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Body Mass Index in Relation to Quality of Life Aspects in Women with Systemic Lupus Erythematosus

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ABSTRACT

Background: Systemic lupus Erythematosus (SLE) is an autoimmune disease affecting physical, psychological and social well-being of patients and their quality of life (QoL). Obesity is a growing public health problems and its rate and risk of disability is higher in SLE patients than general population. In this study, we assessed the correlation between body composition in patients with SLE and their quality of life aspects.

Methods: Fifty-six adult women with SLE who attend in Rheumatology Research Center of Shiraz University of Medical Sciences were enrolled. Most of patients were on low to medium steroid doses. Their height (cm), weight (kg), Body Mass Index (BMI), percentage of body fat and fat free mass (kg) were measured. Demographic data, physical activity, disease duration, and medications were obtained through patient self-report questionnaire. For evaluating the QoL in patients with SLE, validated Iranian version of short form 12 (SF-12) questionnaire was used.

Results: there was significant correlation between BMI over 25 and bodily pain. There was not any significant relation between other aspects of QoL (physical functioning, role limitations due to physical health, general health, social functioning, vitality and mental health) and BMI over 25 in patients with SLE.

Conclusion: There is a correlation between BMI over 25 and experiencing more pain (which is a marker of QoL) in women with SLE.

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Introduction

Systemic lupus erythematosus (SLE) is an autoimmune disease in which the body's immune system mistakenly attacks healthy tissues (1). SLE is a pervasive disease with wide-ranging effects on physical, psychological and social well-being (2). So a comprehensive assessment of SLE should include several different outcomes, such as quality of life (QoL). Obesity is a growing public health problem, and is related to a variety of health problems such as higher risk of osteoarthritis, cardiovascular disease

and disability. Among those studies that have assessed obesity or body composition in SLE, rates of obesity seems to be higher than in the general population (2-5).

An early study suggested that overweight subjects were more probable to have poorer physical functioning status (6). However, in the present population, detailed quantification is not available. By aging, overweight persons are more probable to develop serious limitations in performing daily activities (7). These persons cause a huge burden

on healthcare resources (8, 9). In terms of public health, low physical function and QoL associated with overweight is important, and they should be addressed by preventive measures and promotion of healthy living (10). Since SLE patients are treated by corticosteroids which affects weight, the hypothesis of the present study was that body composition in patients with SLE would be associated with an impaired QoL and this study was undertaken.

Materials and Methods

Fifty-six patients with SLE attending the Rheumatology Research Center at Hafez Hospital affiliated to Shiraz University of Medical Sciences in Shiraz, Iran participated in this study. All participants were adult women with a diagnosis of SLE based on the 2012 American College of Rheumatology criteria (11). The study was approved by the Ethics Committee of Shiraz University of Medical Sciences and all the participants completed the written informed consent. This study was conducted between August to November 2015.

Regarding anthropometric and body composition measurements, to balance the circadian alterations, all assessments were performed during the morning visit. Height (cm), and weight (kg) were measured in standing position with light clothes without shoes. BMI was calculated using body weight (kg) divided by the square of height (kg/m²). Demographic data, physical activity level, disease duration, and medications were obtained through patient self-report questionnaire. The validated Iranian version of short form 12(SF-12) questionnaire was used which is the short form of SF-36 questionnaire to evaluate health-related QoL in patients with SLE (12).

This questionnaire is shorter and is consisted of only one third of the SF-36 questionnaire. SF-12 questionnaire includes 12 items and 8 scales comprising physical functioning (PF), role limitations due to physical health (RP), general health (GH), bodily pain (BP), social functioning (SF), vitality (VT), mental health (MH) and role

limitation as a result of emotional health (RE). The main investigator read all SF-12 questions of the patients. SPSS software was used to analysis of the data (Statistical package for the Social Sciences, version 16, SPSS Inc., Chicago, IL, USA) and the normality of distribution was assessed by Kolmogorov-Smirnov test.

Results

The mean age of participants was 37 years and the mean BMI was 26.3. Duration of the disease ranged from 3.87 to 15 years. The mean of SLE disease activity index (SLDEAI) varied from 2 to 8 and the mean of patients SLDEAI was 4 (Table 1). Totally, 16.2% of patients suffered from lupus nephritis, 8.1% had arthritis, 1.3% were with vasculitis and 27.9% had hypocomplementemia. Anti-ds-DNA was positive for 19 patients out of 56 (Table 1).

Table 1: Demographic characteristics, clinical and laboratory features of SLE patients (n=56).

Variable	SLE patients no. (range)
Age (year)	37 (30-45)
BMI	26.3 (21.2-28.3)
Disease duration (year)	7.5 (3.87-15)
SLEDAI	4 (2-8)
Lupus nephritis	12 (16.2)
Arthritis	6 (8.1)
Vasculitis	1 (1.3)
Hypocomplementemia	22 (29.7)
Positive anti-ds-DNA	19 (25.6)

SLE: Systemic lupus erythematosus; BMI: Body mass index; SLEDAI: systemic lupus erythematosus disease activity index

Table 2 indicates the comparison of QoL aspects in SLE patients based on BMI. According to Table 2, there was a significant correlation between BMI over 25 and bodily pain ($r=0.28$, $p=0.04$). There was no significant relation between other aspects of QoL (physical functioning, role limitations due to

Table 2: Comparison of quality of life aspect in SLE patient according to BMI

Variable	BMI<25	BMI≥25	P value
PF	55.2±37.8	65±36.7	0.8
RP	51.9±29.8	60±28.4	
GH	28.9±23.9	40±32.2	0.15
BP	51.3±35.8	74±28.3	0.02
SF	55.2±32.8	54±32.01	0.75
RE			
MH	58.5±27.6	60±28.4	0.86
VT	48.6±32.7	61±30.6	0.9

PF: Physical functioning; RP: Role limitations due to physical health; GH: General health; BP: Bodily pain; SF: Social functioning; VT: Vitality; MH: Mental health

physical health, general health, social functioning, vitality and mental health) and BMI over 25 in patient with SLE (Table 2).

Discussion

In the present work, the BMI and QoL were assessed in Iranian SLE patients and their correlation was studied. No difference was found in patients QoL aspects including physical functioning (PF), role limitations due to physical health (RP), general health (GH), social functioning (SF), vitality (VT) and mental health (MH) based on their BMI except for bodily pain (BP) which was significantly higher in patient whose BMI was more than 25.

According to previous studies, an increased BMI is prevalent in SLE patients (13) and as it is clear in this study, there is a strong relation between bodily pain and BMI. Pain can interfere with the QoL, and the SLE patients who experience the highest levels of pain, also report stiffness and fatigue. Pain can also cause functional limitations that lead to a significant economic burden on the society (14). While it is well known that obesity is a risk factor for pain disorders involving bones and joints, recent evidence also suggests that obesity may also be a significant contributor for soft tissue-related pain (15).

Also obesity is a risk factor for chronic pain (15). It is likely that multiple factors are involved in the relationship between obesity and pain sensitivity but the exact mechanisms underlying the obesity pain sensitivity link are not clear at this time (15). Possible explanation related to the complicated characteristics of the disease itself; including the inflammatory burden of lupus itself as well as therapy with corticosteroids. Most patients in this study were on low to medium steroid dose (9). Furthermore, poor physical activity has been considered as one of the potential contributors of pain sensitivity. Animal studies suggest that obesity may affect sensitivity via obesity-related alteration in the endocrine and opioid systems; so another possible mechanism, may be related to the endogenous opioid system (15).

Conclusion

Women with SLE were shown to have a significantly lower Basal Metabolic Rate (BMR) (16); however, no significant difference has been observed in patients' BMI in comparison to healthy individuals. Presumably consuming immunomodulatory drugs, immunosuppressive and the inflammatory burden of the disease might contribute to the altered metabolism seen in these patients. Also there is a relation between BMI over 25 and experiencing more pain in women with SLE. This means that overweight and fat women with SLE experience

more pain than normal women with SLE. Other markers of QoL were not associated with BMI in these patients that may be because of other confounding factors that were not considered such as medications and low sample size.

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Conflict of Interest

None declared.

References

- 1 Yang J, Yang X, Zou H, et al. Oxidative Stress and Treg and Th17 dysfunction in systemic lupus erythematosus. *Oxid Med Cell Longev*. 2016;2016:2526174. DOI: 1155/2016/2526174. PMID: 27597882.
- 2 Kipen Y, Strauss BJ, Morand EF. Body composition in systemic lupus erythematosus. *Br J Rheumatol*. 1998;37:514-9. DOI:1093/rheumatology/37.5.514. PMID:9651078.
- 3 Petri M. Detection of coronary artery disease and the role of traditional risk factors in the Hopkins Lupus Cohort. *Lupus*. 2000;9:170-5. DOI:1191/096120300678828226. PMID: 10805483.
- 4 Petri M, Perez-Gutthann S, Spence D, et al. Risk factors for coronary artery disease in patients with systemic lupus erythematosus. *Am J Med*. 1992;93:513-9. DOI: 11016/0002-9343(92)90578-Y. PMID:1442853.
- 5 Bernatsky S, Boivin J, Joseph L, et al. Prevalence of factors influencing cancer risk in women with lupus: social habits, reproductive issues, and obesity. *J Rheumatol*. 2002;29:2251-4. DOI:1016/j.jaut.2012.12.009. PMID:23410586.
- 6 Stewart AL, Brook RH. Effects of being overweight. *Am J Public Health*. 1983;73:171-178. DOI:2105/AJPH.73.2.171. PMID:6600376.
- 7 Launer LJ, Harris T, Rumpel C, et al. Body Mass Index, weight change, and risk of mobility disability in middle-aged and older women: the epidemiologic follow-up study of NHANES 1. *JAMA*. 1994;271:1093-1098. DOI:1001/jama.1994.03510380049036. PMID:8151851.
- 8 Seidell JC. The impact of obesity on health status: some implications for health care costs. *Int J Obes*. 1995;19:S13-S16. PMID: 8581114.
- 9 Colditz GA. Economy costs of obesity. *Am*

- J Clin Nutr.* 1992;55:503S-507S. DOI:1093/ajcn/55.2.503s. PMID:1733119.
- 10 TS Han, MA Tijhuis, ME Lean, et al. Quality of life in relation to overweight and body fat distribution. *AJPH.* 1998;88:1814-1820. PMID:9842379.
 - 11 Petri M, Orbai AM, Alarcón GS, et al. Derivation and validation of the Systemic Lupus International Collaborating Clinics classification criteria for systemic lupus erythematosus. *Arthritis Rheumatol.* 2012;64:2677-86. DOI:1002/art.34473. PMID: 22553077.
 - 12 Pakpour AH , Nourozi S, Molsted S , et al. Validity and reliability of short form-12 questionnaire in Iranian hemodialysis patients. *Iran J Kidney Dis.* 2011;5:175-181. PMID: 21525577.
 - 13 Kipen Y, Briganti EM, Strauss BJ, et al. Three year followup of body composition changes in pre-menopausal women with systemic lupus erythematosus. *Rheumatology (Oxford).* 1999;38:59-65. PMID: 10334684
 - 14 Di Franco M, Guzzo MP, Spinelli FR, et al. Pain and systemic lupus erythematosus. *Reumatismo.* 2014;66:33-8. DOI:4081/reumatismo.2014.762. PMID: 24938194.
 - 15 Okifuji A, Donaldson GW, Barck L, et al. Relationship between fibromyalgia and obesity in pain, function, mood, and sleep. *J Pain.* 2010;11:1329-371. DOI: 1016/j.jpain.2010.03.006. PMID: 20542742.
 - 16 Shamekhi Z, Habibagahi, Ekramzadeh M, et al. Body composition and basal metabolic rate in systemic lupus erythematosus patients. *Egypt Rheumatol* 2012;39:99-102. DOI:1016/j.ejr.2016.10.004.