

Clinical Aspects of Multiple Sclerosis Patients with Normal Spinal Cord Imaging

Claudia Chaves, MD¹, Rik Ganguly, BS¹, Ann Camac, MD¹, MaryAnne Muriello, MD¹, Grace Lee, MD²

¹Neurology Department, Lahey Clinic, Lexington, MA , United States ² Radiology Department, Lahey Clinic, Burlington, MA, United States



OBJECTIVES

To evaluate the clinical aspects of multiple sclerosis patients with normal spinal cord imaging.

BACKGROUND

Multiple sclerosis (MS) is an auto-immune disorder that affects both the brain and spinal cord in the vast majority of patients. However, approximately 10% of MS patients have no spinal cord involvement at autopsy. The clinical characteristics of this population have not been well studied.

METHODS

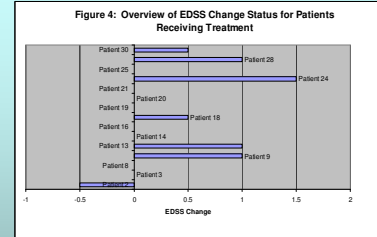
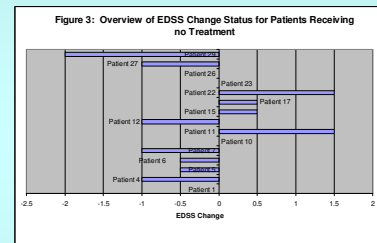
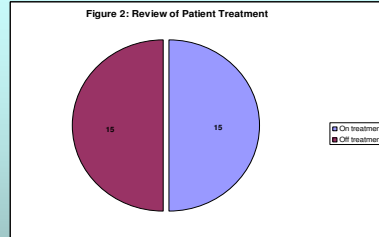
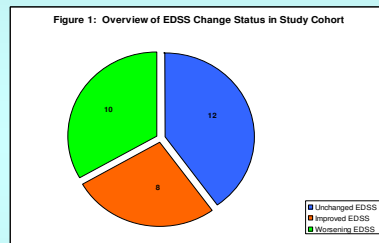
We retrospectively reviewed our MS database and selected patients who have had 1.5 Tesla MRIs of brain, cervical and thoracic spine. From this cohort, we selected the patients who have had normal spinal cord imaging over time and studied their demographics, clinical characteristics and outcome (Table 1).

Patient Number	Age (years)	Sex	MS type	Disease Duration (years)	First EDSS	Most Recent EDSS	Difference between First and Most Recent EDSS (years)	Change in EDSS from First to Most Recent	# of Cervical MRIs	# of Thoracic MRIs	Treatment
1	68	F	RRMS	50	2	2	1.5	0	2	1	None
2	45	M	RRMS	25	2	1.5	2	-0.5	4	2	Tyrosol
3	45	M	RRMS	11	2	2	1.5	0	4	2	Avonex
4	54	F	RRMS	38	2	1	6	-1	6	4	None
5	53	F	RRMS	22	2.5	2	3	-0.5	1	1	None
6	62	F	RRMS	36	1.5	1	1.5	-0.5	1	1	None
7	60	F	RRMS	34	3.5	3.5	2.5	-1	2	1	None
8	56	F	RRMS	36	1.5	3	6	-0.5	3	2	Avonex
9	49	F	RRMS	10	2	3	5.5	0	5	2	Relbif
10	63	F	RRMS	17	2.5	2.5	6	0	1	2	None
11	59	F	RRMS	1	2	4.5	0.83	1.5	2	1	None
12	67	F	RRMS	1	1	0	0.5	-1	1	1	None
13	51	F	RRMS	13	2	3	1	-1	2	1	Relbif
14	45	F	RRMS	3	0	0	2.5	0	1	1	Relbif
15	42	F	RRMS	16.2	1	1.5	4	-0.5	2	1	None
16	52	F	RRMS	13	2.5	2.5	0.5	0	2	2	Steroids
17	66	F	RRMS	12	1.5	2	6	-0.5	2	2	None
18	47	F	RRMS	22	1.5	2	2	0.5	2	2	Avonex and Cellcept
19	55	F	RRMS	9	0	0	3	0	3	2	Betaseron
20	47	F	RRMS	4.5	0	0	4	0	7	6	Copaxone
21	56	F	RRMS	4	0	0	3.5	0	2	1	Avonex
22	71	F	RRMS	55	3.5	5	6	1.5	4	1	None
23	68	F	RRMS	1	2	2	3	0	2	1	None
24	66	F	RRMS	21	6	7.5	5	1.5	5	1	Betaseron
25	43	F	RRMS	17	2	2	1	0	1	1	Avonex
26	65	F	RRMS	11	3.5	3.5	1	0	3	2	Avonex
27	64	F	RRMS	2	2	1	3.5	-1	1	1	None
28	48	F	RRMS	3.5	3.5	4.5	3.5	-1	2	2	Relbif
29	61	F	RRMS	32	3	1	6	-2	1	1	None
30	57	F	RRMS	27	2	3.25	6	-2.25	3	1	Tyrosol

Table 1: A survey of clinical characteristics that were examined in study patients

RESULTS

We had 30 patients (13%) without evidence of spinal cord lesions on MRI selected from a total of 225 MS patients. The mean age of those patients was 55.4. There were 28 women and 2 men. Twenty nine patients had Relapsing Remitting MS (RRMS) and one patient had Clinically Isolated Syndrome. The mean disease duration was 17 years, median was 12.5 years. Twelve patients had unchanged EDSS scores, 8 patients had improved and 10 patients had worsening of their EDSS (Figure 1) over a mean follow-up of 4.6 years. We had an average of 2.6 cervical and 2 thoracic MRIs per patient during their follow-up. Fifteen patients were not on any treatment during this period of time (Figure 2); of these, 11 demonstrated stable or improved EDSS (Figure 3). The other half were on different disease modifying agents, 9 of them with stable or improved EDSS (Figure 4).



CONCLUSIONS

In our center, thirteen percent of the MS patients had normal spinal cord imaging, with exclusive cerebral involvement. These patients were predominantly women with RRMS. They had less physical disability overtime, with 2/3 of them having unchanged or improved EDSS despite lack of a specific treatment in more than half of this group.