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Depressive symptoms in multiple sclerosis patients

Multiple sclerosis, the most frequent neurological disorder affecting young people in the third or fourth decades of their life, is mainly perceived as a disease of motor and sensory systems but it is also connected with the existence of changes in psychological functioning (1). The course of the disease differs in every MS patient but we can distinguish: relapsing-remitting MS (RR-MS) with a stable phase periodically exacerbated throughout the duration of the disease, secondary progressive (SP-MS) with the beginning typical for RR-MS course unavoidably followed by a progressive phase, primary progressive (PP-MS) with steadily worsening condition from the beginning of the disease and progressive relapsing (PR-MS) with progressive course periodically exacerbations (7, 15). Since the course of the disease is unpredictable MS patients may experience different emotional disorders.

The interest in emotional disorders accompanying the disease began from Jean Marie Charcot, who first noted, about 130 years ago, that emotional and intellectual changes accompany multiple sclerosis (4, 14). In the early twenties of the XX century emotional disorders were even thought to be the most important symptoms of the disease (4, 14). Other, reported in the literature, psychiatric disorders accompanying the disease, apart from euphoria, were depression, labile mood, impulsive laughter, irritability, nervousness and memory deficits (4). The prevalence of depression in different studies is thought to be from 22–54% (1, 5, 8, 10, 13). Some authors also inform about strong association of multiple sclerosis and bipolar affective disorders. While the prevalence of affective disorders in general population is about 1 %, its occurrence in MS is about 13 %. The aim of the study was to evaluate the prevalence of depression in patients with MS, and also assess this prevalence separately for RR-MS and PP-MS groups, to find the relationship between the presence of depression, and disease duration and disability caused by the disease.

MATERIAL AND METHODS

Subjects were 106 patients of Department of Neurology of Medical University of Lublin and 41 healthy controls matched in age. We included into the study patients with diagnosis of multiple sclerosis according to McDonald criteria. 89 patients (84%) had RR (relapsing-remitting) and 17 people (16%) had PP (primary progressive) course of the disease. In the RR-MS group 51 patients (48.1%) were in relapse, while 38 patients (35.9%) in remission. The mean age of MS patients were 38.7 ± 10.8 years, whereas for control group it was 39.5 ± 14.9 years. The average disease duration was 9.8 ± 8.8 years, and the mean EDSS was 3.9 ± 1.8 . The exact demographic data concerning multiple sclerosis patients and healthy controls group are presented in table 1.

All patients underwent a complete neurological and psychological examination and their level of disability was assessed according to the EDSS (6). All participants of the study completed a Beck Depression

Inventory (BDI). It is a 21-item scale recommended for screening measure of depression. We assumed 13 points as a cut-off score for measuring depression (13). Statistical analysis was performed using Mann-Whitney test and Spearman correlation test and $p < 0.05$ was regarded as indicating a significant difference.

Table 1. Demographic characteristics

	MS patients	Control group
Number of people	106	41
RR-MS	89 (84%)	
PP-MS	17 (16%)	
Mean age (year \pm SD)	38.7 \pm 10.7	39.5 \pm 14.9
Mean age of onset (years \pm SD)	28.9 \pm 8.5	
Females (%)	60 (57%)	24 (56%)
Males (%)	46 (43%)	17 (44%)
Disease duration (year \pm SD)	9.8 \pm 8.8	
Mean EDSS (score \pm SD)	3.9 \pm 1.8	

Table 2. Level of depression in investigated group of patients

BDI score \pm SD		p
MS patients 13.1 \pm 10.2	Control group 5.7 \pm 5.7	$p < 0.001$
Men 11.6 \pm 8.2	Women 14.3 \pm 11.4	NS
RR-MS 12.7 \pm 10.2	PP-MS 15.7 \pm 9.8	NS
Relapse 14.8 \pm 10.7	Remission 9.8 \pm 8.9	$p < 0.05$
EDSS $>$ 3.5 15.0 \pm 11.0	EDSS \leq 3.5 11.0 \pm 9.0	$p = 0.053$
Disease duration \geq 3 years 15 \pm 10.4	Disease duration $<$ 3 years 8.7 \pm 8.1	$p < 0.05$
Married 15.4 \pm 10.3	Single 7.9 \pm 7.9	$p < 0.001$
Bladder problems 15.3 \pm 11.2	Without bladder problems 10 \pm 7.9	$p < 0.02$

RESULTS

49.1% of MS patients suffered from depression. Compared to control group, MS patients showed statistically significant higher total BDI score (13.1 \pm 10.2 vs 5.7 \pm 5.7). Compared to healthy controls and patients with EDSS \leq 3.5 MS, patients with higher EDSS had higher total BDI score (5.7 \pm 5.7 and 11.0 \pm 9.0 vs 15.0 \pm 11.0 respectively, $p < 0.001$) Compared to healthy control and patients with duration of MS $<$ 3 years, MS patients with duration of MS \geq 3 years showed higher total BDI score (5.7 \pm 5.7 and 8.7 \pm 8.1 vs 15 \pm 10.4, respectively, $p < 0.05$) There was also a difference in BDI score between patients married and single (15.4 \pm 10.3 and 7.9 \pm 7.9 respectively, $p < 0.001$), difference between patients in relapse and remission (14.8 \pm 10.7 and 9.8 \pm 8.9 respectively, $p < 0.05$) and patients with and without bladder problems (15.3 \pm 11.2 vs 10 \pm 7.9, $p < 0.02$) There was no statistically significant difference in BDI score (11.6 \pm 8.2 vs 14.3 \pm 11.4) between men and women both in MS and healthy control groups. We found statistically significant positive correlation between severity of depressive symptoms and disease duration and disability measured in EDSS.

DISCUSSION

The frequency of depressive symptoms in multiple sclerosis patients vary in different studies from 15–54% (1, 5, 8–11, 13). Considering only reliable studies, this frequency vary from 27–54% (9). On the basis of our research 49.1% of multiple sclerosis patients suffered from depressive symptoms, but the majority of patients had depression of mild intensity. Our results are similar to those found by us in most of other studies (1, 8, 10, 11, 13, 15). This wide range of percentage may derive from the fact that in detecting depressive symptoms some problems may occur, because certain depressive symptoms such as chronic fatigue, motor slowing, lack of energy, sleep disturbances and concentration problems may overlap with symptoms of depression.

We assumed 13 points in BDI as a cut-off point for screening measure of depression in our patients. According to Sullivan's study BDI cut-off score of 13 points is recommended as an optimal in this case, and it still gives a false negative rate of 30 % (13). Correlation between depressive and anxiety symptoms and degree of physical disability was investigated in many studies (2, 5, 8). Although widely investigated, this correlation is still unclear. Our results showed that there was a tendency for depressive symptoms to increase with higher level of disability measured in EDSS, which is in accordance with the results of some authors (2, 8). But there are still some studies in which such correlation has not been confirmed. Their authors claim that frequency and severity of depressive symptoms are rather independent of disease severity measured with EDSS (5, 7). In Joffe's study on 100 MS patients no positive correlation was found between functional disability measured in Kurtzke scale and the intensity of mood disorders (5). According to Stenager, on the other hand, there is a tendency for depression to increase with worsening disability up to an EDSS score of 5–6 points but patients with greater disability (EDSS 7–9) in spite of severe brain damage show lower level of depression compared to mildly disabled patients (quotation after 9).

Some studies suggest that psychiatric episodes coincide with neurological exacerbations (2, 9). Results of our study also confirm this hypothesis. Some authors proved that in most patients depressive symptoms were present during exacerbations of the disease. Milleforini also revealed that greater degree of disability is connected with a higher risk of depression (8). It is still not known whether depression in MS is just a psychological response to the functional loss and disability or has a neurological substrate. Probably depression in MS is not only a direct response to functional loss. It is known that affective disorders in MS patients are present more often than patients with other neurological deficits and comparable degree of disability (1). A comparison of 64 MS patients and 23 patients with spinal cord injury revealed that fewer emotional disturbances were present in spinal cord injury group who were more functionally disabled (2, 12). Studies on MS patients with demyelinating lesions located mainly in spinal cord showed that they suffer fewer depressive disorders compared to the group with predominantly brain lesions despite their greater disability (13).

Our results showed that patients with longer disease duration tend to be more depressive. This positive correlation was also confirmed in McIvor's study carried out in 1984. But in a number of studies such correlation was not confirmed (2, 9). On the other hand, Sullivan in his study made in 1995 on newly diagnosed patients (within 2 months of the diagnosis of multiple sclerosis) revealed that the frequency of depression was above 60% in this group. In our study patients with disease duration >3 years were more depressive than those suffering from MS <3 years. Another thing is that 3 years' time of MS duration is usually connected with still relatively good physical ability. Usually longer disease duration is unavoidably connected with worsened condition of the patient. Probably for this reason we cannot treat disease duration as an independent risk factor of depression in multiple sclerosis. Our results show that single MS patients are less depressive than married ones. This can be explained by the married MS

patients' fear about being a burden to their family, also fear of being left by a spouse, about future of their children (including higher prevalence of the disease in MS patients' families). The above mentioned difference between single and married was not observed in our control group.

In our study the existing bladder problems in MS patients seems to contribute to the presence of depressive symptoms but has no influence on anxiety disorders. We have not found a similar observation in other studies but this relation is not astonishing. Bladder problems can be embarrassing and stressing to many patients.

CONCLUSIONS

Although neuropsychological aspects of multiple sclerosis have been a subject of interest in recent years, in everyday clinical practice these aspects of the disease remain unrecognized or ignored (3). Scales commonly used for measuring disability in multiple sclerosis such as expanded disability status scale introduced by Kurtzke in 1983 (EDSS) do not take mood disorders and cognitive deterioration of these patients into account; they focus on physical disability mainly (6). The aim of this article was to stress the need to place more attention on clinical detection and treatment of psychopathological disorders in multiple sclerosis patients. Early identification and treatment of depression may decrease the negative influence of bad psychological functioning on the course of the disease and reduce depression related disability. Since pathogenesis of mood disorders in MS has not been explained yet, it should be a subject of future research.

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SUMMARY

The aim of this study was to assess the occurrence and level of depression in multiple sclerosis (MS) patients and its dependence on clinical course of the disease, disease duration and disability (assessed in EDSS). Subjects were 106 patients with clinically definite MS and 41 healthy controls matched in age. Patients were assessed using the Beck Depression Inventory (BDI); they underwent a standard neurological examination and their level of disability was evaluated in EDSS. 49.1% of MS patients suffered from depression. Compared to control group, MS patients showed statistically significant higher BDI score (13.1 ± 10.2 vs 5.7 ± 5.7). Compared to healthy controls and patients with $EDSS > 3.5$, MS patients with lower EDSS had higher BDI score. Compared to healthy controls and patients with duration of MS > 3 years, MS patients with shorter disease duration showed higher total BDI score. There was also statistically significant difference in BDI score (14.8 ± 10.7 and 9.8 ± 8.9 respectively) between patients in relapse and in remission. Although depression is a common mood disorder in MS patients this aspect of the disease is often unrecognized or ignored. The most numerous group among MS patients are people with mild intensity of depression. Depressive symptoms have greater intensity in patients with longer disease duration, greater disability and during relapse of MS.

Objawy depresji u chorych na stwardnienie rozsiane

Celem pracy była ocena częstości występowania i nasilenia depresji u chorych na stwardnienie rozsiane (SM) w zależności od przebiegu klinicznego i czasu trwania choroby oraz stopnia niesprawności (w skali EDSS). Oceniono 106 chorych z SM (M/K=60/46; średni wiek - $38,7 \pm 10,7$, postaci RR-MS/PP-MS = 89/17) i 41 osób zdrowych zgodnych wiekowo. Do badań wykorzystano skalę depresji Becka (BDI), wszyscy chorzy byli badani neurologicznie, a ich stopień niesprawności oceniano również w skali EDSS. 49,1% chorych z SM miało zaburzenia depresyjne o różnym stopniu nasilenia. W porównaniu z grupą kontrolną chorzy z SM wykazywali znacząco wyższy wynik w skali depresji Becka ($13,1 \pm 10,2$ vs $5,7 \pm 5,7$). W porównaniu z grupą kontrolną i chorymi z $EDSS > 3,5$ u chorych z niższym EDSS (mniejszym stopniem niesprawności) stwierdzono wyższy stopień nasilenia depresji ($p < 0,05$). W porównaniu z grupą kontrolną i chorymi, u których choroba trwała > 3 lata, osoby, które chorowały na SM < 3 lata wykazywały wyższy stopień nasilenia depresji ($p < 0,05$). Stwierdzono również istotną statystycznie różnicę w wyniku BDI między chorymi w czasie rzutu i w okresie remisji ($14,8 \pm 10,7$ i $9,8 \pm 8,9$ odpowiednio, $p < 0,05$). Depresja jest częstym zaburzeniem stwierdzanym u chorych z SM. Najliczniejszą grupę wśród chorych na SM stanowią osoby o łagodnym stopniu nasilenia zaburzeń depresyjnych. Depresja występuje z większą intensywnością u pacjentów z dłuższym czasem trwania choroby, z większym stopniem nasilenia niesprawności w skali EDSS oraz w czasie rzutu choroby.