MEDICAL CHANNEL

Original Article

PLASMAPHERESIS TECHNIQUE, COMPLICATIONS AND INDICATIONS AT THE ISRA UNIVERSITY HOSPITAL HYDERABAD

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ABSTRACT

Objective to observe the safety, efficiency and factor that predispose to poor outcome or complications
Study Design: Retrospective study
Place and Duration The study was conducted from May 2007 to April 2010 at Isra university Hospital Hyderabad.
Patients and Methods: We have reviewed the plasma aphaeresis records of all 200 therapeutic plasma exchange procedures performed on a total of 44 patients with a mean age of 50+-10 years, 30 (68.5%) were male and 14 (31.5) were females, continuous flow cells separator by Fresenius Kabi 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.
Inclusion criteria: Patients were included were neurological disease & Hematological disease.
Exclusion criteria: Patients which are suffered from cerebral stroke, were excluded from study.
Results: Most commonly Guillain Barre syndrome 28(64%), myasthenia gravis 6 (13%), paraproteinemic neuropathy 3(6.5%), chronic inflammatory demyelinating polyneuropathy 5(12%) and Goodpasture syndrome 2 (4.5%) During TPE procedure, no patients had any morbidity or mortality, and the complications were mild and manageable such as hypotension, hypocalemia, rashes at the site of canola. Complications of plasma exchange were noted during 25% (n = 11). These include hypocalcaemiain 8% of the patients, urticarial reactions in 7.3%, pruritic reactions in 12%, and hypotension/headache in 6.8%. No major procedural complications were seen..
Conclusion:Over all our data shows that the plasma exchanges is an effective and safe procedure especially for a variety of neuro immunological conditions.

Key words: Apheresis, Therapeutic plasma exchange, indications, treatment, complications.

INTRODUCTION:

Therapeutic plasma exchange (TPE, plasmapheresis) is an extracorporeal blood purification technique designed for the removal of large molecular weight substances from the plasma.
In order to consider plasma exchange as a therapeutic option, two conditions need to be present: a disease state related to the presence of a pathological substance in the plasma and the possibility or removal of the substance in an amount sufficient to permit resolution of the disease. Plasma exchange is often employed as the last resort treatment of numerous disease unresponsive to conventional therapy Plasmapheresis has been used over the past 3 decades to treat a variety of neurological and hematological disorders, and its use is becoming more extensive. Although generally regarded as a safe procedure, complications do occur. Neurological disorders are among the most common indications for plasmapheresis in many countries .Plasmapheresis is used to treat immunologically mediated peripheral neuropathies including Guillain-Barre syndrome. and chronic inflammatory demyelinating polyneropathy . and other disorders such as myasthenia gravis .Paraproteinemic polyneuropathy and acute idiopathic inflammatory demyelinating disease of the central nervous system ( ).Automated plasma exchange is done with the help of a cell sepretor which are of two kinds We undertook a

retrospective review of plasmapheresis done in our institution since 2007 to2010.To determine its safety efficacy and attempted to delineate factors that predisposes to poorer outcome. Automated

MATERIAL AND METHODS:

Case histories of the patients who have undergone plasmapheresis were reviewed. The baseline demographic data, past medical history, concurrent steroid use, indication for plasmapheresis, complications during the creation of vascular access and plasmapheresis, and vital signs, white cells count serum calcium level and serum electrolytes were analyzed and after. All the patients were kept on continuous flow cell separator by Fresenius Kabi 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.

RESULTS:

A total 200 plasma exchange were performed on 44 patients. There were 30 male and 14 female patients and the mean age was 50±10 years. Table 1

Ninety 90.90% patients had neurological disorders while 9.09% had hematological disease. Table II.

The most common indications were Guillain Barre syndrome 28(64%), myasthenia gravis 6 (13%), paraproteinemic neuropathy 3(6.5%), chronic inflammatory demyelinating polyneuropathy 5(12%) and Goodpasture syndrome 2 (4.5%) Multiple myeloma and 1 (4%), systemic lupus erythematosus with antiphospholipid syndrome 1(4%).

In 30 (68%) patients, the clinicians reported good improvement, 8 (18%) also given i/v immunoglobulin and only 4 (9%) had no improvement. For patients with neurological disorders, 32 of 35 patients (79%) were reported to have improved with plasmapheresis compared with only 4 of 6 (13%) patients with hematological disorders (p=0.05). %) During TPE procedure, no patients had any morbidity or mortality, and the complications were mild and manageable complications were reported in 55 of the exchange procedures (25%) in 11 patients. The most common complication was hypocalcaemia 8% of the patients, urticarial reactions in 7.3%, pruritic reactions in 12%, and hypotension/headache in 6.8%. No major procedural complications were seen

DISCUSSION:

TPE is an extracorporeal blood purification technique designed for the removal of large-molecular weight substances include pathogenic autoantibodies, immune complexes, cryoglobulins, myeloma light chains, endotoxin, and cholesterol-containing lipoproteins.

During TPE procedure, no patients had any morbidity or mortality, and the complications were mild and manageable complications were reported in 55 of the exchange procedures (25%) in 11 patients our findings were consists with Basic et al and Prilozi et al 2006 .

Like many other countries, neurological disorders were the most common indication for plasma exchange in our institution. The indications for plasma exchange were similar to those of other institutions (1-3, 22) as well as the age and gender makeup (23). Complications were minor and manageable not common, and our figures were comparable with those from other institutions. Our results are not correlate with the Miladi MI, 2008 et al reported high incidence of complications due to the initial disease severity, they used other method of PE, the existence of associated illness, and a long stay in intensive care unit .

Wu et al reported that complications occurred in 36% of the exchanges effecting 59.2% of the patients from a total of 694 exchange and 157 patients (23). While Couriel and Weinstein had 381 exchanges in 63 patients, they recoreded complication in 17% of the procedures involving 49% of the patients (22).

Crit Care's results confirm that fresh frozen plasma should be abandoned as replacement fluid in plasma exchanges of Guillain-Barré syndrome patients. They also underline the need for close monitoring of patients during sessions and, especially, the respect of treatment contraindications. Some adverse incidents could be attributed to the underlying disease rather than to the plasma exchange session

Like Wu et al, we found no deaths within 48 h of the last exchange (23). Most of the complication were milk with only 2 resulting in the need for mechanical ventilating. However we did have more septic complications especially catheter related sepsis. The use of temporary vascular access was not associated with severe complication.

Like Rodnitzky and Goeken (24), we found that hematological disease and poor renal function were related to death, and with multivariate analysis, the mortality was related to poor renal function rather that the underlying indication for plasma exchange. Unfortunately our sample size was too small to have adequate statistical power. It is interesting to note that none of these patients had a documented history of renal impairment which would suggest, an indication of the fact that they were sicker even upon admission. We suggest a correction of renal impairment before the commencement of plasma exchange.

TABLE 1
GENDER DISTRIBUTION

SEX	Number	Percentage%
Male	30	68.18
Female	14	31.81
	44	100

TABLE II

DISORDERS	Number	Percentage%
Neurological	40	90.90
Hematological	4	9.09
	44	100

CONCLUSION

It is an effective procedure, especially in neurological disease. Plasmapheresis was safe and useful in patients with myasthenia gravis and Guillain Barré syndrome. The drawbacks of the procedure are its costs and requirement of special equipment

REFERENCES:

1. Chong HT, Tan CT. Plasmapheresis in the University of Malaya Medical Centre, Malaysia. Ther Apher . 2001 Apr;5(2):147-9.
2 Basic-Jukic N, Brunetta B, Kes P. Plasma exchange in elderly patients. Ther

Apher Dial. 2010 Apr;14(2):161-5.
3 Raphaël JC, Chevret S, Hughes RA, Annane D.Plasma exchange for Guillain-Barré syndrome. Cochrane Database Syst Rev. 2002;(2):CD001798.
4. Basic-Jukic N, Kes P, Glavas-Boras S, Brunetta B, Bubic-Filipi L, Puretic Z Complications of therapeutic plasma exchange: experience with 4857 treatments. Ther Apher Dial. 2005 Oct;9(5):391-5.
5 Tazi I, Merimi F, Majd A, Benchemsi N Therapeutic plasma exchange in Casablanca. Transfus Apher Sci. 2008 Aug;39(1):45-8.
6 Milovanceva-Popovska M, Stojkovski Lj, Grcevska L, Dzikova S, Ristovska V, Gogovska L, Polenakovic M. Therapeutic apheresis in the Republic of Macedonia - our five years experience (2000-2004). Prilozi. 2006 Jul;27(1):37-44.
7 Kaynar L, Altuntas F, Aydogdu I, Turgut B, Kocyigit I, Hacioglu SK, Ismailogullari S, Turgut N, Erkurt MA, Sari I, Oztekin M, Solmaz M, Eser B, Ersoy AO, Unal A, Cetin M.
Therapeutic plasma exchange in patients with neurologic diseases: retrospective multicenter study. Transfus Apher Sci. 2008 Apr;38(2):109-15.
8 Haupt WF, Rosenow F, van der Ven C, Birkmann CImmunoadsorption in Guillain-Barré syndrome and myasthenia gravis. Ther Apher. 2000 Jun;4(3):195-7.
9 Alshekhlee A, Hussain Z, Sultan B, Katirji B. Immunotherapy for Guillain-Barré syndrome in the US hospitals. J Clin Neuromuscul Dis. 2008 Sep;10(1):4-10.
10 Bouget J, Chevret S, Chastang C, Raphael JC. Plasma exchange morbidity in Guillain-Barré syndrome: results from the French prospective, randomized, multicenter study. The French Cooperative Group. Crit Care Med. 1993 May;21(5):651-8.
11 Kankirawatana S, Huang ST, Marques MB Continuous infusion of calcium gluconate in 5% albumin is safe and prevents most hypocalcemic reactions during therapeutic plasma exchange. J Clin Apher. 2007;22(5):265-9.
1 2 Miladi MI, Feki I, Kammoun H, Elleuch H, Triki C, Gargouri J, Mhiri C[Relevance of plasma exchange in the treatment of myasthenia gravis: study of 11 cases]. Rev Med Interne. 2008 Feb;29(2):87-93.
13 Nogales-Gaete J, Valenzuela D, Liendo F, Vidal P, Gil G, Sáez D[Plasmapheresis in neurological diseases. Experience in 140 procedures in 47 patients]. Rev Med Chil. 2004 Mar;132(3):295-8.
14 Marn Pernat A, Buturoviæ-Ponikvar J, Svigelj V, Ponikvar R Guillain-Barré syndrome treated by membrane plasma exchange and/or immunoadsorption. Ther Apher Dial. 2009 Aug;13(4):310-3.
15 Espérou H, Jars-Guincestre MC, Bolgert F, Raphaël JC, Durand-Zaleski I. Cost analysis of plasma-exchange therapy for the treatment of Guillain-Barré syndrome. French Cooperative Group on Plasma Exchange in Guillain-Barré Syndrome. Intensive Care Med. 2000 Aug;26(8):1094-100.
16 Sanjay R, Flanagan J, Sodano D, Gorson KC, Ropper AH, Weinstein R
The acute phase reactant, fibrinogen, as a guide to plasma exchange therapy for acute Guillain-Barré syndrome. J Clin Apher. 2006 Jul;21(2):105-10.
17 Hughes RA, Raphaël JC, Swan AV, van Doorn PA. Intravenous immunoglobulin for Guillain-Barré syndrome. Cochrane Database Syst Rev. 2001;(2):CD0020