

THE BLOOD MUCOPROTEINS' LEVEL IN DECOMPENSATED RHEUMATIC HEART DISEASES

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Blood mucoprotein level is a sensitive index for the activity of rheumatic process (1, 3, 4, 6, 11, 12, 13, 15, 16, 17, 20, 25, 26, 27, 28, 30). However, the problem concerning the importance of these indices in decompensated rheumatic heart diseases is not adequately clarified in literature. According to some authors, their values are dimmed in decompensation in a much lesser degree than those of other indices for the activity of rheumatic process (4, 6, 13, 24, 25). Others state that the level of mucoproteins in decompensation is more frequently increased as compared to compensated heart affections (29). A third group of investigators (11) are of the opinion that in advanced stages of cardiac insufficiency, these values are more readily dimmed and in a higher degree in comparison with the values of other indices.

The goal of the present work is to verify the diagnostical significance of mucoprotein tests as index for the activity of the rheumatic process in decompensated heart diseases, making furthermore an attempt to analyse the characteristic features established.

Material and method

A total of 114 patients were studied with rheumatic heart diseases, treated at the therapeutical clinic — Higher Medical Institute — Sofia and at the internal clinic — Higher Medical Institute — Varna, of which 36 were 1st degree decompensation, 30 — 2nd-A degree, 16 — 2nd-B degree and 32 — 3rd degree. The mucoprotein values were evaluated with the diphenylamine test (DPHA) and the mucoprotein-tyrosine test of Winzler (MPT), modification 1948. The normative values of both tests, established on 40 clinically healthy individuals, are the following: for DPHA — 196,4 ± 47,4 U, for MPT — 2,51—0,41 mg%. Besides the mucoprotein tests, ESR flocculation test, total protein and protein fractions, leukocytes determination and differential count were also performed.

Results

The results of the investigations carried out on mucoproteins and flocculations tests are illustrated in table 1.

Table 1

Rheum. heart diseases	No evidence for activity	With evidence for activity	MPT	DPHA	W	ML
Decomp. 1st degr.	6	30	3.1 5.27 σ 5.27 m 0.95	198.33 301 σ 50.26 m 9.17	5	27
Decomp. 2nd-A degr.	10	20	2.9 5.11 σ 2.63 m 0.58	214 298 σ 55.51 m 13.10	5.8	34.4
Decomp. 2nd-B degr.	5	11 11	2.64 5.34 σ 3.64 m 1.09	212 308 σ 81.7 m 24.63	6.4	35.6
Decomp. 3rd degr.	4	28	2.8 3.54 σ 0.77 m 0.14	223 267 σ 42.68 m 8.06	7.1	45

It is obvious from the table, that in patients without evidence for active rheumocarditis the values of MPT and DPHA tests are almost levelled towards the upper limit of the normal for all groups.

In the series with evidence for activity of the rheumatic process, the increased above the normative mean values display a tendency towards lowering within the limits slightly above the normative only in the patients of 3rd degree decompensation. The difference observed in comparison with the values of preceding groups is statistically reliable. In this group the difference in the mean values of the mucoproteins between patients with evidence for active rheumocarditis and patients with no such evidence is as well substantially decreased as compared with the same values of the former groups. Thus, in patients with 2nd degree decompensation and clinical evidence for active rheumocarditis, a considerable inertness occurs in mucoprotein motility, which becomes apparent also when the values of square deviation are considered.

Provided the effect of treatment of patients with 1st and 2nd-A degree decompensation is favourable, the mucoprotein level exhibits a descending course. Normalization of the values of the different indices is effected in the following order: firstly the ESR is normalized, next the mucoprotein level (in the majority of instances DPHA is the first) and lastly, those of the protein fractions. In severe forms of rheumocarditis, with scarce susceptibility to treatment, this level shows a wavy course.

In patients with 2nd-B and 3rd degree decompensation, the said course is much more variable. Apart from the two types herein described, in one third of the instances, initially normal and slightly elevated values are observed which increase parallel with reducing the degree of decompensation under the effect of treatment. This pattern of the course (with clearing

up) is noted chiefly among patients with pronounced rightside decompensation — severe cyanosis, enlargement of the liver and eventually cardiac cirrhosis. In 5 patients with similar type of decompensation, the mucoprotein values were retained within subnormal limits during repeatedly carried out investigations. In these patients the course of the disease was very severe with insignificant response to management.

In three cases a gradual decrease was established of the values initially situated in the close vicinity to the upper normative limits.

In 11 patients with 2nd-B and 3rd degree decompensation, very high mucoprotein values were detected. In two of them heavy pancarditis was disclosed, in 4 — bronchopneumonia, in 2 — thrombophlebitis and in 3 — subacute bacterial endocarditis.

The relationship between the values of the flocculation tests and mucoprotein level is demonstrated in table 1. It becomes apparent from the latter, that the mean values of these indices are inversely proportional. In single cases this interdependence however, is not invariably present.

Discussion

It is evident from our investigations that in heart diseases with 1st and 2nd degree decompensation, the mucoprotein values exhibit a parallel course with the activity of the inflammatory process. Merely in patients of 3rd degree decompensation this reaction appears to be slower and more weakly manifested in values fluctuating within a range slightly beneath or above the upper limit of the normal. In one third of the patients with 2nd-B and 3rd degree decompensation clearing up is established under the effect of the treatment performed, of values, with initial orientation towards the upper limit of the normative or slightly above it. Thus, for the presence of rheumocarditis in patients with advanced stage of heart decompensation, we have available the evidence of increased, though insignificantly, mucoprotein values, as well as the presence of a dynamic pattern directed towards deveiling (clearing up) or reduction of values, previously (found) towards the upper limit of the normative. The maintaining of these values within subnormal limits in the absence of a dynamic tendency assumes a very important prognostical significance.

The cause of reduced response on the part of the mucoproteins observed with more advanced degrees of heart decompensation is due, according to numerous authors (7, 8, 14, 19, 21, 23) to inhibition of the functional activity of the liver, wherein the larger part of the mucoproteins are produced. Our data support this statement, as the more substantial decrease, with or without clearing up of the test values, is parallel to the positivation of flocculation tests and is more frequently marked in rightsided decompensation with heavy cyanosis and enlargement of the liver. The functional state of the adrenal cortex (according to 11,23) has an essential bearing on mucoprotein synthesis. The glucocorticoid function of the latter (adrenal cortex) is attenuated parallel to the development of heart decompensation, particularly the rightside one (2, 9, 10).

It is further necessary to draw the attention to another fact of unquestionable importance for the low response of mucoproteins — the produc-

tive characteristics of the inflammatory process in these instances, exhibiting an inclination for a latent course. The considerable increase of the mucoproteins' level observed in acute inflammatory process — pancarditis, thrombophlebitis, infarction etc., occurs provided the functional state of the liver and adrenals is not seriously disturbed. The lack of reaction on the part of mucoproteins, as well as the presence of a permanent low level is indicative for serious disorders in these functions and assumes an important prognostical significance. Hence, the level of the mucoproteins could serve as an index for the reactivity of the organism.

Inferences

The mucoproteins' level is one of the most sensitive indices for the activity of rheumatic process and in decompensation heart diseases. In instances of advanced degree of decompensation, an inhibition of the mucoprotein reaction takes place, which is not invariably indicative for dimming, as clearing up is observed in one third of the cases only. Certain characteristic features were also established, on which the literature survey offers none at all or insufficient data:

Severer inhibition of the values reported is observed in patients with pronounced rightside decompensation, whereas cardiac hepatic cirrhosis does not exert invariably an influence worth of mentioning.

The reaction pattern of the mucoproteins as well assumes prognostical significance as it reflects the reactivity of the organism.

The normative values concerning the level of mucoproteins in advanced stages of decompensation are not valid. The presence of dynamics under the effect of treatment is of utmost importance.

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УРОВЕНЬ МУКОПРОТЕИНОВ КРОВИ У ДЕКОМПЕНСИРОВАННЫХ СЕРДЕЧНЫХ БОЛЬНЫХ

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РЕЗЮМЕ

Прослежен уровень мукопротеинов крови у 114 больных с ревматическими сердечными пороками в различной степени декомпенсации. Статистически достоверная разница в их уровне устанавливается только у больных с III ст. декомпенсации, а это показывает, что с нарастанием декомпенсации наступает значительное угнетение их реакции. Это угнетение проявляется сильнее при правосторонней декомпенсации. Обсуждаются причины этих особенностей, а также и прогностическое значение реакции на мукопротеины.