

## **The Twelve-Year Experience of Plasmapheresis in Patients with Myasthenia Gravis**

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Plasmapheresis (PP) had been shown to be effective in the treatment of a variety of autoimmune diseases, including myasthenia gravis (MG), acute and chronic inflammatory demyelinating polyneuropathy, rapid progressive glomerulonephritis, hemolytic uremic syndrome. The mechanisms proposed for the actions of therapeutic PP included removal of antibody, alloantibody, immune complexes, monoclonal protein, cytokines, and antitoxin. From November 1993 to March 2006, we treated 523 patients with various diseases by PP for a total of 808 courses and 3737 sessions. Among them, 252 MG patients received 494 courses of PP treatment for a total 2280 sessions. In our center, PP was utilized a double-filtration technique with a plasma separator (Plasmacure; Kuraray Co., Osaka, Japan) and plasma fractionator (Evaflux 4A; Kuraray Co.) in a KM 8800 membrane plasmapheresis monitor (Kuraray Co.). All patients tolerated PP well, although 2.3% of them experienced hypotension. For the clearance of serum substances during serial PP treatment, two sessions of PP treatment were adequate for IgM and lipoprotein cholesterol. However, the best clearance of IgG and other globulins could not be achieved until the fourth sessions of PP treatment. A minimum of 4 sessions of PP treatment at 2-day intervals was needed for the most immunological diseases. Prethymectomy PP might decrease the time on mechanical ventilation and shorten the stay in the intensive care unit (ICU) for patients with MG. Among our thymectomized patients, a higher removal rate of acetylcholine receptor antibody was associated with a shorter duration of ICU stay, postoperative hospital stay and a trend toward improving vital capacity. The immunological profiles were changed after PP in MG patients in terms of the increased apoptotic percentage of peripheral blood cell by about two fold ( $p=0.021$ ). In contrast, after PP, B cells ( $p<0.001$ ), Th cells ( $p<0.010$ ) and Th/Ts ratio ( $p<0.001$ ) of health volunteers were increased, whereas Ts cells ( $p<0.010$ ), NK cells and total T cells were decreased after PP especially in female patients. The IL-10 was significantly increased immediately after PP. In conclusion, besides the removal of specific autoantibodies, the change of cytokines and immunological parameters after PP might also contribute the improvement of clinical condition in MG patients.