Pain in Multiple Sclerosis, Is Dimethyl Fumarate Associated to Less Pain, When Compared to Other Disease Modifying Therapies?

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BACKGROUND

Pain is a common manifestation in patients with multiple sclerosis (MS); however, previous studies have not explored the effect of disease modifying therapy (DMT) in pain management[1]. Besides having an anti-inflammatory effect from modulating immune responses, DMF also has the distinct antioxidant effect through the nuclear factor erythroid-2 related factor-2 (Nrf2) - dependent antioxidant response element pathway.

According to this unique property, recent animal study[2] suggest that active metabolite of DMF can inhibit pain behaviors through an inhibition of reactive oxygen species production that involves the central nucleus of amygdala. Therefore, there is a possibility that pain may be less frequent, in MS patients receiving DMF.

METHOD

Patients with Relapsing Remitting MS, were invited to participate in the study during their follow up visit at the MS neurology clinic in Texas Tech University Health Sciences Center.

Participating patients were properly consented.

Pain was assessed by *0-10 numeric rating scale* and *Short-Form McGill Pain Questionnaire*.

Electronic medical record were evaluated, current and past DMT was documented.

RESULTS

A total of 96 patients were included.

- 80% patient had moderated to severe pain. (40.6% severe pain*).
- 83% (5of 6) of patients on interferons were experiencing severe pain*.
- 50% (10 of 20) of patient on DMF reported severe pain*.

Characteristic	DMF	Other DMTs	*P*-value
Number (n)	20 (20.8%)	76 (79.2%)	
Age (years)	39.8 ± 10.8	44.5 ± 12.0	0.11
Gender • female • male	 16 4	 54 22	0.42
Duration of disease (years)	7.0 ± 5.3	8.2 ± 8.0	0.41
Pain medication (n)	12	33	0.19
Severe pain* (n)	10	29	0.34
Pain intensity	4.8 ± 2.7	4.8 ± 3.0	0.99
McGill Pain score	5.9 ± 2.7	5.4 ± 2.9	0.54

* Severe pain = McGill Pain Questionnaire score ≥ 7

DISSCUSSION

According to our study, 40.6% of patients were experiencing severe pain. 50% of patients treated with DMF reported severe pain and 60% of these patients used pain medications (*P*-value 0.34 and 0.19 respectively)

Pain was reported higher in treatment with interferons, in particular Avonex. There was no statistically significant difference between DMF group and other DMTs group with regard to pain

CONCLUSIONS

In our study, we could observe that patient on DMF seem to have less pain than patients on interferons, in particular Avonex. Unfortunately the sample was small and no statistically significant difference was found. At present time, we could not imply that DMF is associated to less pain than other DMTs. However, further prospective studies with larger population are necessary to evaluate the association between pain and DMF.

According to our study, Patients on interferons particularly Avonex seemed to be experiencing more pain than the other DMTs. This result is consistent with a case report[3] documenting this association; however, the exact mechanism is unclear.

REFERENCES

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