Polymethylmethacrylate. A Flexible Membrane for a Tailored Dialysis
Polymethylmethacrylate
A Flexible Membrane for a Tailored Dialysis

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Preface

The present volume of Contributions to Nephrology is aimed at offering a comprehensive review of the many aspects of polymethylmethacrylate (PMMA) dialysis membranes, and describes in detail the biophysical properties of this membrane, its chemical structure and the manufacturing procedures aimed at obtaining hollow fibers suitable for medical purposes. Different mixtures of polymer and solvent lead to membranes with the same chemical composition but different diffusive characteristics and variable hydraulic permeability. Various experimental conditions are considered in order to identify the dialytic properties of the PMMA membrane and dialyzer series.

In particular, the last generation of PMMA membranes with higher porosity and ultrafiltration capacity is evaluated in relation to the newer potential to remove middle- to large-molecular-weight solutes. Various clinical conditions are reported in which PMMA membranes are utilized at variable rates of ultrafiltration, blood and dialysate flows. The biocompatibility or the hemocompatibility of PMMA membranes are investigated with a series of tests that offer a summary of the blood-membrane interactions during hemodialysis. The importance of these aspects in relation to the chronic dialyzed patient and the acutely ill patient is also described. Finally, the long-term experience gained with various PMMA membranes is reported by different groups.

In conclusion, a group of well-known experts in the field of hemodialysis have contributed to this book in an attempt to achieve a comprehensive review of the aspects related to the PMMA membrane, a summary of the most recent experimental and clinical results, and an overview of future potentials and new trends in research.

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