

Does the anatomical localization of lower extremity venous diseases affect the quality of life?

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ABSTRACT

Objective: To investigate the effects of venous diseases at different anatomical localizations on the qualities of life of patients with varicose veins.

Methods: The study included 354 cases, which was referred to a private vascular and interventional radiology center in Bursa, Turkey between January 2005 to January 2006. The cases were diagnosed with visual inspection and were clinically indicative of varicose veins. Color Doppler ultrasonography was used to radiologically examine the varicose veins. All cases were accepted as class II criteria according to the Clinical, Etiologic, Anatomic, Pathophysiologic classification. The generic Short Form Health Survey-36 (SF-36) was used to measure physical and mental quality of life (QOL). High scores indicated good QOL. The Statistical Package for Social Sciences version 13.0 program was used for the statistical evaluation.

Results: When the life SF-36 quality parameters of cases

with different anatomical localizations of the varicose veins were examined, only the mental health scores were found to differ in different groups ($p < 0.01$). In females and males with superficial venous disease, significant differences were found in physical function, physical role and pain among the physical health scale components, and in vitality and emotional role scores among the mental state determinants. When females and males with deep vein disease were compared, significant differences were found among both physical and mental health determinants.

Conclusions: Anatomical localization of lower extremity varicose veins can be accepted as a predictive factor in determining the life qualities of patients with varicosities in their lower limb, and should be used to regulate their therapy and follow up protocols.

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Varicosity of the lower limbs is a common chronic disease that results in increased mortality and morbidity.¹⁻⁴ Previous studies estimate its prevalence in males over 15 years of age as 10-15%, and in females as 20-25%.⁵ Although it is very common, few studies have examined its effect on life quality and functions.⁶ Varicosity is often accepted as a cosmetic problem affecting patients' emotional states. Furthermore, by

disturbing the quality of life, varicosity also decrease the patients' productivity at active ages.³⁻⁴ For this reason, the International Society for Vascular Surgery emphasizes that the quality of life as well as clinical state of patients with varicose veins should be taken into account by physician.⁷

The budget devoted to treat varicose veins is a burden on the healthcare system.⁸ For this reason, the

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decision to operate on varicose veins is also important from an economic point of view. The varicose veins' anatomical localizations should be determined to plan the surgery. Studies indicate a weak correlation between the localization and severity of lesions.⁹ Thus, it is generally accepted that for the treatment of varicose veins, the patients' quality of life, as well as their symptoms, should be taken into account. Today, one of the forms for evaluating the Quality of Life (QOL) is the Short-Form Health Survey (SF-36).¹⁰⁻¹²

This study investigates whether or not the quality of life of patients evaluated by the SF-36 differs with different localizations of varicose veins, and with different age and gender. The varicose veins are characterized by visual inspection and the anatomical classification is performed by Doppler ultrasound scanning.

Methods. Bursa is Turkey's fourth biggest city, located in the Marmara region where most of the population works in industrial fields. This study was carried out between January 2005 to January 2006 at a private vascular and interventional radiology center in Bursa, Turkey, which works with a special protocol with the Ministry of Health and Ministry of Labor. The study included 354 cases referred from primary and secondary healthcare centers that were diagnosed with visual inspection and that were clinically indicative of varicose veins (such as the presence of dilated, elongated or tortuous veins on either leg). All cases were accepted as class II criteria according to the Clinical, Etiologic, Anatomic, Pathophysiologic (CEAP) classification.¹³ No additional radiological examinations were recommended for the patients in this study. All the patients had already been referred by clinicians to the radiology center for color Doppler ultrasonography (CDUS). The study was carried out with the patients' ongoing protocols. In all cases, CDUS was performed by a radiology specialist and its results were reported.

In the beginning, the patients were classified according to the following hierarchy: superficial venous disease (SVD), perforator disease (PD) or deep venous disease (DVD). The study excluded cases that were reported as normal (0.9%). Cases without DVD and with perforator insufficiency less than one were classified as SVD. Thus, all the cases were divided into 2 groups, SVD or DVD, according to their CEAP anatomical classification.

Pediatric patients, patients with previous trauma and those with venous surgical history were also excluded from the study. Patients that had received medical treatment without surgical intervention were included in the study.

The generic Short-Form Health Survey-36 (SF-36) was used to measure the physical component score (PCS) and mental component score (MCS) QOL. High scores indicated good QOL. The SF-36 is a trustworthy measurement of life quality, which has been well studied.¹⁴⁻¹⁶ It contains physical component scores (physical functioning, role-physical, pain index, general health conception) as well as mental component scores (vitality, social functioning, role-emotional, mental health). It is frequently used for life quality assessment in patients with varicose veins.³ In addition, it is the most common life quality assessment form used in modern medicine.

Our study applied, prior to the analysis, the Shapiro-Wilk and Kolmogorov-Smirnov Lilliefors normality tests in order to find out whether or not the variables were normally distributed. For statistical comparisons, the t-test and the Mann Whitney U test were applied with $\alpha=0.05$. The Statistical Package for Social Sciences version 13.0 program was used for statistical analysis.

Results. The 354 cases' mean age was 38.05 ± 14.7 years. Of the total cases, 57.6% were male (n=204) and 42.4% were female (n=150). The mean ages were homogenous in the SVD and DVD groups. This finding was tested and supported with statistical methods. The gender distribution of cases with different CEAP classification groups is shown in **Table 1**. The differences between gender in the groups was significant ($p<0.05$).

The scores according to the SF-36 form are given in **Table 2**, which classifies the groups according to their venous disease's anatomical localization.

When comparing the SF-36 quality of life parameters among different groups according to the venous disease's anatomical localization, the difference between the SVD and DVD groups was significant only in the mental health scale's social function scores ($p<0.01$). For this purpose, both

Table 1 - Gender characteristics of study groups

Anatomical localization of venous disease	Gender		
	Male (%)	Female (%)	Total (%)
SVD	72 (48)	78 (52)	150 (100)
DVD	132 (64.7)	72 (35.3)	204 (100)
Total	204 (57.6)	150 (42.4)	354 (100)

SVD - superficial venous disease, DVD - deep venous disease

Table 2 - Summary of SF-36 scores by anatomic localization of venous disease functional disease category.

Venous Diseases	Physical health scales								
	Physical functioning			Role-physical		Pain index		General health perceptions	
	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD
SVD	150	66.45	26.37	46.87	39.20	45.20	21.91	50.62	24.21
DVD	204	63.28	25.64	49.26	38.67	42.00	22.36	50.12	23.58
Total	354	64.64	25.96	48.27	38.85	43.35	22.20	50.33	23.81
	Mental health scales								
	Vitality			Social functioning		Role-emotional		Mental health	
	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD
SVD	150	49.40	21.85	61.97	24.95	53.33	37.83	59.33	19.44
DVD	204	53.23	26.90	68.18	25.08	56.86	38.46	58.90	21.38
Total	354	51.61	24.93	65.57	25.17	55.36	38.18	59.08	20.56
SVD - superficial venous disease, DVD - deep venous disease, SD - standard deviation									

Table 3 - Summary of SF-36 scores by anatomic localization of venous disease and gender groups.

Groups	Physical health scales								
	Physical functioning			Role-physical		Pain index		General health perceptions	
	n	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Group 1	72	73.63	24.78	56.81	34.12	55.16	22.13	54.54	32.21
Group 2	78	60.38	26.29	38.46	41.42	36.00	17.30	47.30	13.73
Group 3	132	70.75	24.09	61.36	36.07	49.63	22.75	57.42	21.96
Group 4	72	50.83	23.33	27.08	33.23	28.00	12.93	37.33	20.82
Total	354	64.64	25.96	48.27	38.85	43.35	22.20	50.33	23.81
	Mental health scales								
	Vitality			Social functioning		Role-emotional		Mental health	
	n	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Group 1	72	55.83	24.22	64.58	31.60	66.66	33.56	59.33	21.17
Group 2	78	43.46	17.58	59.37	15.52	41.02	37.57	59.33	17.69
Group 3	132	61.59	27.17	73.29	25.17	72.72	32.90	62.85	21.07
Group 4	72	37.91	18.43	57.95	21.66	27.77	30.12	52.00	20.27
Total	354	51.61	24.93	65.57	25.17	55.36	38.18	59.08	20.56

groups were classified among themselves according to gender and 4 groups were formed.

Group 1: males with SVD, group 2: females with SVD, group 3: males with DVD and group 4: females with DVD. **Table 3** shows these groups' quality of life parameter distributions.

When the venous disease's anatomical localization was evaluated by gender, it was observed that the life quality parameters differed. The significant differences are indicated in **Table 4**.

In females and males with superficial venous disease, significant differences were found in physical functions ($p < 0.01$), physical role ($p < 0.01$) and pain ($p < 0.01$) among the physical health scale components, and in vitality ($p < 0.01$) and emotional role scores ($p < 0.01$) among the mental state determinants.

When females and males with deep venous disease were compared, significant differences were found among both physical and mental health determinants ($p < 0.001$).

Table 4 - Significant differences.

SF-36 concepts	Group 1-2 SVD/E-K	Group 1-3 Male SVD-DVD	Group 2-4 Female SVD-DVD	Group 3-4 DVD/E-K
Physical health scales				
Physical functioning	$p<0.01$	NS	$p<0.05$	$p<0.001$
Role-physical	$p<0.01$	NS	NS	$p<0.001$
Pain index	$p<0.001$	NS	$p<0.001$	$p<0.001$
General health perceptions	NS	NS	$p<0.01$	$p<0.001$
Mental health scales				
Vitality	$p<0.001$	$p<0.05$	$p<0.05$	$p<0.001$
Social functioning	NS	NS	NS	$p<0.001$
Role-emotional	$p<0.001$	NS	$p<0.05$	$p<0.001$
Mental health	NS	NS	NS	$p<0.001$
SF-36 - short form -36, SVD - superficial venous disease, DVD - deep venous disease * $p<0.05$ significant; NS - not significant				

When the qualities of life of women with respect to their venous diseases' anatomical localization were compared, significant differences were detected. Physical function ($p<0.05$), pain index ($p<0.001$) and general health perceptions ($p<0.01$) among the physical components, and vitality ($p<0.05$) and emotional roles ($p<0.05$) among the mental components varied significantly according to their anatomical localization of lower extremity venous disease.

In males, different life quality scores from different anatomical localizations were obtained only in vitality ($p<0.05$).

Discussion. For the diagnosis of venous diseases of the lower limbs, the clinical examination should be correlated with radiological consultation. The most common radiological method is CDUS, which was also used in our study. Using CDUS makes it possible to detect with certainty whether the venous disease is superficial or deep.

Clinical findings are not sufficient for the decision of surgical or medical therapy. Surgical indication requires detection of the disease's anatomical localization, as well as the patient's qualities of life.¹⁷⁻¹⁹ In addition, the true decision for priority of surgical treatment will maintain appropriate utilization of the funds in this field. When the qualities of life were examined without regard for the gender of our cases, a significant difference was detected between the 2 groups in social function scores among their mental health components. Mental health is an indicator of a person's well being, mental health and emotional aspect.²⁰ This finding shows that the lower limbs'

varicosity affects social functions, and this in turn affects the psychological state.

When the groups' qualities of life were examined with respect to gender and the venous disease's anatomical localization, it was found that deep venous diseases are more common in males and that superficial venous diseases are more common in females.

When the groups were analyzed according to alterations in their quality of life, the greatest statistical difference was found between males and females with DVD. When females were compared within the same group, a difference in their quality of life was highest in those with DVD. Males' quality of life was altered only in its mental health component. Anatomical localization's effect on quality of life was greater in women than in men.

As a result, varicose veins are very common diseases affecting the quality of life. The quality of life of patients with this disease can be affected by the anatomical localization of venous diseases causing varicose veins.

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