Pain In Patients With Multipe Sclerosis

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Summary

***Background**: pain is frequently listed among initial symptoms of MS or an occurring in the course of the disease.*

***Patients** and Methods: one hundred thirty MS patients diagnosed according to Macdonald's criteria compared with 115 matched age and sex control were interviewed about pain Neuropathic, somatic and headache.*

***Results**: Neuropathic pain was significantly higher in MS than control group, while LLD and ARP were of no significance difference between two groups. For somatic pain there was significant increase in MS.*

***Conclusion**: pain is common in MS especially LLD. There is no significant difference between pain subtypes and duration of disease and FS, EDSS.*

Key words : pain, multiple sclerosis

Introduction:

Multiple sclerosis

Is generally considered to be a primarily demyelinating T-cell-mediated chronic inflammatory disease of the CNS in which an autoimmune response to myelin proteins of the CNS is triggered by one or more exogenous agents in a genetically susceptible host. [1]

MS is characterized by a triad of inflammation, demyelination, and gliosis (scarring); the course can be relapsing remitting or progressive. [2] The etiology is unknown and various theories implicating the environment, heredity, immune system or viral agents has been suggested. [3]

PAIN

Definition is unpleasant sensation localized to a part of the body, and emotional experience associated with actual or potential tissue damage. [4,5]

Acute pain is recent in onset and often expected to end in days to weeks.

Pain is defined as chronic if it:

(1) Persists for one month beyond the usual course of an acute illness or healing injury,

(2) Is associated with a chronic pathologic process.

(3) Recurs at intervals of months or years.

Classification of Chronic Pain

A/ Neuropathic pain, that is referred to the body region that is innervated by the damaged nerves, or pain that is emanating from neural injury or dysfunction.[5,6]

Clinical hallmarks of this classification are burning, dysaesthetic, piercing pain; painful responses to non-painful stimuli (allodynia) and/or increased pain sensation when noxious stimuli are applied (hyperalgesia). [6]

B/Nociceptive (somatic/visceral) pain arises from injury or disease in soft tissue or other somatic structures. Pain is usually described as sharp, throbbing or aching.

C/Psychogenic pain: usually refers to an inappropriately exaggerated reaction to a painful stimulus. [6] It persists in the absence of an identifiable organic pain source or in believed to be in excess of a documented organic lesion. [5].

Pathophysiology

The Pathophysiology of central Neuropathic pain is poorly defined, while important advances have been made in peripheral nervous system (PNS) injury-related changes. Modification of ion channels, due to demyelination and distribution of lesions along a sensory pathway, is probably a principal cause of pain generation. Moreover, pain could also arise from stimuli on PNS, such as a plaque in the pons at the root entry zone in the case of trigeminal neuralgia (TN). [6]

Patients and method:

One hundred-thirty MS patients –diagnosed according to Mc Donald criteria-[1] whom course of the disease is either relapsing remitting (RR),secondary progressive (SP), or primary progressive (PP), were studied in the Department of Neurology at Baghdad Teaching Hospital (Multiple Sclerosis Clinic) during the period between October 2003 and October 2004.

Each patient was interviewed and assessed for pain symptoms and expanded disability scale system (EDSS) and functional scale (FS) systems [2] were used to assess the severity of the disease.

One hundred-fifteen age and sex matched healthy controls (mainly medical and paramedical staff),

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were interviewed and assessed by using the same protocol paper.

We classified pain symptoms as: Neuropathic pain (Trigeminal neuralgia(TN), L'hermitte's symptom/sign, lower limb dysesthesia (LLD) and optic neuritis(ON), acute radicular pain (ARP), somatic pain (lower back pain(LBP), painful spasms) [8] and headaches (tension and migrainous). [9]

Results:

One hundred-thirty patients with MS were interviewed, males 58 (44.62 %), females 72 (55.38 %). Mean age at onset is 31 year old, mean age at interview is 38.7 year old (SEM + 1.7), mean duration of disease is 7.17 (SEM + 1) year. The mean EDSS was 5.22 (SEM + 0.3) range (1-8), FS was 5.32 (SEM +0.3) range (1-8). RRMS 101 patients (77.6 %), SPMS 14 patients (10.7 %), PPMS 15 patients (11.5 %).

A percentage of the pain incidence within each subtype of MS patients is as follow:

Neuropathic pain

TABLE (I)

Type of MS	ON	LLD	L'hermitte	TN	ARP
RR	**47 (46.5%)**	**65 (64%)**	**36 (35.6%)**	**28 (27.7%**	**3 (2.9%)**
SP	**3 (21.4%)**	**8 (57%)**	**5 (35.7%)**	**5 (35.7%)**	**0 (0%)**
PP	**4 (26.6%)**	**9 (60.3%)**	**5 (33.3%)**	**2 (13.3%)**	**1 (6.6%)**

Table (I) shows that the commonest type of Neuropathic pain in all types of MS is LLD, and the following types of pain –in a decreasing frequency- as follow:

In RR comes ON, to be followed by L'hermitte's symptom/sign, TN, and ARP.

In SP come L'hermitte's symptom/sign & TN the same frequency, ON, and ARP.

In PP come L'hermitte's symptom/sign, ON, TN, and at last ARP.

Somatic pain

TABLE (II)

Type of MS	Painful spasms	LBA
RR	**60 (59%)**	**41 (40.5%)**
SP	**8 (57%)**	**8 (57%)**
PP	**9 (60%)**	**10 (66.6%)**

Table (II): Shows the prevalence of somatic pain among patients with MS.

The incidence of somatic pain in patients with RR course is higher than the other subtypes, followed by PP and then SP.

Painful spasms are of higher incidence than LBA in RRMS, equal incidence in SPMS, and of lower incidence in PPMS.

Headache

TABLE (III)

Table (III) shows the incidence of tension headache which in general is higher than the incidence of migraine in all subtypes of MS.

Type of MS	Migraine	Tension
RR	**15 (14.8%)**	**38 (37.6%)**
SP	**1 (7%)**	**7 (50%)**
PP	**0 (0%)**	**7 (46.6%)**

RRMS with highest frequency of incidence of both types of headache followed by SPMS, and PPMS in a decreasing manner.

B/ Pain in MS patients as a whole in a comparison with the control group is as follow:

Neuropathic pain

TABLE (IV)

	ON	LLD	L'hermitte	TN	ARP
Patients	**41.5 %**	**63 %**	**35.3 %**	**26.9 %**	**3 %**
Control	**0 %**	**58 %**	**9.5 %**	**3.4 %**	**8.6 %**
P value	**0.000**	**0.4**	**0.000**	**0.000**	**0.059**

Table IV shows the incidence of some types of Neuropathic pain (ON, L'hermitte's symptom/sign, and TN) was significantly higher in MS patients than control group, while others (LLD and ARP) were of no significant difference between the two groups.

Somatic pain

TABLE (V)

	Painful spasms	LBA
Patients	58.9 %	44.1 %
Controls	33.9 %	66.9 %
P value	0.001	0.001

In table V there is significant difference in the incidence of somatic pain between MS patients and control group, being higher in patients than control regarding painful spasms, but the reverse in LBA.

Headache

TABLE (VI)

	Migraine	Tension
Patients	11.7 %	39 %
Controls	8 %	56 %
P value	0.28	0.002

In table VI there was no significant difference in the incidence of migraine between the two groups, but the control group has significantly higher incidence of tension headache than MS patients.
There is no significant difference in the incidence of pain and duration of the disease, EDSS, and FS

TABLE (VII)

Type of pain	***P*** value		
	Duration	EDSS	FS
Neuropathic	0.454	0.459	0.21
Somatic	0.6	0.2	0.31
Headache	0.37	0.52	0.54

Table VII shows p value in a group of patients with EDSS<5, EDSS>5 and FS<5, FS>5
(P<*0.05*) is regarded as the level of significance. There is no significant difference in the incidence of pain and duration of the disease,

Discussion:

In a cross sectional study we have evaluated the prevalence and characteristics of pain in 130 Iraqi patients with MS. The assessment included a heterogeneous patient population with different disease course, relatively short duration of disease, mean 7.17 (SEM +1) years, while the mean duration of the disease was 19.9 (SEM +1) years in an European study (A.G. Beiske et al, 2003)[10], and a wide range of clinical disability, mean EDSS in our study was 5.22 (SEM + 0.3) range (1-8), FS was 5.32 (SEM +0.3) range (1-8) and this is comparable with previous European study where EDSS mean was 4.09 (SEM+0.18) range (1-9) [10].

In this study 100 % of the patients had experienced pain symptoms during their course of illness, which was similar to that reported from Iranian study (H. Pakdaman et al, pain in MS)[11], while European study has reported lower frequency 65.5 %, which is probably because of shorter period for reporting pain symptom (they studied pain symptoms that had occurred within last 4 weeks before examination).

In this study the presence of pain symptoms were independent of the age of onset, mean 31.17 (SEM +1.7) years and this is comparable with the European study, mean age at onset was 31.7 (SEM+0.9); age at examination in our study was 38.3 (+1.7), while in the European study the mean age at examination was 51.6 (SEM+0.9); also pain symptoms were independent of duration of the disease mean 7.17 (SEM +1) years in ours but it was 19.9 (SEM+1) years in European's, disease course and disability which were again comparable with the same study [10] .

This study shows the presence of the following types of pain were significantly higher in patients with MS than in control group:
ON in 41.5 % of MS patients, 0 % in control (P = 0.000)
TN in 26.9 % of MS patients, 3.4 % in control (P = 0.000)
L'hermitte's symptom/sign 35.3 % of MS patients, 9.5 % in control (P =0.000)
Painful spasms 59 % of MS patients, 33.9 % in control (P = 0.001).
These results are compatible with Iranian study [11].
The prevalence of LBA and tension headache were significantly higher in control (66.9 % and 56 % respectively) than MS patients (45 % and 40 %) (P = 0.001 and 0.002 respectively) and this is the reverse of the Iranian study results which stated that these two symptoms were higher in MS patients. This may be due to the type of the work of control in our study, impaction of life in our country, and relatively short disease course, wide range of disability, and the use of the symptomatic medications by our patients.

There was no significant difference in prevalence of ARP between patients 3 % and control 8.6 % (P = 0.0059), this symptom was not included in previous studies (Iranian nor European); no significant difference in prevalence of migraineous headache between patients 12.3 % and control 8 % (P =0.28), and this is compatible with Iranian study[11].

No significant difference in the prevalence of LLD between our patients and control group (P =0.4).

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