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POSTTRAUMATIC STRESS DISORDER, TENDERNESS AND FIBROMYALGIA

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Abstract—The aims of the present study were to inquire into the prevalence of fibromyalgia syndrome, to assess nonarticular tenderness, to measure fibromyalgia syndrome-related symptoms, quality of life, and functional impairment among posttraumatic stress disorder (PTSD) patients as compared with control subjects. Furthermore, the differences between the PTSD patients with and without fibromyalgia syndrome were studied. Twenty-nine PTSD patients and 37 control subjects were assessed as to the diagnosis of fibromyalgia syndrome according to the American College of Rheumatology. Tenderness was assessed manually and with a dolorimeter. Fibromyalgia syndrome-related symptoms, quality of life, physical functioning, PTSD symptomatology, and psychiatric features were assessed by valid and reliable self-report inventories. Results showed that the prevalence of fibromyalgia syndrome in the PTSD group was 21% vs. 0% in the control group. Furthermore, the PTSD group was more tender than the control group. PTSD subjects suffering from fibromyalgia syndrome were more tender, reported more pain, lower quality of life, higher functional impairment and suffered more psychological distress than the PTSD patients not having fibromyalgia syndrome. It is suggested that previous reports on diffuse pain in PTSD in fact described undiagnosed fibromyalgia syndrome. The link between psychological stress and pain syndromes is emphasized. © 1997 Elsevier Science Inc.

Keywords: Fibromyalgia syndrome; Posttraumatic stress disorder; Quality of life; Tenderness.

INTRODUCTION

Posttraumatic stress disorder seems to be associated with a complex array of abnormalities in several biological systems in addition to its more obvious psychological components [1]. Despite the fact that controlled research in this area is at a relatively early stage, findings from a number of studies suggest that PTSD patients exhibit distinctive physiological, neuropharmacological, and neuroendocrinological changes [2–4]. The present study deals with the link between the more biological and psychological approaches, namely the sensitivity to pain and tenderness.

Fibromyalgia syndrome is a common syndrome of diffuse aching, pain, and stiff-

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ness in the muscles or joints, accompanied by tenderness on examination at specific, predictable anatomic sites known as tender points [5]. A constellation of ancillary symptoms may be present, such as headache, sleep disturbances, irritable bowel syndrome, and fluctuations of symptoms in response to changes in weather or stress level [6]. Although the syndromic status of fibromyalgia remains uncertain and the disorder has been thought to be attributable to psychological factors or medically unexplained, the topic is controversial and studies show both positive and negative evidence [e.g., 7, 8].

Because fibromyalgia syndrome symptoms have been shown to vary with emotional stress and many of these symptoms (pain sensitivity, sleep disturbances, headaches, etc.) have often been reported in association with PTSD, we decided to study fibromyalgia syndrome prevalence and features in PTSD patients and compare them to a matched control group. The aims of the present study were as follows:

1. To inquire into the prevalence of fibromyalgia syndrome, and assess nonarticular tenderness (manually and by a dolorimeter) in PTSD patients as compared to controls.
2. To inquire into the distribution of fibromyalgia syndrome-related symptoms, quality of life, and functional impairment in the PTSD population as compared to the control group.
3. To question further the differences between the PTSD patients with and without fibromyalgia syndrome with regard to quality of life, functional impairment, core symptoms of PTSD, and associated features of general psychopathology (depression, anxiety, etc.).

METHOD

Subjects

Twenty-nine PTSD patients and 37 control subjects participated in the study. No significant differences were found between the ages of the two groups (mean age for the PTSD group 34.4 [10.8] and for the control group 36.2 [6.8]), between the female/male ratio (18/11 for the PTSD group and 24/13 for the control group), education (mean years of school was 12 years for both groups), and percentage of those married (62% for PTSD group and 78% for control group). The 29 PTSD patients participating in the study were the entire patient group consecutively admitted to the clinic at the time of the study. Four patients approached refused to participate in the study. All four were apprehensive of the dolorimeter pressure examination. The traumas to which these patients had been exposed and consequently developed PTSD were mixed: combat reactions, motor vehicle accidents, work accidents, and civilian terrorist incidents. It should be noted that these patients were relatively severe cases of PTSD and they were almost all referrals from outside sources, such as the Israeli Ministry of Defence (war/army-related), family physicians, the National Insurance (civilian terrorist victims), etc. The PTSD patients were recruited from a trauma and posttrauma clinic affiliated with the Beer-Sheva Mental Health Center, a university-affiliated psychiatric hospital. This clinic is the only PTSD clinic in the southern part of Israel with a catchment area of 400,000 citizens. Upon admission to the study each subject was diagnosed by a senior psychiatrist according to DSM-IV [9] to verify the PTSD diagnosis. Each patient participated in the study within 3 months of admission to the clinic. Patients treated with supportive psychotherapy only were included in the study. The study was approved by the ethics committee of the Hospital and each patient signed an informed consent form. No patient had alcohol abuse or organic problems. Only patients with minor physical injuries, as assessed by the senior physician, participated in the study. The control group was a sample of volunteers randomly selected from the technical and administrative staff of Ben-Gurion University. The matching was done by group means. All controls were healthy with no coexistent disease. Musculoskeletal pain symptoms played no part in the inclusion or exclusion process.

Assessment

Fibromyalgia syndrome. To assess the presence of fibromyalgia syndrome we used the American College of Rheumatology (ACR) [10] criteria, which are as follows: (1) the subject had widespread pain for

at least 3 months in combination with (2) tenderness at 11 or more of 18 specific tender point sites specified in what follows.

Tenderness. Tenderness assessment (manually and with a dolorimeter) has been described in great detail elsewhere [10]. In all subjects, a count of 18 tender points at nine symmetrical sites was performed by thumb palpation. Threshold of tenderness was measured using a Chatillon dolorimeter, which has a maximum scale of 9 kg [11]. This threshold is measured at nine tender points and four control points. All dolorimeter measurements as well as the point count were done by one observer (R.S.), and the interview regarding symptoms was done by another observer (N.S.); thus the first observer was unaware of the symptoms reported by the subject. As both observers were undergraduate psychology students, they could not anticipate tenderness findings.

Fibromyalgia syndrome symptoms. Visual analog scales (VAS) were used by patients to evaluate their current levels of pain, morning stiffness, and fatigue. The items were scored on a 0–10-point scale, with 10 denoting the worst possible condition. In addition, the presence of the following symptoms was reported: sleep disturbance, headache, parasthesias, and subjective joint swelling.

Quality of life. Assessment of quality of life was done by a 16-item questionnaire from an instrument by Flanagan [12]. Subjects were asked to rate their level of satisfaction using a seven-point scale with 1=highly dissatisfied and 7=highly satisfied. The score for this questionnaire is the mean score of the 16 items. This questionnaire has been adapted to Hebrew and validated in a recent study [13]. In the present study Cronbach's α was 0.966 for this scale.

Physical functioning. Physical functioning and health status were assessed by the Fibromyalgia Impact Questionnaire (FIQ) [14]. The first part of the FIQ focuses on the patient's ability to perform daily tasks and contains ten items, with 0=always able to do and 3=never able to do. The mean of these items yields one physical functioning score. The FIQ was adapted to Hebrew and validated in an earlier study [15]. Cronbach's α in the present study for the FIQ was 0.889.

PTSD symptoms. PTSD core symptoms of *intrusion* and *avoidance* were measured by the Impact of Event Scale (IES) devised by Horowitz et al. [16] to assess the emotional sequelae of extreme stress. High validity and reliability of the IES has been established in the Hebrew version [17]. Cronbach's α in the present study for the IES was 0.878. This measure was administered only to the PTSD group.

Psychiatric symptoms. To assess associated psychiatric features of PTSD we used the SCL-90 [18]. In addition to the nine subscales, we used the Global Severity Index (GSI), which reflects the clinical severity of all symptoms. The Hebrew version has been used extensively in PTSD research in Israel [e.g., 19]. Cronbach's α in the present study for the SCL-90 was 0.980 for the whole scale.

RESULTS

Comparing the PTSD group to the control group

Table I shows the prevalence of fibromyalgia syndrome and the two measures of tenderness as well as quality of life and physical functioning for the PTSD group and the controls.

Table I.—Prevalence of fibromyalgia syndrome, measures of tenderness, quality of life and FIQ

Variable	PTSD (n=29)	Controls (n=37)	p-value
Fibromyalgia syndrome prevalence	6 (21%)	0 (0)	0.005
Point count (of 18) ^a	7.9 (4.8)	4.5 (3.6)	0.0014
Dolorimeter threshold at nine tender points ^b	4.4 (1.8)	5.8 (1.3)	0.006
Dolorimeter threshold at four control points ^b	5.3 (1.7)	6.5 (1.1)	0.0009
Quality of life ^c	3.8 (1.7)	6.0 (1.1)	0.0001
FIQ ^d	1.7 (0.6)	0.7 (0.6)	0.0001

^a Mean (SD).

^b Mean (SD) (in kilograms).

^c Mean of 16 items (0–7, 7—maximal satisfaction).

^d Mean of 10 items (0–3, 3—maximal impairment).

Table II.—Distribution of fibromyalgia syndrome-related symptoms in the PTSD vs. the control group

Fibromyalgia syndrome-related symptoms	PTSD group (n=29)	Control group (n=37)	p-value
Pain (0–10) ^{a,b}	7.6 (2.0)	4.5 (11.9)	ns
Morning stiffness (0–10) ^{a,b}	7.0 (2.8)	2.1 (2.9)	0.0001
Fatigue (0–10) ^{a,b}	7.5 (2.8)	3.2 (3.0)	0.0001
Sleep disturbance ^c	88%	8%	0.0001
Headache ^c	90%	41%	0.0001
Paresthesias ^c	72%	20%	0.0001
Subjective joint swelling ^c	36%	7%	0.01

^a Mean (SD).

^b Higher value indicates impaired condition.

^c Percent of subjects who indicated presence of symptom.

From Table I it can be seen that, on all the above measures, the PTSD group is in worse condition, has higher prevalence of fibromyalgia syndrome, lower tenderness scores, lower quality of life and more physical impairment. Table II shows the distribution of fibromyalgia syndrome-related symptoms in the PTSD group vs. the control group.

From Table II it can be seen that the PTSD patient group reported more frequent and severe symptoms (with the exception of “pain”) as compared to the control group. They suffered more morning stiffness, fatigue, sleep disturbance, headache, paresthesias and subjective joint swelling.

Comparing the two groups on the SCL-90 (data not shown here) shows, as expected, that the PTSD group is significantly elevated on all the subscales as compared to the control group. All comparisons were significant at $p < 0.0001$.

Comparing PTSD patients with and without fibromyalgia syndrome

To further inquire into the relationship between PTSD and fibromyalgia syndrome we subsequently studied the two PTSD patient groups, the ones diagnosed with full fibromyalgia syndrome ($n=6$) and the ones without this diagnosis ($n=23$).

As expected, the PTSD patients with fibromyalgia syndrome were more tender than the non-fibromyalgia syndrome PTSD subjects. Their mean point count and mean dolorimeter threshold were 13.8 (2.2) and 2.5 kg (0.8) vs. 6.4 (4.1) and 4.9 kg (1.7) ($p=0.002$) respectively. The PTSD patients with fibromyalgia syndrome reported significantly more pain ($p=0.03$), significantly more fatigue ($p=0.046$), and lower quality of life ($p=0.05$) than patients without the syndrome.

Regarding the psychological parameters, IES and SCL-90, the comparison between the two groups is shown in Table III.

From Table III it can be seen that the differences between the two groups were insignificant for the two core measures of PTSD, intrusion, and avoidance and significant for most of the SCL-90 subscales (with the exception of somatization and obsession); that is, the PTSD group with Fibromyalgia Syndrome scored higher (i.e., suffered more).

Table III.—Intrusion, avoidance and psychiatric symptoms in PTSD subjects with and without fibromyalgia syndrome

Scale	PTSD subjects with fibromyalgia syndrome (n=6), mean (SD)	PTSD subjects without fibromyalgia syndrome (n=23), mean (SD)	p-value
IES			
Intrusion	28.0 (8.6)	21.7 (9.0)	NS
Avoidance	19.7 (12.1)	17.3 (7.9)	NS
SCL-90			
GSI	2.8 (0.5)	1.7 (1.0)	0.025
Somatization	2.7 (0.5)	1.9 (1.1)	NS
Depression	3.1 (0.5)	1.9 (1.2)	0.02
Phobia	3.2 (0.5)	1.6 (1.0)	0.001
Obsession	3.0 (0.5)	2.1 (1.3)	NS
Anxiety	3.3 (0.4)	2.0 (1.2)	0.013
Paranoia	2.7 (0.6)	1.2 (0.9)	0.0008
Interpersonal	2.4 (0.6)	1.4 (1.2)	0.07
Hostility	2.6 (0.8)	1.6 (1.0)	0.029
Psychosis	2.4 (0.9)	1.4 (1.2)	0.08

DISCUSSION

In this study a prevalence of 20% of fibromyalgia syndrome was found in PTSD subjects, whereas none of the controls had such a diagnosis. The PTSD subjects were much more tender and sensitive to pain than the normal control group (higher point count and lower dolorimeter threshold) and reported more fibromyalgia syndrome-related symptoms than their matched controls. The PTSD subjects diagnosed as suffering from fibromyalgia syndrome reported a higher level of overall suffering (GSI) and impaired quality of life, and reported more psychiatric symptoms (depression, phobia, anxiety, paranoia, interpersonal sensitivity, hostility, and psychosis) than their counterparts who had no fibromyalgia syndrome. However, regarding the fibromyalgia syndrome-related symptoms, differences between the groups were significant only for pain and fatigue.

The prevalence of 20% fibromyalgia syndrome found here is far greater than in the general population (2%) [20] and reaches the figures for rheumatology patients [21]. The finding that there is a correlation between pain and PTSD is in accordance with earlier studies [22–24]. Kuch et al. [25] found that, among 60 patients treated for fibromyalgia syndrome in a pain clinic, the prevalence of phobias and PTSD were 3.2 times more common in victims of minor road vehicle accidents than in subjects with non-vehicular-related onset of pain. This group [26] has repeatedly found that anxiety disorders (of which PTSD is one) are connected and interact with chronic pain. The present study is the first one to assess the prevalence of fibromyalgia syndrome in a diagnosed PTSD population and the data support a strong connection between the two disorders. It is very likely that some of the pain sensitivity and chronic pain syndrome found in earlier studies of PTSD are in fact cases of undiagnosed fibromyalgia syndrome. The present study indicates that fibromyalgia syndrome has a substantial overlap with PTSD, which supports the psychological background of the disorder.

The results of our study raise the question of whether fibromyalgia syndrome is,

in fact, a stress-related disease. Goldenberg [27] states that fibromyalgia syndrome is not a psychiatric disease, however, he emphasizes the relationship to psychological stress. Some studies suggest that fibromyalgia syndrome patients report an increase in symptoms when emotionally stressed [e.g., 8] and that fibromyalgia syndrome patients report higher levels of daily hassles than other patient groups [28]. However, typically one third or more of the samples obtain a normal psychological profile, indicating that psychopathology is not necessary for the development of fibromyalgia syndrome [29]. It seems that there is great variability among fibromyalgia syndrome patients and that some might be more vulnerable to other disorders, among them PTSD. Furthermore, the study indicates that fibromyalgia syndrome is a complex of both somatic and psychological symptoms. Because the pathogenesis of fibromyalgia is not totally clear, its symptoms should be seen as functional or medically unexplained, and whose etiology may be substantially attributable to psychological factors. It would be interesting to examine fibromyalgia syndrome patients for PTSD prevalence to see if PTSD or PTSD symptomatology would be elevated in this group.

The present study is limited in that the sample represents relatively severe PTSD cases. It may be difficult to generalize the findings of the present study to PTSD patients seeking treatment in the community. Further studies should address this.

In summary, we found a high prevalence of fibromyalgia syndrome in PTSD patients and numerous common symptoms. This suggests that previous reports on diffuse pain in PTSD could be undiagnosed fibromyalgia syndrome. The present study further emphasizes the link between stress and pain syndromes and points to the importance of psychological factors in the etiology of fibromyalgia syndrome. Further studies should establish this relationship and resolve unanswered questions.

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