THE INFLUENCE OF IMMUNOGLOBULIN A ON THE MICROCIRCULATION AND CONDITION OF HAEMOSTASIS WHILE THE ALLERGIC VASCULITIS

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While the examination of condition of platelet-vascular haemostasis within patients with allergic vasculitis there was stated that there is prevail the condition of hypercirculation, the basic pathogenetic fact of which is considerable decrease of anticoagulant properties, reduction in thrombin time and within the majority of patients there was observed the depression of fibrinolytic system. There also occurs massive thrombosing of microcirculation and serous impregnation of vessel wall and perivascular tissue under the influence of circulating immune complexes.

Keywords: allergic vasculitis, immunoglobulin A, haemostasis, microcirculation

Pathological manifestations of allergic vasculitis is based on inflammatory reaction of arterioles and vessels of the skin with an abnormality of structure and function of endothelium of blood vessels.

Allergic vasculitis is very varied by its origin (aetiology of them is unknown, predisposing factors and provoking moments are numerous), but they combine with generality of pathogenetic mechanisms, the base of which consists of immune-pathogenetic changes, which are connected with the allergic reactions of immediate and slow type [1]. The reason of allergization of organism while this can be such infavourable factors as: hyperinsolation, penetrating radiation, industrial dust, long focal infection, side effect of drugs etc [1, 2, 3].

Within the majority of patients while the examination of blood there are revealed the abnormalities, which testify to the presence of inflammation: increase of ESR, the level of fibrinogen, the content of α_2-globulins, the C-reactive protein, but there are absent the specific changes while the haemorrhagic vasculitis. Skin rash in the form of small haemorrhages with the histopathologic feature of vasculitis of vessels of skin microvasculator are character for the allergic vasculitis [1, 4, 5, 6, 7]. This research is dedicated to the examination of system of haemostasis while the haemorrhagic vasculitides.

Material and methods of research

The research of haemostasis was based on clinically-laboratory examination of 226 sick people with vasculitis and 20 practically healthy people of comparable age.

The definition of fibrinolytic activity of euglobulin clot by Kowarzik, Buluck

The principle of method is based on the deposition in the acid environment and low temperature of euglobulin faction, which contains factors of blood coagulation and fibrinolysis. The method is based on works of Milston, Macfarlane and Biggs, which have showed that plasminogen is the main component of euglobulin faction. Received sediment of euglobulin dissolves, fibrinogen transforms into fibrin. Time from the moment of clot formation till its dissolution expresses the fibrinolytic activity of examined blood.

The definition of aggregation activity of platelets

The aggregation of platelets was defined with the classical method of Born (1963), on the optical aggregometer «Chromolog» (USA). Tests of venous blood from the ulnar vein were taken to the plastic test tubes, the blood was stabilized with 3,8 % solution of sodium citrate in relation blood-anticoagulant 9:1.

The definition of antiaggregation activity of vessel wall

Equipment and reactives. 3,8% solution of sodium citrate, adenosine diphosphoric acid (ADP), plastic syringes or covered with silicone with the capacity of 5, 10 ml, tonometerfor measuring of arterial pressure, apparatus for measuring the aggregation of platelets, test tubes, pipettes with the capacity of 0,1; 0,2; 1 ml, centrifuge with cooling.

The index of antiaggregation activity of vessel wall is defined by the formula: aggregation of platelets in plasma, which is poor with platelets and received before the vein stagnation/aggregation of platelets in plasma, which is poor with the platelets and received after the vein stagnation.

Received results and their discussing

We have carried out the definition of level of circulating immune complexes within 226 patients with allergic vasculitis. This research was carried out from the supposition, that within sick people with allergic vasculitis, there occurs massive thrombosing of microcirculation and serous impregnation of vessel wall and perivascular tissue under the influence of circulating immune complexes. We have revealed that while the allergic vasculitis there is increased the value of immunoglobulin A (exceeds normal showings 2,5–3 times), which prevails in the composition of immune complexes and revealed in the type of granule while the microscopy of biopsy material of skin and kidneys.

The reason of forming of immune complexes can be the infection. Taking of medicines, change of protein composition of plas-

ma. The structural changes of vessel wall and abnormality of collagen synthesis lead to the contact stimulation of platelets and provoke micro thrombosing. The localization and evidence of clinical revelations is defined by zone and massiveness of vessel lesions.

Telangiectatic haemorrhages are pathogenetically connected with inferiority or structural change of connecting tissue, decrease of collagen content in the vessel wall, which lead to the focal thinning of the walls of microvessels and widening of their lumens, and inferiority of local haemostasis in connection with unsufficiency of subendothelium.

At the pathogenesis of hemorrhagic diathesis while the paraproteinemia the main role is played by increased content of protein in plasma, sharp increase of blood viscosity, slowdown of blood flow, thrombogenesis, stasis and damage of small vessels. Besides, «wrapping» of platelets with muff of protein leads to their functional inferiority.

Within 226 patients with allergic vasculitis (100 of patients of 1 group and 126 patients of 2 group) while the admission there were examined some indicators of haemostasis, particularly ADP-induced aggregation of platelets (AAS), fibrinolytical activity of euglobulin clot (FAEC), the factor of Willebrand (fW), antiaggregational activity of vessel wall (AAVW).

The quantitative definition of content of the factor of Willebrand in plasma. Its level while the allergic vasculitis naturally increases 2,5 times, and the degree of increase corresponds the severity and prevalence of lesions of microvessels, especially if we take into consideration that endothelium is the only place of factor Willebrand synthesis.

At the sharp phase of allergic vasculitis there is revealed the considerable worsening of all the indicators of haemostasis and, first of all of endothelial dependent.

Within patients with allergic vasculitis there were revealed considerable changes of studied indicators. The level of ADP of induces aggregation of platelets in the 1 group was increased till 3,47 ± 0,10 micromole/ADP and in the second group till 4,80 ± 0,14 micromole/ADP. Therefore, the level of aggregation of platelets in the 2 group to 27,7% above the showings of 1 group ($P < 0,001$) and to 54,2% above the facts of control group ($P < 0,001$). In the control group the level of AAS in average was 2,20 ± 0,10%. The maximal aggregation activity of platelets was noticed in the group of patients with more severe course of stroke.

The research of AAVW within patients with allergic vasculitis in the most sharp period of disease has revealed its decrease within sick people of 1 group till 0,96 ± 0,03 c.e. The lowest AAVW was noticed in 2 group, which was in average 0,71 ± 0,05 c.e. In the control group AAVW was 1,25 ± 0,04 c.e. AAVW in 2 group to 26,0% lower than the showings of 1 group ($P < 0,001$) and to 43,2% lower than the level of the control group ($P < 0,001$).

Within patients of 1 group the FAEC was in average depressed till 184,5 ± 1,2 min and within patients of 2 group till 219,7 ± 1,6 min. Thereby, within patients of 2 group there is defined the depressing of fibrinolytic activity 19,1%, than within patients of 1 group ($P < 0,001$) and to 51,5% lower the level of control group ($P < 0,001$). The level of FAEC in the control group in average was 145,0 ± 1,8 min.

Thereby within patients with allergic vasculitis there is observed the high content of Willebrand factor at the background of lowered antiaggregational activity of endothelial wall and decreased fibrinolytic activity of blood, and also there is revealed the increase of showings of platelets aggregation. It testifies to the direct connection of endothelial disfunction and abnormalities of haemostasis, what is one of the basic factors of appearance of allergic vasculitis.

Thereby, it should be taken into consideration that examined abnormalities of haemostasis, strengthening of thrombogenic activity and decrease of fibrinolytic activity of blood, can exist rather long time latently, will be rather lomg compensated by the thrombogenig potential of vessel system. Their realization requires some push, particularly AH, which leads to the disbalance of thrombocyte-endothelial interactions, and the londer disease is the more rough the abnormality of haemostasis and more heavy the course and outcome of allergic vasculitis.

In the haemostasiogramm there prevails the condition of hypercoagulation, the main pathogenic fact of which is considerable lowering of anticoagulant behavior, shortening of thrombine time.

Besides, there are observed initial signs of coagulopathy, to which there testifies the hypercirculation at the first phase of time shortening of blood coagulation by Li – White.

Conclusion

1. Within patients with allergic vasculitis, there occurs the massive thrombosing of microcirculation and serous impregnation of vessel wall and perivascular tissue under the influence of circulating immune complexes.

2. The research of condition of haemostasis within patients with allergic vasculitis showed, that there observed the depression of fibrinolytic system: low percent of spontaneous fibri-

nolysis, and also considerable increase of density of blood clot.

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