Introduction

The world of intensive care and more specifically the area of critical care nephrology are undergoing a series of changes that largely depend on the application of new technologies. Patients are severely ill with multiple organ dysfunction, and a common denominator is often sepsis. The new definition of this complex syndrome includes organ dysfunction as part of the criteria to make the diagnosis, and therefore, it is not a surprise that new technologies designed for organ support are increasingly used in septic patients.

This is the case of extracorporeal therapies in which the equipment has become a platform to run different therapies and techniques in view of the most recent concept of ECOS (extracorporeal organ support). Patients suffering from these disorders have in common an altered immune response, high concentration of chemical mediators in blood including endotoxin, and finally endothelial dysfunction. Because blood is the fluid phase perfusing all different organs, it makes sense to attempt therapies that may modify the composition of blood in the sense of reducing the burden of chemical mediators. Removal by filtration and adsorption has been the target for new techniques using highly permeable membranes and sorbents. In recent years, the combination of filtration and adsorption has found application with the use of sur-

face-modified membranes that represent a good compromise between a dialyzer and an adsorbent cartridge. By removing endotoxin and mediators, one can restore the immunohomeostasis cutting the peaks of either pro- or anti-inflammatory mediators, improving humoral response and restoring the transendothelial resistance leading to a limitation of the capillary leak syndrome. Furthermore, monocytes may regain control in the function of presenting the antigen as demonstrated by the improvement of HLA-DR expression in patients treated with extracorporeal therapies. So, beyond the improvement in the hemodynamic response, extracorporeal therapies may play a pivotal role in immunohomeostasis restoration and organ support. The present issue of blood purification is perfectly in line with the editorial strategy of the journal in which different techniques acting on blood through specific devices and membranes represent the forefront of the science called Blood Purification. In this series of manuscripts, the new modified AN69 membrane called oXiris has been applied for different purposes and in different settings. This may represent the beginning of a new era of blood purification in critically ill patients.

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