NATURAL IMMUNITY AND ALLERGY. A STUDY OF SERUM LYSOZYME IN ALLERGIC PATIENTS

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The mechanism of allergic diseases is still scarcely clarified, but there is sufficient reason to assume that it is based on antigen-antibody reaction. Not a single symptom or syndrome exists that is endowed with the value of a definitive proof for the allergic genesis of a given disease (V. Hadorn — 1969). In discussing various allergic reactions, it becomes evident that they differ from each other essentially by clinical course and manifestation (M. Werner et al — 1968). Since antigen-antibody interaction underlies the mechanism in all similar reactions (A. D. Ado — 1970), the phenomenon could be reasonably considered as an immunologic one. Nowadays, it is accepted that the allergic state is one of the phases of a complex biological process, occurring and forming in the course of immunity development (V. D. Timakov — 1973). In all diseases with an allergic genesis, the generalization of clinical data past history, clinical course, paraclinical and allergic (in vitro) studies is essential for the diagnosis (A. Astrug — 1974). The immunologic tests for elucidating some of the allergic reactions, in vitro, are classified in two large groups: serologic and cytologic (V. Valchanov, R. Popivanov — 1972). Such reactions demonstrate the formation of antigen-antibody complex, or the presence of antibodies in the patient's serum and cells (F. Austen, E. Becker — 1971). Reference was already made to the mutual relationship between immunity and allergy. However, the problem of natural immunity in the listed conditions is quite different. It is well known that its factors undergo modifications in practically any morbid condition, and more particularly, one of its basic factors — the lysozyme (E. Maron, B. Bonavida — 1971; K. Metodiev — 1976 a and 1976 b and many others). The protective action of lysozyme is very clearly manifested in the immunity of conjunctiva and cornea, oral cavity, pharynx, nose, sinuses and upper airways. In this context, the purpose of this work is to establish the changes in blood serum lysozyme values of patients with affections mainly localized in the listed above parts of the human organism (allergic rhinitis, sinusitis, bronchitis and bronchial asthma).

Material and methods

The study covers a total of 76 patients with allergic rhinitis (19—25.0 per cent), allergic sinusitis (12—15.8 per cent), allergic bronchitis (27—35.5 per cent) and bronchial asthma (18—23.7 per cent). Blood was taken from each patient in the aliergologic office of the faculty polyclinic — Varna, while lysozyme quantity was determined in the Chair of Microbiology and Virology of the Medical Faculty — Varna. The quantitative method of F. Elliott (1966), as modified by Zucker (1970) was used. The results of lysozyme value determinations in biological fluids of healthy individuals served as controls (K. Me-

todiev — 1976 c). No statistical difference in the results of the investigated men and women was established. The same holds true for the age of the subjects under study: mean age 21.4 years (the youngest 17.2, and the oldest — 38.6 years).

Results and discussion

The results of quantitative lysozyme determinations in the serum of patients are expressed in mcg/ml or gamma. The mean lysozyme amount in the serum of the subjects from the various groups is the following: allergic sinusitis patients — 9.7 mcg/ml; allergic rhinitis patients — 10.9 mcg/ml; allergic bronchitis patients — 13.1 mcg/ml, and bronchial asthma patients (in paroxysm) — 14.8 mcg/ml. These values are a substantially higher than lysozyme values in the serum of healthy persons — averaging 6.2 mcg/ml in a total of 185 investigated individuals. Expressed in percentages, the rise of values ranges from 100 per cent among healthy cases to 156.6 per cent among those with allergic sinusitis, to 176 per cent in patients with allergic rhinitis, 211.3 per cent in patients with allergic bronchitis, and up to 240 per cent among bronchial asthma patients. It becomes evident from the results submitted that against the background of an overall increase in the serum lysozyme amount of patients, in those with allergic sinusitis it is lower, showing a gradual rise in allergic rhinitis and bronchitis and reaching maximum values, among patients with bronchial asthma, examined during paroxysm. The changes in lysozyme values outlined comply with those in paraclinical indicators and allergic tests in this particular group of affections. It was already pointed out above that in diseases with allergic genesis, the generalization and analysis of clinical data, past history, clinical course, paralinical and allergic tests have an essential practical bearing on diagnosing. In the described investigation of patients with changes involving mainly the area of the oral, nasal and sinus cavities, as well as the upper airways, the ascending gradation of serum lysozyme values in the separate groups is impressive. This is explained precisely by the analysis and generalization of the mentioned above parameters. It is well known that allergic sinusitis runs a mild course as compared to allergic rhinitis, irrespective of the fact that the anatomical closeness and mutual relations between sinus and nasal cavity very often result in a secondary focus within the sinuses, respectively the nose. The changes in allergic bronchitis and bronchial asthma are discussed under analogical aspects. As yet, allergic bronchitis is not recognized as an independent disease entity by all clinicists since it occupies an interim position between bronchospasm and chronic bronchitis and emphysema, on the one hand, and bronchial asthma, on the other. However, there is no doubt that spastic bronchitis (the so-called allergic bronchitis) represents an early stage of bronchial asthma development, with certain exceptions, especially in childhood. Both in chronic allergic bronchitis, and in bronchial asthma, where it is much more

Table 1

Type of affection	Lysozyme	%
Bronchial asthma	14,8	240
Allergic bronchitis	13,1	211,3
Allergic rhinitis	10,9	176
Allergic sinusitis	9,7	156,5
Healthy persons	6,2	100

pronounced, as the result of allergic reaction chemical mediators are released (histamine, SRS-A, bradykinin, ELHF-A), outlining the symptomatics and course of the disease, along with various pathological variations on behalf of other organs and systems. Evidently, the listed above conditions demand an increase in the serum lysozyme quantity of patients, an increase which is in compliance with the changes in a number of other indicators, characteristic of the same diseases. Therefore, we feel that serum lysozyme assay in patients with a variety of allergic diseases would definitely contribute to the prompt and more precise diagnosis of conditions produced by allergic reaction.

Conclusions

1. Lysozyme quantity in the serum of patients with allergic diseases is greater than in the serum of healthy individuals.

2. Patients with bronchial asthma display the highest increase in serum lysozyme values, next ranking patients with allergic bronchitis, rhinitis and sinusitis.

3. The gradation of changes in serum lysozyme quantity among patients from the various groups corresponds to the changes established by other investigations, as well as to the clinical course, severity and prognosis of the disease.

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ЕСТЕСТВЕННЫЙ ИММУНИТЕТ И АЛЛЕРГИЯ. ИССЛЕДОВАНИЕ ЛИЗОЗИМА В СЫВОРОТКЕ КРОВИ БОЛЬНЫХ АЛЛЕРГИЧЕСКИМИ ЗАБОЛЕВАНИЯМИ

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РЕЗЮМЕ

Исследованы 76 больных различными аллергическими заболяваниями аллергическими ринитами — 19 (25%), аллергическими синуитами — 12 (15,8%), аллергическими бронхитами — 27 (35,5%) и бронхиальной астмой — 18 (23,7%). У каждого больного определялось количество лизозима в сыворотке крови. В виде контролей служили результаты количественного определения лизозима в биологических жидкостях 185 здоровых лиц. У всех исследованных количество лизозима было выше нормального. В сравнении со 100% у здоровых людей (6,2 мкг/мл), лизозим увеличивался до 156,5% у больных аллергическими синуитами (9,7 мкг/мл), до 176% у больных аллергическими ринитами (10,9 мкг/мл), до 211,3% у больных аллергическими бронхитами (13,1 мкг/мл) и до 240% у больных бронхиальной астмой (14,8 мкг/мл).

Была обсуждана возможность предложить количественное определение лизозима в сыворотке крови больных алерргическими заболеваниями как параклинический метод исследования, вместе с остальными клиническими, параклиническими и аллергологическими параметрами.