THERAPEUTIC PLASMA EXCHANGE AS A TOOL IN THE TREATMENT OF NEUROLOGICAL DISEASES: A SINGLE CENTER EXPERIENCE

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Background and Aims: Plasmapheresis is an extracorporeal technique that removes immunological active substances, such as antibodies or immune complexes, from plasma. Simultaneously, it can provide essential factors in deficit, when supplementing with plasma. Therapeutic plasma exchange (TPE) can be used in numerous diseases with systemic involvement and, more recently, it has assumed an increasingly relevant role in the treatment of neurological diseases. Our aim was to review neurological indications, technique prescription, clinical outcomes and complications of these procedures.

Methods: We conducted an observational retrospective single-center study of the neurological diseases treated with TPE in our unit. We analyzed all procedures performed between January 2010 and December 2012 and collected indications, technical factors, complications and clinical outcomes of all treatments conducted. TPE was performed removing 1 to 1.5 of plasma volume per session. All procedures used Human Albumin 5% as replacement fluid and two units of fresh frozen plasma (FFP) were given in the end of each session. Hypocoagulation of the extracorporeal circuit was maintained with unfractionated heparin.

Results: Seventy-seven cycles of TPE (a total of 421 procedures) were performed on 45 patients [55.6% female; median age of 51 years (SD ± 16.8)]. The main indications of TPE in neurological diseases included myasthenia gravis (n = 35), Anti-N-methyl-d-aspartate (NMDA) encephalitis (n = 7), Guillain-Barré syndrome (n = 7), neuromyelitis optica spectrum disorders (n = 6), acute disseminated encephalomyelitis (n = 5), paraneoplastic syndromes (n = 4) and multiple sclerosis (n = 2). Intravenous immunoglobulin was given before TPE in 25 cases, 34 patients were on steroid and 6 patients had received pyridostigmine. Eighteen patients had coadjuvant immunosuppression [Mycophenolate mofetil or Azathioprine (n = 13), Rituximab (n = 3), tacrolimus (n = 1), Tocilizumab (n = 1) or Eculizumab (n = 1)]. The median number of TPE sessions per patient was 5 (range 1-20) and most cycles (63.6%) were performed every day for 3 sessions and 2 sessions every other day. Most of TPE (59.7%) was performed in ward, 27.3% in Intensive Care Unit (ICU) and 10 treatments were conducted in ambulatory. Near 84% of treatments were done through central venous catheters (CVC) and one patient had an arteriovenous (AV) fistula. Twenty-four (5.7%) complications were seen in 421 procedures. These complications were infection (18.2%), catheter-related (7.8%) and allergic reactions (1.3%). TPE procedure was terminated in 7.8% of sessions depending on these complications. Overall responses to TPE were noted in 81.8% of patients and 6 patients had at least one relapse during follow-up.

Conclusion: TPE is an effective and safe treatment option in several neurologic diseases. In our center, principal indications for TPE were myasthenia gravis, NMDA encephalitis and Guillain-Barré syndrome. In this study, clinical outcomes were favorable in the majority of the cases, with a minimum rate of complications per procedure. Therefore TPE should be considered in an early phase of presentation of disease. In relapsing diseases like myasthenia gravis, refractory to immunosuppression therapy, an AV fistula could be an alternative access to minimize the CVC-related complications.