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The Severity of Premenstrual Syndrome Symptoms in Sickle Cell Disease Patients: A Case- Control Study

ABSTRACT

Objective: Sickle Cell Disease (SCD) patients experience recurrent pain attacks and up to 30% of these become chronic pain. There is known to be a relationship between chronic pain and depression and other psychological problems. Therefore, Sickle Cell Disease patients often experience a series of social and psychiatric problems. The aim of this study to determine the frequency and severity of premenstrual syndrome in women aged ≥18 years with sickle cell disease and to compare these values with healthy women.

Methods: This case control study was conducted from January 2018 to March 2018. The data were collected using a questionnaire of 21 items and the Premenstrual Syndrome Scale (PMSS). Statistical analysis was performed using SPSS 21 software.

Results: The study included 50 patients aged with 18 years who were diagnosed sickle cell anemia at the University Hospital and control group of 50 subjects have no chronic disease. Premenstrual Syndrome (PMS) according to DSM-5 was determined in 34 (68%) of the case group and 39 (78%) of the control group (p=0,26). Mean depressive effect subscale score was 15.64±6.56 in the sickle cell anemia group while, it was 19.48±6.67 in control group (p=0,05).

Conclusions: Although PMS frequency and symptom severity in women with SCD were similar with normal population, the depressive effect subscale scores were lower in SCD group. This results' cause could be attributed to PMS symptoms being perceived as less severe compared to the pain experienced in sickle cell crises.

Keywords: Sickle Cell Disease, Premenstrual Syndrome, Chronic Pain, Depression, Hemoglobinopathies.

Orak Hücre Hastalarında Premenstrual Sendrom Semptomlarının Şiddeti- Vaka Kontrol Çalışması

ÖZET

Amaç: Orak Hücre Hastalığı (OHH)'nda, hastalar tekrarlayan ağrı atakları geçirir ve bunların %30'u kadarında kronik ağrı gelişir. Kronik ağrı ile depresyon ve diğer psikolojik problemler arasında bir ilişki olduğu bilinmektedir. Bu nedenle Orak Hücre Hastalığı hastaları sıklıkla bir dizi sosyal ve psikiyatrik problem yaşayabilirler. Bu çalışmasının amacı; Orak Hücre Hastalığı olan 18 yaş ve üstü kadınlarda premenstrüel sendromun (PMS) sıklığını ve ciddiyetini belirleyerek sağlıklı kadınlarla karşılaştırmaktır.

Gereç ve Yöntem: Bir vaka kontrol çalışması olarak Ocak 2018-Mart 2018 arasında yapılmıştır. Veriler 21 maddeden oluşan bir anket formu ve Premenstrüel Sendrom Ölçeği (PMSS) kullanılarak elde edildi. İstatistiksel analiz SPSS 21 yazılımı kullanılarak yapıldı.

Bulgular: Çalışmaya üniversite hastanesinde orak hücreli anemi tanısı konan ve 18 yaşından büyük 50 hasta ve kronik hastalığı olmayan 50 kişiden oluşan kontrol grubu dahil edildi. DSM-5'e göre PMS; vaka grubunun 34'ünde (%68) ve kontrol grubunun 39'unda (%78) tespit edildi (p = 0,26). Orak hücreli anemi grubunda ortalama depresif etki alt ölçek skoru 15.64 ± 6.56 iken, kontrol grubunda 19.48 ± 6.67 idi (p = 0,05).

Sonuç: OHH'li kadınlarda PMS sıklığı ve semptom şiddeti normal popülasyonla benzer olmasına rağmen, depresif etki alt ölçek puanları SCD grubunda anlamlı olarak daha düşük olmasının nedeni; orak hücre krizlerinde yaşanan ağrıya kıyasla, PMS semptomlarının daha az şiddetli algılanması olabilir.

Anahtar Kelimeler: Orak Hücre Hastalığı, Premenstrual Sendrom, Kronik Ağrı, Depresyon, Hemoglobinopatiler.

INTRODUCTION

Premenstrual Syndrome is a health problem that requires attention to be paid to the prevalence as it has a negative effect on the quality of life for many women in the world. Premenstrual disorders affect up to 12% of women (1, 2). In literature the prevalence of PMS was found as 32.6%-69.9% among Turkish women (3).

The estimated children population born with Sickle Cell Disease (SCD) is 300.000 per year and 70 million affected individuals in the worldwide (4, 5). SCD patients are frequent in tropical regions; equatorial Africa, the Mediterranean, the Caribbean, the Arabian Peninsula, India and South America (5). Turkey is one the Mediterranean country and the prevalence of sickle cell anaemia trait, was found to be 0.5% in Turkey while it was 0.4% in Eastern Mediterranean Region(6). Patients with SCD experience psychiatric problems and depression commonly likewise the other chronic diseases (7). The prevalence of depression among adult patients with SCD estimated between 21.6% and 44% throughout worldwide in the last 10 years. This outcome could be associated with multiple factors, such as the chronic structure of the disease, the symptom of severity and the presence of psychosocial stressors (4).

Chronic diseases affect both the psychological and the social balance of an individual and this fact reveals the necessity of new adaptations (8). At the same time chronic pain could be clinical phenotype for the most patients and every individual has different threshold of pain and tolerance (5). Therefore, understanding the complexity of this relationship between chronic diseases and psychological balance, support to treat each component in a best way (9). Also determining cause of pain with a multidisciplinary team provides optimal management of chronic pain (5).

The aim of this study was to contribute to understand the adaptation to chronic pain in terms of both the frequency and the severity of premenstrual syndrome in women aged > 18 years with sickle cell disease and comparing these with healthy women.

MATERIAL AND METHODS

This case- control study was conducted in the Medical Faculty located in Hatay province in the southern part of Turkey, after approval of the Ethics Committee of Hatay Mustafa Kemal University, from January 2018 to March 2018.

Premenstrual Syndrome Scale (PMSS) questionnaire, comprised of 44 items, applied to participants to detect PMS and, if so, to define the severity of the syndrome (10). The PMSS is scored from 1 to 5 points (1 = never, 2 = occasionally, 3= sometimes, 4=often and 5 = always). The Scale has also nine subscales: The depressive emotions (items from 1 to 7), the anxiety (items 8-11, 13, 15,16), the tiredness (items 12, 14, 17, 18, 25, 37), the irritability (items from 19 to 23), the depressive thoughts (items 24, 26-30, 44), the pain (items from 31 to 33), the changes in appetite (items from 38 to 40) and the bloating (from 41 to 43). The total PMSS points are obtained from the sum of all subscale points, ranging between 44 and 220. Sum points closing to 220 indicate the increased intensity of PMS symptoms.

The forms including sociodemographic data and the PMSS were completed by the patients and the participants of control group themselves, then evaluation of the presence of PMS was made on the basis of the DSM-5 diagnostic criteria and clinical interview. Informed consent was obtained from all the study participants.

Sample Size: The study group was formed of women aged > 18 years, with a regular menstrual cycle who presented at Hatay Mustafa Kemal University Medical Faculty Research Hospital and were diagnosed with sickle cell anaemia (SCD) and no other chronic disease. The control group was formed of women aged >18 years, with a regular menstrual cycle and no chronic disease. A total of 100 subjects were included in the study, as 50 in the study group and 50 in the control group (True difference mean= 20, power= 0.9, σ= 30, 0.05, n= 45) (11).

Statistical Analysis: The data obtained in the study were analysed statistically using SPSS 21 software. The data were presented as number (n), percentage (%), arithmetical mean ± standard deviation values. When comparing the mean values of two groups, t-test was used for normal distribution data and Mann-Whitney U test was used for non-complying data.

RESULTS

The mean age was 30.12±8.17 years (range, 18-49 years) in the study group and 23.04±4.31 years (range, 18-38 years) in the control group. In the control group, 3 (6%) women were married, 46 (92%) were single, and 1 (2%) was widowed/separated. The sociodemographic data of both groups are shown in Table 1.

The frequency of patients experiencing painful crisis was as follows;1 (2%) per week, 1(2%) per month, 11(22%) per 6 months, 12(24%) per >1 year, 12(%24) per year, 13(%26) per 2-3 per month. Painful crises were reported to be in parallel with menstruation in 14 women (28%) with SCD and not in parallel with menstruation in 56 (72%) with SCD. PMS according to the DSM-5 criteria was determined in 34 (68%) of the SCD group and in 39 (78%) of the control group. Both groups were similar with respect

Table 1. Distribution of The Responses to The Sociodemographic Questionnaire of Both Groups

	SCD group n (%)	Control group n (%)	p
Marital status			
Married	22(44)	3(6)	**0.02**
Single	24(48)	46(92)	
Widowed/separated	4(8)	1(2)	
Level of education			
Illiterate	3(6)	0(0)	**0.001**
Primary school	11(22)	1(2)	
Middle school	20(40)	4(8)	
High school	10(20)	30(60)	
Further education/university	6(12)	13(26)	
Doctorate	0(0)	2(4)	
Level of Income			
<1000 TL	23(46)	3(6)	**0.001**
1000-2000 TL	18(36)	19(38)	
2000-3000 TL	7(14)	12(24)	
>3000 TL	2(4)	16(32)	
Age of menarche			
≤13 years	13(26)	27(54)	**0.04**
≥14 years	37(74)	23(46)	
Duration of menstruation			
2-6 days	39(78)	34(68)	0.262
≥7 days	11(22)	16(32)	
Dysmenorrhea			
Never	8(16)	2(4)	0.138
Sometimes	14(28)	16(32)	
Always	28(56)	32(64)	

to PMS according to DSM-5. The mean points of the PMSS obtained by both the SCD and control groups are shown in Table 2. When the subscales of the PMSS were examined, the point of depressive emotions was significantly lower than the control group (p=0.05).

Table 2. Premenstrual Syndrome Scale Scores of the Sickle Cell Disease (SCD) and the control group

	SCD* group	Control group	p
Depressive emotions	15.64±6.56	19.48±6.67	**0.005**
Anxiety	14.14±5.80	13.18±5.49	0.398
Tiredness	16.88±6.05	17.02±6.38	0.911
Irritability	12.24±5.25	14.30±5.93	0.069
Depressive thoughts	13.64±6.07	16.06±7.41	0.077
Pain	9.00±3.30	9.20±3.49	0.769
Changes in appetite	7.90±3.90	8.66±3.70	0.321
Changes in sleep	7.58±3.50	7.50±3.53	0.910
Bloating	8.12±3.57	8.80±3.84	0.362
Total PMS points	102.8±31.61	112.6±35.25	0.130

DISCUSSION

SCD patients and carriers have been determined at higher rates in southern provinces such as Kahramanmaraş, Adana, Mersin and Hatay in Turkey (12). A number of studies have shown that the frequency of neuropsychiatric problems with SCD is higher than that in normal controls (13, 14). As this is the first study in literature to have been conducted in Turkey on the measurement of PMS severity in SCD patients, it can be considered to provide new information.

In a study in Nigeria investigating the psychological effect of SCD, approximately 50 %of a large series of 408 patients were reported to have depressive emotions. Asnani et al examined the prevalence of depression in 277 SCD patients and 65 control subjects in Jamaica and reported a prevalence

rate of 21.6% in the SCD patients and 9% in the control group (4).

One of the first reports of the relationship between depression and SCD was a study of 3 case reports by Morin and Waring. They suggested that depression occurred more than was estimated in SCD patients. Morgan and Jackson reported that adolescent SCD patients had significantly higher depression scores than their healthy peers (15). In another study by Belgrave and Molock of 46 adult patients with SCD, mild depression according to the Beck Depression Inventory (BDI) was determined in 56.5% of the sample (16). In a larger study of 109 adult SCD patients by Thompson et al, depression and other psychological problems were examined and 56% of the sample were determined to meet the criteria of mild psychological problems and 40% had depression (17). Another study of 50 African-American patients found a higher prevalence of depression in SCD patients compared to the general African-American population (18).

The prevalence of depression in chronic diseases has been reported in literature to be higher than in control groups (19). In contrast to these previous studies, in the comparison of the SCD patients of the current study with the control group following the measurement of the severity of PMS, significantly lower depressive emotions subscale points were determined in the SCD patients compared to the control group (15.64±6.56 vs. 19.48±6.67) (p=0.05). Furthermore, depression is related to clinical complications, and Nadel and Portadin reported that in 50% of patients in their study, painful episodes triggered depressive symptoms (7). In the current study, painful crises were not seen in parallel with menstruation in 72% of the SCD patients, suggesting that pain in the premenstrual period did not trigger depressive symptoms.

The prevalence of depression in SCD is similar to that of other chronic diseases and varies between 18% and 44%. The NICE-91 (2009) guideline reported that depression was seen 2-3 -fold more in patients with chronic disease (20%-30%) compared to the general population (10%) (18). In the current study, when PMS prevalence was examined according to the DSM-5 criteria, it was found in 34 (68%) of the SCD patients and in 39 (78%) of the control group, but the difference was not statistically significant (p=0.368).

Socioeconomic factors, level of education and social support are some of the factors affecting the relationship between chronic disease and depression (18). Molock and Belgrave stated that there was evidence of poor psychological compliance in SCD patients and it was therefore necessary to investigate the role of socioeconomic status because of factors such as time, financial difficulties and social insufficiencies (20). According to the results of the current study, the level of education and financial status of the SCD patients was at a lower level than that of the healthy control group (p=0.00). However, when the relationships between the level of education and financial status and depression were examined in the SCD patients, no statistically significant relationship was found (p>0.05). The demographic variables of education, gender, social support and unemployment are predictors of depression. It is thought that examining these variables could be helpful in resolving the cause and effect relationship between SCD and depression.

In the light of the results of the current study that the level of education and socioeconomic status of the SCD patients were lower than those of the control group, it can be considered that chronic disease could prevent educational opportunities and thereby prevent working and earning money, as the development of disease-related comorbidities in SCD patients at a young age could reduce their learning power and the ability to later find employment.

Limitations: Although the reason for depression in SCD is not fully known, it may be a multifactorial result of the underlying process. There is insufficient data available related to the cause and effect relationship between depression and pain, whether the pain experienced in SCD originates from depression, or whether depression causes more pain or not. In addition, it can be difficult to recognise depressive symptoms in SCD patients when they emerge as different symptoms from those of the general population.

Conclusion

As this is the first study in literature to have been conducted in Turkey on the measurement of PMS severity in SCD patients, it can be considered to provide new information. The severity of PMS in the SCD patients and the depressive emotions points of PMSS were found to be lower than those of the control group. The reason for this can be considered to be that the painful symptoms of PMS are perceived as less severe by the SCD patients than the pain experienced in sickle cell disease crises. The reason for fewer depressive symptoms seen in SCD patients could be attributed to the development of insensitivity, acceptance of the disease and growth after trauma. Furthermore, as painful crises were not seen to be in parallel with menstruation in the vast majority of SCD patients, this suggests that pain in the premenstrual period did not trigger depressive symptoms. There is a need for further more comprehensive studies on this subject with larger patient series to provide more information about PMS severity and the related factors in female patients with SCD.

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