ. Disorders of the sebaceous glands. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. Rook's Textbook of Dermatology. Massachusetts: Blackwell Publishing; 2004. p. 43.1-43.75.
6. Zaenglein AL, Thiboutot DM. Acne vulgaris. In: Bolognia JL, Jorizzo JL, Rapini RP, Horn TD, Mascaro JM, Saurat JH, *et al*., editors. Dermatology. Edinburg: Elsevier-Science; 2003. p. 531-44.
7. Anderson DE, Haas C. Blood type A and familial breast cancer. Cancer 1984;54:1845-9.
8. Walker PD, Karnik S, deKernion JB, Pramberg JC. Cell surface blood group antigens in prostatic carcinoma. Am J Clin Pathol 1984;81:503-6.
9. Jager MJ, Völker-Dieben HJ, de Wolff-Rouendaal D, Kakebeeke-Kemme H, D'Amaro J. Possible relation between HLA and ABO type and prognosis of uveal melanoma. Doc Ophthalmol 1992;82:43-7.
10. Olasode OA. Is ABO blood grouping a gene marker for vitiligo? Niger J Med 2002;11:193.
11. Mohan L, Singh G, Kaur P, Pandey SS, Mohan R, Niyogi AK. "ABO blood groups and vitiligo". Indian J Dermatol 1982;27: 60-2.
12. Wasfi AI, Saha N, El Munshid HA, El Sheikh FS, Ahmed MA. Genetic association in vitiligo: ABO, MNSs, Rhesus, Kell and Duffy blood groups. Clin Genet 1980;17:415-7.
13. Tursen U, Tiftik EN, Unal S, Gunduz O, Kaya TI, Camdeviren H, *et al.* Relationship between ABO blood groups and skin cancers. Dermatol Online J 2005;11:44.
14. England DM, Solie B, Winkelmann RK. Isoantigens A, B, H in normal skin and tumors of the epidermal appendages. Arch Pathol Lab Med 1979;103:586-90.