

SUMMARY OF THE PLENARY LECTURE

BIORHEOLOGY AND THE PRACTICE OF MEDICINE

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Biorheological disturbances in the human organism which can be looked at as a disease are applying for example to abnormalities of bronchial mucus or to other specific fluids produced by several organs - not to mention the many more or less solid constituents of the body with their very different rheological qualities. The most important role in this respect is played by the blood - vessel wall organ.

For diagnostic reasons the blood as one part of this organ is easy of access. The vessels, especially the microcirculation, often can be assessed only indirectly. Therefore measurement of fluidity of blood and its components considerably has been extended. Its unique results generally are not sufficient for a comprehensive diagnostic definition. The valence of disturbed fluidity of blood in the sense of a disease can only be judged if the clinical background is known. A laboratory screening of fluidity in this sense can only discover a risk, but it will not furnish a diagnosis. A diagnostic and likewise a therapeutic disposition therefore only will be possible, if, except from specifications of blood fluidity, there are enough facts or clinical evidence available about the situation of microcirculation.

The probability for a disease primarily appointed hemorheologically will be the highest, if microcirculation in its most sensitive reaction on disturbances of fluidity is not functioning correctly. Nearly always there are feed-back mechanisms included insofar as disturbances of fluidity are impairing the function of microcirculation. An impaired function of microcirculation,

for example in types of autonomous obliteration, conversely acts upon fluidity of blood, for example by increasing the hematocrit in the sense of autoprogression. The small vessel disease in diabetes mellitus is presenting similar findings. In addition consistent biochemical changes coincidentally will be followed by increased aggregability and/or rigidity of red cells, enhancing the vicious circle. Increased friction of rigid red cells may destroy many platelets at the endothelial lining of the capillary, some kind of an ideal activation of clotting process, possibly with joining fibrin production.

Starting point for therapy of biorheological disorders is their aetiological and pathogenetical background. For the overwhelming disorders of the system blood - vessel wall the greatest part of therapy is directed to the underlying diseases. In addition the measure of hemodilution or sometimes reduction of fibrinogen level by snake venom has become important, though this is more or less a symptomatic treatment. Another therapy is plasmapheresis which sometimes for months may cause a regression of the underlying immunological process.

A further therapeutical action is to influence the behavior of red cells by different pharmacological substances. This may partly preserve platelets by reducing the rubbing effect of rigid red cells.

A special protection from platelet activation seems to be an efficient measure in many (small-) vessel diseases, though not always extent, mechanism and statistical significance of the drugs effect has been clarified.

Especially in small vessel diseases with trophical tissue damage physical as well as nursing measures are of great importance. They often can furnish an indispensable additional treatment for recovery of the supplying circulation and consequently revival of viable tissue.