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Rheological Aspects of Plasmapheresis

PREFACE

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Plasmapheresis is gaining increasing significance as a therapy of diseases in which abnormal blood rheology has been established. Following the classical indications for therapy of "hyperviscosity syndromes" such as M. Waldenstroem and Multiple Myeloma, diseases with more subtle rheological abnormalities (e.g. rheumatoid arthritis, cryoglobulinemia, systemic sclerosis and hyperlipoproteinemia) have recently been treated successfully by plasma exchange. The therapeutic success provides pathogenetic clues "ex juvantibus": in other words, it suggests that hitherto unrecognized microcirculatory and/or hemorheological factors might determine the course or severity of such diseases. The procedure of plasma separation itself is heavily influenced by hemorheological factors, i.e. by flow abnormalities of the normal and/or the pathologically altered blood. Phenomena such as phase separation between plasma and cells, filtration polarization, blood cell deposition and blood cell damage in plasma separation devices have been described.

The present symposium, to the best of our knowledge the first of its kind, has been organized to establish interdisciplinary exchange of ideas between engineers and designers who attempt to understand (and hopefully improve) the processes of plasma separation extra vivum, with the physicians who apply these procedures to patients. There is a strong likelihood that these two groups of researchers are dealing with problems that have a common nature, namely the consequences of "abnormal flow behavior" of the blood, which exists already in healthy blood, but which may well be accentuated in disease states.

I wish to thank the moderators of this symposium, Prof. E.F. Leonard, Columbia University, New York (representing the engineering side of plasmapheresis) and Prof. H.G. Sieberth, RWTH-Klinikum Aachen (representing the medical side) for their help in organizing and moderating this symposium, and also for their help as guest editors of the special issue of CLINICAL HEMORHEOLOGY, which will print the proceedings. Furthermore, I wish to thank the participants, and last not least the editors-in chief of CLINICAL HEMORHEOLOGY (Prof. A.L. Copley and Prof. S. Witte) for their kind offer to publish this symposium in CLINICAL HEMORHEOLOGY.