Plasma Exchange as a rescue treatment in Multiple Sclerosis relapses refractory to steroid treatment.

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Background
Multiple Sclerosis (MS) is an immune mediated disease, which causes significant disability. First line treatment of acute relapses is high dose glucocorticosteroid pulse treatment given daily over 3 to 5 days. If symptoms persist despite steroid treatment, therapeutic plasma exchange (PE) is suggested. The removal of humoral factors is currently considered as the rationale for PE in MS.

Objectives
To report our MS centre experience with PE for MS relapses refractory to high dose intravenous treatment.

Matherials and methods
Based on 2010 Mc Donald Criteria, PE data were evaluated from 16 patients diagnosed with an MS relapse unsuccessfully treated with intravenous methylprednisolone (MPD; 1 gram qd for 5 days) from July 2005 to May 2016. Deteriorated and insufficiently improved symptoms after MPD treatment were defined as MPD unresponsiveness. Response to PE treatment was classified as a definite change of neurological deficit with significant impact on function within the EDSS functional score.

Results
We analysed the PE data of 8 males and 8 females, with a mean age of MS onset of 31 years old (SD 11.3) and a mean age at relapse of 34 years old (SD 10.5). Relapses were multifocal in 6 patients, monolateral severe optic neuritis (visual acuity less than 0.4) in 7 patients, myelitis in 2 patients and due to brainstem localization in 1 patient. Median EDSS before PE treatment was 4.25 (range 2.5-7) and 2 (range 1.5-6.5) after at least 2 PE sessions (median number of sessions: 5, range 2-5) with a median EDSS change of 1.5 (range 0.5-5). No meaningful adverse events occurred.

Sex	Age at onset	Age at relapse	Type of relapse	N. of PE	EDSS at relapse	EDSS post PE	delta EDSS
F	27	28	Optic neuritis	2	3,5	2	1,5
M	21	21	Multifocal	5	7	2	5
M	28	28	Multifocal	3	4,5	1,5	3
M	49	51	Optic neuritis	3	6	5	1
M	49	50	Spinal cord	5	6	4,5	1,5
M	39	39	Optic neuritis	2	3,5	1,5	2
F	14	19	Brainstem	5	7	6,5	0,5
F	26	26	Spinal cord	5	5,5	2,5	3
F	17	18	Multifocal	5	6	4,5	1,5
M	34	35	Optic neuritis	5	2,5	1	1,5
F	36	36	Optic neuritis	5	3	2	1
F	47	47	Multifocal	5	3	2	1
F	30	30	Multifocal	5	2,5	1,5	1
M	22	22	Multifocal	5	4	2	2
M	27	52	Optic neuritis	3	5	4,5	0,5
F	35	38	Optic neuritis	3	3,5	3	0,5

Discussion and conclusions
Clinical response to PE was obtained in all our patients. Though our sample is quite small, the result seems in line with a previous report on a wider cohort (72.6% in 90 patients with Clinically Isolated Syndrome or MS, independently of previous MPD treatment). The relevant prevalence of multifocal relapses (37.5%) in our sample reinforces the favourable effect of PE in case of severe clinical relapses. The lack of a control group to compare our results with PE after MPD and the retrospective nature of our analysis are limitations. A prospective randomised trial on a more extended cohort would be the best way to evaluate PE effect after MPD.

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