

New membrane technology by haemodialysis for the multiple myeloma

Julen Ocharan-Corcuera

Servicio de Nefrología-Hipertensión. Hospital Txagorritxu Ospitalea. Vitoria-Gasteiz. Álava. España.

Gambro launches HCO 1100 – a new membrane technology with the potential to advance the treatment of multiple myeloma patients with acute renal failure.

Gambro's latest innovation, the High Cut-off Protein-permeable membrane HCO 1100, has the potential to significantly improve the treatment of multiple myeloma patients with Acute Renal Failure. The HCO 1100 membrane is particularly effective in dialysis treatment for the removal of nephrotoxic serum free light chains, which is a protein present at abnormally high concentrations in multiple myeloma patients and which may lead to acute renal failure.

Multiple myeloma is a type of cancer that results in an overgrowth of malignant plasma cells in the bone marrow resulting in an over-production of free light chain protein. The presence of abnormally high concentrations of serum free light chains in the blood is a major cause of acute renal failure in multiple myeloma patients. Preliminary clinical investigations suggest that shortening the time during which the patient's kidney is exposed to toxic serum free light chains can decrease the risk of developing chronic renal failure in this patient population.

Note: Contact details can be found at the Gambro web site.

Correspondencia: Dr. J. Ocharan-Corcuera.

Servicio de Nefrología-Hipertensión. Hospital Txagorritxu-Ospitalea. José Achotegui, s/n. 01009 Vitoria-Gasteiz. Álava. España.

Correo electrónico: josejulian.ocharancorcuera@osakidetza.net

Initial clinical studies performed at the University of Birmingham (UK) demonstrated that the HCO 1100 membrane rapidly removes nephrotoxic serum free light chains from the blood¹. This development of free light chain removal haemodialysis using the HCO 1100 (FLCR-HD) together with chemotherapy is a significant breakthrough in the treatment of multiple myeloma patients with renal failure².

The HCO 1100 membrane is specifically designed for blood purification in diseases requiring the removal of larger molecules from blood. The HCO 1100 membrane has a pore size three times greater than that of normal haemodialysis membrane. It was demonstrated in a recent study from the University of Birmingham (UK)³ and the University of Tübingen (Germany)⁴ that the larger membrane pores of the HCO 1100 allows for a greater removal of larger proteins, such as serum free light chains compared to a normal haemodialysis filter.

To further substantiate the clinical value of the free light chain removal haemodialysis with the HCO 1100 membrane in patients with multiple myeloma, a European multi-center, randomized, controlled clinical trial is planned to start in the near future.

The HCO 1100 membrane is CE Marked and available in the following 18 European countries: Ireland; Germany; Austria; Switzerland; Italy; Sweden; Spain; Finland; France; Luxembourg; Malta; Cyprus;

Norway; Slovenia; Iceland; Belgium; Estonia; and Slovakia.

About Multiple Myeloma⁵

Multiple myeloma (also known as myeloma or plasma cell myeloma) is a progressive hematologic (blood) disease. It is a cancer of the plasma cells, which are an important part of the immune system that produce immunoglobulins (antibodies) and which help to fight infections and diseases. Multiple myeloma is characterized by excessive numbers of abnormal plasma cells in the bone marrow and overproduction of intact immunoglobulins (IgG, IgA, IgD, or IgE) or free light chains. Hypocalcaemia, anemia, renal damage, increased susceptibility to bacterial infection,

and impaired production of normal immunoglobulins are common clinical manifestations of multiple myeloma.

Immunoglobulins are made up of protein chains, two long chains called heavy chains and two shorter chains known as light chains.

Although a high level of protein in the blood is a sign of myeloma disease, about 15 % to 20 % of patients with myeloma produce incomplete immunoglobulins which contain only the light chain portion of the immunoglobulin. These free light chains may deposit in the kidney and clog the tiny tubules that make up the kidney's filtering system, which can eventually cause kidney damage and result in kidney failure.

Los autores no declaran conflictos de intereses.

References

1. Hutchison CA, Bradwell AR, Mead G, Chandler K, Harper J, Cook M, et al. Free light chain removal by extended hemodialysis in patients with cast nephropathy from multiple myeloma. *J Am Soc Nephrol.* 2006;17:23A.
2. Hutchison CA, Cockwell P, Reis S, Chandler K, Mead GP, Harrison J, et al. Efficient removal of immunoglobulin free light chains by hemodialysis for multiple myeloma: In vitro and in vivo studies. *J Am Soc Nephrol.* 2007;18:886-95.
3. Hutchison CA, Cockwell P, Basnayake K, Cook M, Harding S, Basu S, et al. Removal of free light chains by extended hemodialysis in patients with cast nephropathy a phase 1/2 Clinical Trial. *Nephrol Dial Transplant.* 2007;22 Suppl 6:58.
4. Heyne N, Weisel KC, Hutchison CA, Friedrich B, Goehl H, Kanz L, et al. Characterization of extra corporal serum free light chain elimination kinetics via high cut-off protein permeable membrane in light chain multiple myeloma. *Nephrol Dial Transplant.* 2007; 22 Suppl 6:123.
5. Internet. Source: www.multiplemyeloma.org