Journal of Analytical & Bioanalytical Techniques

Valentyna, Kravchun, Ashukina, Leontieva, Danyshchuk, et al., J Anal Bioanal Tech 2021, 12:7

Short Communication Open Access

Influence of Bacterial and Fungal Sensitization on Anti-A and Anti-B Absorbing Ability of Erythrocytes

Dielievska Valentyna[1*], Kravchun PG[1], Ashukina NO[2], Leontieva FS[2], Danyshchuk ZN[2]

[1]*Department of Internal Medicine, Kharkiv National Medical University, Kharkiv, Malaya, Ukrain*

[2]*Department of Medical Sciences, Sytenko Institute of Spine and Joint pathology, Kharkiv, Ukrain*

[*]**Corresponding author:** Dielievska Valentyna, Department of Internal Medicine, Kharkiv National Medical University, Kharkiv, Malaya, Ukrain, Tel: +380979402376; E-mail: valentinka_1987@ukr.net

Received date: August 02, 2021; **Accepted date:** August 16, 2021; **Published date:** August 23, 2021

Abstract

To evaluate the role of bacterial and fungal cell-mediated sensitization in anti-A and anti-B absorbing ability of erythrocytes not corresponding to the blood group type. Patients with coxarthrosis and gonarthrosis aged 18- 74 years old were studied. 11 persons with anti-A and anti-B absorbing ability of erythrocytes not corresponding to blood group type and 16 persons with not corresponding to blood group characteristics absorbing ability of erythrocytes were investigated. Leukocyte migration inhibition reaction was used to analyze bacterial and fungal sensitization.

Keywords: Anti-A; Anti-B; Leukocyte

Introduction

Anti-A absorbing ability of erythrocytes was associated with cell-mediated sensitization to Penicillium, *Candida albicans*, *Pseudomonas aeruginosa*, *E. Coli* and not revealed in the case of normalization cell-mediated immune reaction to the mentioned pathogens. In the reaction with the heated specific anti-A antibody with complement at room temperature the diameter of erythrocytes increased more as compared to the reaction without serum and cells without anti-A absorbing ability and absence of anti-A absorbing ability was characterized by the decrease of the size of erythrocytes in the reaction [1]. Anti-B absorbing ability of erythrocytes was characterized by sensitization to *Streptococcus pyogeneus* and humoral sensitization to *Candida albicans*, Staphylococcus aureus, *Staphylococcus epidermalis*.

Description

Bacterial and fungal sensitization is different in the persons with anti-A and anti-B absorbing ability of erythrocytes not corresponding to the blood group type. Diameter of erythrocytes is influenced by the action of specific antibody corresponding to the absorbing ability of erythrocytes. Different from blood group type absorbing ability of erythrocytes is a subject of discussion. More reports of successful incompatible blood group transfusion and discrepancies while blood typing are registered [2].

Recently we have reported about distinctive differences in bacterial and fungal sensitization observed between the persons with anti-A and anti-B absorbing ability of erythrocytes not corresponding to their blood group characteristics. Subsequent examination of the studied persons by the method of absorbtion, leukocyte migration inhibition technique and agglutination with complement at room temperature revealed the presence of sensitization to *Penicillium* while preserved anti-A absorbing activity, whereas sensitization to *Pseudomonas aeruginosa*, *Candida albicans*, *Clebsiella pneumoniae* was successfully treated while the course of the prescribed specific treatment [3].

Interestingly, that normalization of sensitization to *Penicillium* was associated with the lost ability to absorb anti-A antibody. Is this state temporary and dependent on further immunological behavior towards bacterial and fungal pathogens requires further investigation. Importantly, absorbing ability of erythrocytes was associated with the increased erythrocyte's diameter after loading with specific heated anti-A (anti-B) antibody and complement at room temperature [4]. The size of erythrocytes of O blood group type and anti-A absorbing ability was measured as 5.8 μm in 0.9% NaCl and 6.1-6.8 μm with heated anti-A; or 5.8-7.3 μm in 0.9% NaCl and 5.6-9.1 μm with the heated anti-A. Whereas diameter of O erythrocytes without anti-A and anti-B absorbing ability did not change after the contact with the heated anti-B antibody: 4.8-8.0 μm in 0.9% NaCl and 4.4-8.0 μm with the heated anti-B and 4.7-6.3 μm with the heated anti-A. The size of A erythrocytes with anti-B absorbing ability in 0.9% NaCl was registered 5.9-7.4 μm and 6.2-8.4 μm after the contact with the heated anti-B, whereas the diameter of erythrocytes without anti-B absorbing ability: 3.7-4.7 μm. The size of B erythrocytes with anti-A antibody absorbing ability: 5.1-5.7 μm in 0.9% NaCl and 6.5-7.0 μm after the reaction with the heated anti-A. Importantly, after normalization of leukocyte migration to *Penicillium* (migration index 0.88) anti-A absorbing ability of the person was not revealed and diameter of erythrocytes in 0.9% NaCl was measured 5.4-6.4 μm and did not increase after the reaction with the heated anti-A: 4.7-6.2 μm.

The size of erythrocytes was not increased after the contact of A erythrocytes with anti-B absorbing ability and the heated serum without anti-A and anti-B antibodies: 4.6, 5.3 μm (negative control). The same increase of A erythrocyte size was observed after the reaction with specific antibody: 5.0-5.4 μm in 0.9% NaCl and 7.4, 8.0 μm with the heated anti-A antibody. Erythrocytes after loading with antibody obtained from elution; the heated anti-A serum attached to O erythrocytes with anti-A and anti-B absorbing ability showed size

6.4-7.6 μm and B erythrocytes with the heated antibody obtained from elution of diluted with 0.9% NaCl anti-B and O erythrocytes with anti-A and anti-B absorbing ability at room temperature: 4.4-5.6 μm. Elution of the antibody after the contact of the studied erythrocytes with fenbendazole and anti-A showed size of A erythrocytes 5.2-6.0 μm and the similar reaction with B erythrocytes and eluted anti-B from O erythrocytes being treated with fenbendazole: 4.8-6.4 μm [5].

Normalization of leukocyte migration to *Pseudomonas aeruginosa*, *Penicillium*, *Candida albicans* of a person with earlier registered anti-A absorbing ability was associated with the absence of anti-A absorbing ability as well as with absence of diameter increase of erythrocytes after the contact of the heated anti-A and complement: 7.0-9.4 μm in 0.9% NaCl and 4.7-8.2 μm with the heated anti-A antibody and might be the result of pathogen influence according to the bacterial mimicry with ABH antigens.

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