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THE HAEMORHEOLOGICAL IMPACT OF DRUGS : CONTROVERSIAL INTRODUCTION

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At the Second International Conference on Clinical Hemorheology, held in London in September 1981, a panel session was held on pharmacological approaches.

Some of the communications presented are printed in this issue.

Controversy is the key word in this field, since August the 2nd, 1845, when Rudolph Virchow only aged 23 gave his revolutionary lecture. In this speech, and in his later publications (1) Virchow set down his classical triad of thrombogenesis factors : vessel wall, coagulability, stasis.

- Concerning impact of drugs on vessel wall Papaverine was synthesized for the first time (2) in 1909, and this opened the era of vasodilation. But Kontos has shown that ischemia per se induces maximum vasodilation (3), and that the agent for this is increased local pCO<sub>2</sub> (4). Paul M. Vanhoutte will discuss haemorheological reasons for using drugs acting on vascular smooth muscle. It must also be remembered that alterations in endothelial cells may play a part in the parietal induction of thrombogenesis (5).

- Concerning impact of drugs on "coagulation" : anticoagulants are used since World War II. Crafoord (6) introduced Heparin in patients in 1939, eighteen years after the discovery of the drug, in the modern indication of prevention of post-operative thrombosis. Bingham (7) used a coumarin derivative for the first time in 1941, in a patient with advanced malignancy and a peptic ulcer ! Strangely enough their action on a crucial element of coagulation control, anti-thrombin III, is absolutely opposite (8, 9). It is only recently that firm proof of the efficacy of coumarin derivatives in long term survival after myocardial infarction has been obtained (10). However it must be noted that fibrinolytics might also have some efficacy. This has also been demonstrated after myocardial infarction (11) and it is interesting to take into consideration the fact that many drugs can enhance fibrinolytic activity, such as (12) furosemide, biguanides, non steroid anti-inflammatories, and certain beta-blocking agents (13). Antiplatelet therapy has certainly led to tremendous enthusiasm, and to gigantic controlled trials (14).

KEY WORDS: Hemorheology, Drugs, Coagulation and Stasis.

Aspirin is effective in reducing stroke and death in patients with transient cerebral ischemia. These topics are reviewed by J.F. Stoltz.

- Concerning impact of therapy on stasis, it is known since many years that the greatest killer of patients is often bed-rest itself. Kinesitherapy might be the greatest haemorheological agent of all. However reduced red cell deformability might not be influenced by this, and seems to be a common disturbance induced by vascular risk factors such as high blood pressure, overweight and smoking (15), diabetes (16). It is the only haemorheological disturbance that has been shown to be proportional to the severity of vascular impairment (17). Certain drugs have a favorable influence on red cell deformability usually measured by microsieving. This topic is discussed by A.M. Ehrly.

A comment from Y.C. Fung (18) seems adequate to conclude this introductory comment :

"The population of red blood cells in each of us is larger than the total population of people in the world. In the world each of us is insignificant. But in our own houses, and in our own gardens and local communities, we decide how things should go. The same is with microcirculation. The individual red cells decide how blood should flow".

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