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Therapeutic plasma exchange in the treatment of neuroimmunologic disorders: Review of 50 cases

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Abstract

Therapeutic plasma exchange (TPE) has been used for the treatment of neurologic diseases in which autoimmunity plays a major role. We reviewed the medical records of our patients who had consecutively been treated by TPE between January 1998 and June 2000. Neurological indications included myasthenia gravis (30 patients), multiple sclerosis attack (6 patients with remitting-relapsing course and 3 patients with secondary progressive course), Guillain-Barrè syndrome (6 patients), paraproteinemic neuropathy (2 patients), and chronic inflammatory demyelinating neuropathy (CIDP), transverse myelitis due to systemic lupus erythematosus, acute disseminated encephalomyelitis in one patient each. Continuous flow cell separators were used for TPE. TPE was generally given every other day for all of the patients and one plasma volume was exchanged for each cycle. Although the patients with secondary progressive multiple sclerosis (3 patients) and paraproteinemic neuropathy (2 patients) did not show any improvement after TPE, other patients' targeted neurological deficits were improved by TPE. During the TPE procedures, no patient had any morbidity or mortality, and the complications were mild and manageable such as hypotension, hypocalcemia and mild anemia; three patients had septicemia due to the venous catheter used for TPE. TPE is an effective treatment in neurologic diseases in which autoimmunity plays an important role in pathogenesis, and it is safe when performed in experienced centers.

Keywords: Therapeutic plasma exchange (TPE); Myasthenia gravis; Multiple sclerosis; Guillain-Barrè syndrome; Paraproteinemic neuropathy; Chronic inflammatory demyelinating neuropathy (CIDP); Transverse myelitis; Acute disseminated encephalomyelitis

1. Introduction

Therapeutic plasma exchange (TPE) has been used to remove antibodies and other immunologically active substances from the blood for the treatment of neurologic diseases in which autoimmunity

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plays a major role [1]. It is a standard treatment for some neurologic diseases including Guillain-Barrè syndrome (GBS) and myasthenic crisis [2–7]. Moreover, in some other neurologic disorders, TPE has increasingly been mentioned as a possible treatment choice in case reports and small series studies [8–13].

TPE is a safe procedure for the treatment of appropriate neurologic illnesses in a specialized unit with a high patient volume [14]. In this study, we retrospectively examined the medical records of our patients pertaining to their response to TPE.

2. Methods

We reviewed the medical records of 50 neurologic patients who had been consecutively treated by TPE between January 1998 and June 2000 at Ankara University İbni Sina Hospital, Neurology Department.

The medical records were analyzed for the patients demographic details (age, sex), indications for TPE, results of the treatment, and the complications of the procedure.

Neurological indications included myasthenia gravis, multiple sclerosis, GBS, paraproteinemic neuropathy, chronic inflammatory demyelinating neuropathy (CIDP), transverse myelitis due to systemic lupus erythematosus, and acute disseminated encephalomyelitis (ADEM) (Table 1). There were 30 female and 20 male patients. The mean age was 40 with a range of 16–72. (Table 1). Continuous flow cell separators were used for TPE (COBE Spectra Lakewood, Colorado). TPE was given every other day for most of the patients and one plasma volume was exchanged for each cycle. The mean TPE session number was 4 and the mean processed plasma volume was 2269 ml for each cycle.

Table 1
Indications of plasmapheresis and demographic details of the patients

Diagnosis	No. of the patients	Mean age/range	Sex (F/M)
MG	30	42 (16–71)	20/10
MS	9	31 (21–44)	6/3
GBS	6	37 (16–53)	2/4
CIDP	1	49	F
MGUS	1	71	M
POEMS	1	43	M
ADEM	1	17	F
TM	1	36	F

MG, myasthenia gravis; MS, multiple sclerosis; GBS, Guillain-Barre syndrome; CIDP, chronic inflammatory demyelinating polyneuropathy; MGUS, monoclonal gammopathy of undetermined significance; ADEM, acute disseminated encephalomyelitis, TM, transverse myelitis.

Table 2
Response to TPE

Diagnosis	Response (total case number/improved case number)
MG	30/30
MS-attack	9/6
GBS	6/6
CIDP	1/1
MGUS	1/0
POEMS	1/0
ADEM	1/1
TM	1/1

3. Results

The results of the treatment are summarized in Table 2. Regarding 30 patients with MG, 15 of them had myasthenic crisis and the others had bulbar signs without respiratory failure. The patients with bulbar signs without crisis were treated by TPE with the aim of stabilizing the clinical picture as soon as possible, and of preventing deterioration of clinical status due to treatment with 1 mg/kg daily prednisone. All patients' targeted neurological deficits were improved by TPE.

Six MS cases with a remitting-relapsing course were treated with TPE because of the lack of response to methylprednisolone with a dosage of 1000 mg/d intravenously (IV) for 10 days. Two weeks after the cessation of IV steroid treatment, the patients were given TPE. Before TPE, the patients' mean expanded disability score was 5.7, and it became 3 after TPE. However, three MS patients with a secondary progressive course did not respond to TPE.

All six patients with GBS were not able to walk without assistance, and TPE was started within 10 days after the beginning of the disease. When they were discharged, all of them had the ability of walking without any support. The patient with CIDP had TPE instituted because she needed assistance with walking, and after TPE she greatly improved. She was also given prednisone 1 mg/kg daily. Another patient diagnosed with transverse myelitis secondary to systemic lupus erythematosus had a vertebrae fracture due to long term steroid treatment; the patient was put on TPE instead of steroids and improved completely.