Response to Plasmapheresis in Myasthenia Gravis Patients: 22 Cases Report

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Plasmapheresis means elimination of plasma and replacement of it with other liquids. Effect of this treatment is confirmed in more than 50 diseases like myasthenia gravis, Guillain-Barre syndrome and TTP. This cross sectional study was done on 25 myasthenia gravis patients referred to Shahid Sadoughi hospital, Yazd, Iran 2004-2007. We report 22 myasthenia gravis patients` response to plasmapheresis.

Key words: plasmapheresis, myastenia gravis.

Plasmapheresis means elimination of plasma and its replacement with other liquids, the most popular type of it is apheresis. Effect of this treatment has been confirmed in more than 50 diseases like myasthenia gravis, Guillain-Barre syndrome and TTP (thrombotic thrombocytopenic purpura) [1-3].

Myasthenia gravis is an autoimmune musculoskeletal disorder which presents with intermittent periods of weakness and muscular fatigue [4]. In about 90% of patients circulatory antibodies have been detected that can bind with acetylcholine receptors in postsynaptic membrane and make periods of fatigue that will deteriorate by muscular activity and remit by rest. But the exact stimulator and origin of these antibodies creation has remained unknown [4][5].

It can involve ocular and facial muscles and also can cause involvement of distal and respiratory muscles, but usually the first symptom is ptosis [4].

Treatment can be conservative or surgical. Drug therapy is by cholinesterase inhibitors or immunosuppressant drugs like corticosteroids and azathioprine. Thymectomy is surgical modality in some cases [4][6].

Immunosuppressant drugs are widely used for most of patients but they have some side effects. Corticosteroids can exacerbate disease at pre-remission period [4][6].

Today there is no doubt that plasmapheresis is an effective treatment to decrease the rate of intubation, tracheotomy and hospitalization (4 and 6). Also it is effective in prevention of myasthenia crisis before thymectomy, lowering complications in time of immunosuppressant dose reduction or adjustment and in patients which have contraindication for immunosuppressant use (4, 5 and 6).

Dose of plasmapheresis for myasthenia gravis patients is different. In severe acute cases daily or one dose each 2 days is suggested and should be continued until remission. After that, doses must be modified and stopped step by step. In patients under treatment of continuous and high doses of immunosuppressant, administration of weekly plasmapheresis parallel l with decrease of immunosuppressant drugs is suggested and should be continued until reaching favorable dosage in patients and must be stopped after reaching that dose [5][6]. In some patients this treatment is needed for a long time; in such cases adding low doses of cyclosporine (1-2 mg per kg/daily) to other drugs (Plasmapheresis and immunosuppressant drugs) will be effective [6].

Considering the importance of plasmapheresis in myasthenia gravis patients, we report 22 myasthenia gravis patients` response to plasmapheresis.

MATERIALS AND METHODS

This cross sectional study was done on 25 myasthenia gravis patients who were referred to Shahid Sadoughi hospital, Yazd, Iran 2004-2007. Patients` diagnosis had been confirmed by joley, neostigmin, tensilon and anti acetylcholine receptors anti bodies' tests. 3 patients were excluded from the study because of missing data in their hospital

documents and 22 patients were included in the study. Data were transferred from their documents to a questionnaire which was developed in consultation with a hematologist and a neurologist and with the helping of previous studies. The questionnaire included demographic data, sign and symptoms of patients at the time of admission like muscle weakness, ptosis, diplopia, etc., myasthenia diagnostic tests reports like EMG, NCV and anti acetylcholine receptors antibodies, doses and frequencies of plasmapheresis and other treatments like corticosteroids, thymectomy, etc., response to treatment during hospitalization and signs and symptoms of patient at the time of discharge. All registered data were transferred to SPSS software and analyzed under descriptive analysis.

RESULTS

22 myasthenia gravis patients were included in the study. 11 patients (50%) were men. Mean age of patients was 43.6 years old (± 19.4). 7 were government-employed, 8 were housekeeper and 7 were self-employed. 19 patients were married. 64% had previous history of hospital admission almost all for myasthenia gravis but they had not got plasmapheresis. 13 patients had history of ICU admission.

At the time of admission all patients had paresthesia, muscle weakness and ataxia; 72% had dyspnea, 64% diplopia, 50% oropharyngeal dysphagia, 45% nasal speech, 41% dysphasia, 41% ptosis, 36% bilateral facial palsy, 14% unilateral facial palsy, 73% decreased DTR and 9% absence of DTR. 64% were intubated and under mechanical ventilation because of respiratory problems.

All patients went under plasmapheresis with primary dose of 1.5-2 liter daily that was adjusted according to response. 55% of patients underwent 12 sessions, 31% seven and 14% more than 16 sessions of plasmapheresis. 14% of patients got both corticosteroids and plasmapheresis. One patient underwent thymectomy.

After plasmapheresis, diplopia, dysphasia and dysphagia have been cured in all patients. But although more than 50% of patients reported decrease in their symptoms, paresthesia in 55%, ptosis in 18%, ataxia in 14%, decreased DTR in 13.5% and nasal speech in 9% of patients remained. These patients continued oral medication.

All patients who underwent mechanical ventilation were cured after plasmapheresis and extubated. Myasthenia tests after treatment became normal.

DISCUSSION

Different studies showed that plasmapheresis is effective in 55%-100% of myasthenia gravis patients [14]. This wide discrepancy between reports can be due to differences in severity of diseases in patients, other treatments may be used along with plasmapheresis, protocol of plasmapheresis or differences in study conduction [4][6]. In our study severe muscle weakness and need for mechanical ventilation was removed rapidly; these results are concomitant with other studies, plasmapheresis is highly effective in respiratory distress [7-9]. Not responding after 15-20 liter or more than 14 days of plasmapheresis is defined as treatment failure that was seen in 14% of our patients that was similar to other studies [6][10].

In each phase of plasmapheresis 2-5 liter of plasma will be exchanged that can decrease even up to 60% of plasma components, proteins, coagulation factors and immunoglobulin [15]. Extent and duration until plasma components especially antibodies remain low depends on remnant proportion, amount of body reserve and production ability. Because of a low amount of IgG remnant compared with other plasma components, plasmapheresis is an appropriate treatment for pulling IgG out of the body [4].

Myasthenia gravis patients after one or two weeks of plasmapheresis will dismiss about 90% of anti acetylcholine receptors auto antibodies [15].

The plasmapheresis efficacy and action latency is different in patients. Some will be treated after the first period of treatment and others will be treated after 2 or more courses. Also it may have no effect on patients` treatment [4][6].

Although plasmapheresis is a golden therapy of myasthenia gravis (especially in immunosuppressive resistant patients) [6], immunorebound reaction as a major complication is common (especially by using plasmapheresis without immunosuppressant drugs for more than 4-10 weeks); we encountered with this complication too. This complication is due to increase in plasma proteins in response to depletion of plasma components after plasmapheresis. This situation in myasthenia gravis patients can lead to rigorous reproduction of anti acetylcholine receptor antibodies and then it can cause exacerbation of myasthenia; so using immunosuppressant drugs with plasmapheresis can prevent from irregular production of antibodies. It is suggested to add immunosuppressant 2-3 weeks after starting plasmapheresis. IVIG (Intra venous Immunoglubins) is also suitable for suppression of humeral immune system [4]. So it is better to use both these two therapies.

Plasmafereza înseamnă eliminarea plasmei şi înlocuirea acesteia cu alte lichide. Efectul acestui tratament este confirmat în mai mult de 50 de boli, cum ar fi: miastenia gravis, sindromul Gauillain-Garre. Acest studiu transversal a fost făcut pe 25 de pacienţi cu miastenia gravis la Spitalul Shahid Sadoughi, Yazd, Iran în perioada 2004-2007. Am raportat 22 de pacienţi cu miastenia gravis ce au răspuns la plasmafereză.

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