



Cascade Filtration, a Promising Treatment for Myasthenia Gravis

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Background/aims

Myasthenia Gravis (MG) is an autoimmune disorder characterized by muscle weakness. Circulating antibodies against the nicotinic acetylcholine receptors (AChR) of the neuromuscular junction are present in most patients and their pathogenicity was clearly demonstrated. A little percentage of patients were defined seronegative that studies suggest be means as unrecognized antibodies. Thymectomy in conjunction with immunosuppressants is used as the first choice of therapy. Nevertheless, in those patients who do not respond to this treatment and who require assisted ventilation, plasmapheresis represents a successful technique.

Cascade Filtration can non-selectively remove immunoglobulins containing antibodies, with the aim of reducing its concentration and consequently improving muscle strength and subjective symptoms.

Methods

Cascade Filtration was carried out using the automatic system Plasmapher/Apherlungs (Aferetica, Italia), directly connected with Amicus Separator System (Fresenius Kabi, Italia). Plasma obtained by centrifugation is conveyed into a fractionator filter, Evaflux 3A20 (Aferetica, Italia), which allows a semi-selective plasma purification and removes immunoglobulins containing AChR antibodies. After purification, plasma goes back to the patient. We treated 2 patients seronegative with severe MG, showing albumin allergic reactions. During the plasma purification procedures, the blood flow was kept at 50 ml/min and the flux rate of the filtration in the plasma separator was 20 ml/min. Plasma fractionation was performed with about 1 plasma volume at each session. Treatments were performed every six weeks for the first patient and every four weeks for the second patient, as a maintenance therapy.

Results

After plasmapheresis treatment, remarkable clinical improvements were observed.

Apparent and rapid recovery from myasthenic muscle weakness was observed and subjective symptoms, especially chest compression and general fatigue, were significantly more attenuated with Cascade Filtration treatments.

Unfortunately, it has not been possible to calculate the decrease in the AChR antibodies titer and to collect objective data. Therefore, our short experience shows a prolonged time of apheresis as maintenance therapy.

Discussion and conclusion

In the present case series we could demonstrate that Cascade Filtration, performed with fractionator filters Evaflux 3A20, can really improve subjective symptoms of patients with Myasthenia Gravis. Cascade Filtration is an effective and safe treatment for patients with severe generalized Myasthenia Gravis, who show inadequate response to pharmacological therapy and therapeutic plasma-exchange or present allergic reactions to albumin administration, also thanks to the fact that Cascade Filtration, avoiding plasma substitution, reduces transfusion-related risks.