

The prevalence of fibromyalgia among school children in Kalubia

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Aim of the work

This study aimed to determine the prevalence of juvenile fibromyalgia syndrome (JFMS) among school children in Kalubia.

Patients and methods

This is a cross-sectional study conducted on school children in Kalubia governorate in January 2012 to determine the prevalence of fibromyalgia syndrome among school children. A total of 2000 children attending on the days of our visits were recruited from (a) primary and (b) preparatory schools. JFMS was diagnosed according to American College of Rheumatology (ACR) revised criteria 2010.

Results

We found that the prevalence of fibromyalgia among students in Kalubia governorate was 1.25%. Widespread pain and fatigue were found in all JFMS cases (100%), muscle stiffness was found in 14 cases (56%), and decreased physical activity in 12 cases (48%). Migraine was detected in 13 cases (52%), whereas sleep disturbance was present in 10 cases (40%). Also, depression was found in 10 cases (40%) and anxiety in two cases (8%). Irritable bowel symptom was detected in five cases (20%), but both weight fluctuation and atypical chest pain were recorded in one case (4%).

Conclusion

Pediatricians and other health providers should suspect JFMS in children suffering from pain, fatigue, and heat and exercise intolerance.

Keywords:

fibromyalgia syndrome, juvenile, Kalubia, school children

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Introduction

Fibromyalgia (FM) is a form of nonarticular rheumatism characterized by musculoskeletal ache and tenderness on palpation of certain musculoskeletal sites [1]. Approximately 8–10 million Americans have FM, with more than half of them being female. The average age of diagnosis in adults is around 40–50 years and 13–15 years for children. Typically, fibromyalgia syndrome (FMS) remains undiagnosed for years before being accurately identified, and patients see an average of three to five doctors before proper diagnosis [2]. Furthermore, most adults with FMS can trace their symptoms to their childhood and one is more likely to develop FMS if he/she has a family member with it [3].

Many etiologies have been proposed for FMS, but neither the etiology nor the pathophysiologic mechanism of this diffuse pain syndrome is known [4]. It is possible that several phenomena such as microtrauma to the muscles or the tendons with referred pain, central nervous system pain-processing pathway dysfunction, disordered stress response, endocrine or hormonal factors, and sleep disturbance may play an overlapping role in the development of this syndrome [5].

Because of the multifaceted problems that develop, effective treatment of FMS requires a multidisciplinary approach, which may include medications, physical therapy, exercises, support groups, and psychological therapy [6]. Low-dose antidepressants, such as amitriptyline, and skeletal muscle relaxants, such as cyclobenzaprine, help to decrease the hyperarousal mechanisms in FM and, in turn, help the child or the adolescent to sleep better. Both medications are administered at bedtime or 1–2 h before bedtime [7]. Some debate surrounds as to which medication should be used initially. Some suggest the use of cyclobenzaprine first in treatment, whereas others suggest beginning medication therapy with low-dose tricyclic antidepressants [8]. The prognosis in juvenile fibromyalgia syndrome (JFMS) is more favorable than its adult version. One theory is that FMS may go dormant, and then reappear later in life. Other theories are that early intervention and treatment may result in a less severe form of the illness [9].

Aim of the work

This study aimed to determine the prevalence of JFMS among school children in Kalubia.

Patients and methods

This is a cross-sectional study conducted on school children in Kalubia governorate in January 2012 to determine the prevalence of FMS among school children. A total of 2000 children attending on the days of our visits were recruited from (a) primary and (b) preparatory schools. JFMS were diagnosed according to the American College of Rheumatology (ACR) revised criteria. Children suffering from any acute infection or metabolic, genetic, endocrinal, or autoimmune diseases were excluded. This study was approved by our faculty ethical committee and children school board of directors. This study was carried out in two stages. In the first stage, all children were questioned about muscle pain above and below the waist on both sides. In the second stage, all children with widespread pain (detected in the first stage) in all four quadrants of their bodies for at least 3 months' duration were subjected to full history taking about disease duration, sleep disturbance and its frequency, ability to concentrate, fatigue, gastrointestinal symptoms, weight fluctuations within the last 3 months, and other health changes such as anxiety, depression, migraine, or an irritable bladder. Also, thorough clinical examination including general examination and locomotor system examination was performed. Laboratory tests, including complete blood count, liver function, kidney function, erythrocyte sedimentation rate, thyroid-stimulating hormone, rheumatoid factor, and antinuclear antibodies were performed. The Widespread Pain Index and the Symptom Severity scale were administered [10]. Depression was assessed with the Children's Depression Inventory. Student's *t*-test and Fisher's exact testing using SPSS 19 (SPSS version 16 Inc, Chicago, ILL) were performed for statistical analysis. *P* value less than 0.05 was considered as significant.

Results

Characteristics of the patient and the control groups

This study included 2000 students: 960 boys (48%) and 1040 girls (52%). Seventy-five students complained of pain when the questionnaire was administered, but clinical diagnosis of FM was established in only 25 cases [seven male (28%) and 18 female (72%)]. Their ages ranged between 9 and 15 years, with a mean age of 11.9 years. The remaining 50 students were chosen as the control group, including 25 female (50%) and 25 male (50%) participants. Their ages ranged between 11 and 15 years, with a mean age of 11.9 years. Hence, the prevalence of FM in this group was 1.2%.

Clinical data of fibromyalgia patients

Although widespread pain and fatigue were found in all FM cases (100%), muscle stiffness was detected

in 14 cases (56%) and decreased physical activity in 12 cases (48%). Migraine was present in 13 cases (52%), whereas sleep disturbance was present in 10 cases (40%). Also, depression was present in 10 cases (40%) and anxiety in two cases (8%). Irritable bowel symptoms were present in five cases (20%), but both weight fluctuation and atypical chest pain were present in one case (4%) (Table 1).

Discussion

Official recognition of FM in adults has been slow, and unfortunately, the recognition and acceptance of JFMS is even slower [9,22]. JFMS was not a separate entity until Dr Muhammad Yunus introduced it into the medical literature in 1985 and reported that it accounts for 25–40% of children with chronic pain syndromes [6]. Recent researches suggest that adolescents with FMS are more likely than their peers to experience social problems such as isolation and peer rejection due in part to academic failure, and adolescents with JFMS were rated by teachers, peers, and themselves as being more sensitive, isolated, and having fewer popularity and leadership qualities [11].

The incidence of FMS in children may be as high as 6.2% of the general pediatric population: 7.5% of new diagnoses are made among children and adolescents by pediatric rheumatologists and ~25% of new referrals to pediatric rheumatologists [23]. JFMS can affect child health and development detrimentally, and adolescents with JFMS receiving inadequate treatment may withdraw from the school and the social milieu, complicating their transition to adulthood [12]. Also, the cognitive symptoms of FM decrease students' concentration in the school, may cause grades to drop,

Table 1 Comparison between patients with juvenile fibromyalgia syndrome and controls with regard to their clinical data

Symptoms	Cases [N (%)]	Control [N (%)]	Total [N (%)]	X	P
Muscle pain	25 (100)	10 (20)	35 (47.7)	42.58	0.001
Fatigue	25 (100)	15 (30)	40 (53.3)	32.8	0.001
Muscle stiffness	14 (56)	10 (20)	32 (42.7)	9.9	0.0016
Gastrointestinal symptoms	5 (20)	9 (18)	14 (18.7)	0.01	0.9
Atypical chest pain	1 (4)	3 (6)	4 (6.3)	0.03	0.85
Migraine	13 (52)	15 (30)	28 (37.3)	3.45	0.06
Irritable bowel	5 (20)	5 (10)	10 (13.3)	0.71	0.4
Sleep disturbances	10 (40)	5 (10)	15 (20)	9.38	0.002
Weight fluctuation	1 (4)	5 (10)	6 (8)	0.204	0.65
Decreased physical activity	12 (48)	10 (20)	22 (29.7)	6.3	0.012
Anxiety	2 (8)	4 (8)	6 (8)	0	1
Depression	10 (60)	4 (8)	14 (81.3)	9.23	0.002

and have an impact on their academic achievement. Furthermore, the child may be thought to be lazy, emotionally disturbed, school phobic, unmotivated, or a slacker, although he is actually in pain and suffers from debilitating fatigue [13].

This study aimed to determine the prevalence of JFMS among school children in our governorate. We found that the prevalence of JFMS among students in Kalubia governorate was 1.25%, and this was consistent with the result of Anglo *et al.* [5], who found that the prevalence of FM was 1.3% among Mexican school children. Although there is a significant difference between our results and those of Buskila and Press [14], who documented that the prevalence of FM was 6.2% among Israeli schools in their study of 338 children, they were similar to our results in that JFMS was more common in girls (80%) than in boys. Also, there was another point of similarity: most of the children diagnosed with JFMS were prepubertal or adolescent girls aged 11–13 years, and this result can be explained by the fact that adolescence is a period of psychological and hormonal changes. Surprisingly, this study evidenced that JFMS is more prevalent than idiopathic arthritis (3.3/1000) as reported by Tayel and Tayel [15]. Moreover, our data were consistent with Yunus [16], who discovered that the prevalence of FM cases surpassed that of juvenile rheumatoid arthritis. In marked contrast, respective reviews of the children attending the clinics of the arthritis society, British Columbia and Yukon division, and the British Columbia Children Hospital between 1982 and 1990 could document only 35 children with JFMS and not a single case among the 875 children attending the university hospital pediatric rheumatology clinic in Saskatoon between 1981 and 1989 [5].

Our study showed that the prevalence of JFMS is less than its adult version as estimated by Jaime *et al.* [17]. Their survey was performed in five European countries (France, Germany, Italy, Portugal, and Spain) to estimate the prevalence of FM in the general population and reported that the prevalence of FM ranged between 2.9 and 4.7% of the children. The previous discrepancies reflect the difficulties in performing such studies, the concept that FM has been evolving over many years, the more different definitions of widespread pain as well as different criteria for classification and the different methods used in these studies. Another major problem is that the diagnosis of JFMS depends on self-reported symptoms, reflecting many factors such as ethnicity, age, psychological distress, and social background [17].

Also, our results were nearly identical to that of Sanjida and Gleason [12], who showed that 76.4%

of their JFMS cases were female. This may be due to the lower pain threshold in women resulting from changes in estrogen levels, which seems to trigger a higher sensitivity to pain. In addition, the male hormone testosterone may be a protective tool against pain.

In the present study, widespread pain and fatigue were present in all cases of JFMS and muscle pain was present in 10 cases (46%), and this was consistent with the study conducted by Yunus [16], who reported that all patients with FM complain of widespread pain and fatigue.

Sleep disturbance was registered in 10 cases (46%), and this was similar to Bigatti [17], who reported a high prevalence of sleep problems among his patients and suggested that they play a critical role in exacerbating FM symptoms.

We found gastrointestinal dysfunctions in five cases (20%), and this was in contrast to the study of Almansa [18], who described gastrointestinal dysfunction in all patients with FM and proposed that an increased degree of psychological distress in these patients predisposes them to functional gastrointestinal disorder (FGID), especially significant for anorectal syndromes.

The present study revealed depressive symptoms in 10 cases (40%), and this in agreement with Okifuji [19], who reported that depressive disorders are prevalent in FM and may be independent of the cardinal features, but are related to the cognitive appraisals of the effects of the symptoms on daily life and functional activities. Anxiety was present in two cases (8%) in our work, and this result suggested that FMS is not a homogeneous diagnosis, but shows varying proportions of comorbid anxiety and depression depending on the psychosocial characteristics of the patients. The current study found that migraine was present in 13 cases (52%), and this is nearly similar to Kashikar-Zuck *et al.* [20], who reported migraine in 63% of their JFMS cases.

In contrast, Cohen *et al.* [11] assessed the prevalence and the severity of FMS among 92 patients suffering from episodic migraine, and the diagnosis of FMS was reached in 22.2% of the female patients and in none of the male patients.

Also, in a study on FM comorbidity by Tommaso *et al.* [21], they reported that primary headache was presented in 36.4% of their cases, and this increased frequency is due to the facilitation of central sensitization phenomena favored by anxiety and sleep disturbances.

Conclusion

Pediatricians and other health providers should suspect JFMS in children who suffer from pain, fatigue, heat and exercise intolerance, cognitive fog, and other symptoms of FM and related syndromes. We recommend not to treat patients with FMS as a homogeneous group and treatment should focus on both physical and emotional dysfunction.

Acknowledgements

Conflicts of interest

None declared.

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