

The impact of compression garments on the quality of life in patients with chronic venous disease

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Abstract

Introduction. Assessment of quality of life in patients suffering from chronic venous disease of the lower extremity who were treated with compression garments.

Methods. Patients of both sexes aged 30–75 years with chronic venous disease and at least varices, but without active ulceration, were qualified for the study. To assess the quality of life, the CIVIQ-20 questionnaire was used before and after 4 weeks of compression therapy with second class compression.

Results. The combined results of the CIVIQ scale rose from 61.49% before compression to 75.17% after 4 weeks of compression therapy ($p \leq 0.01$). No correlation was found between sex, age, career status or type of work and the averaged CIVIQ score.

Conclusions. Compression therapy with special garments significantly improves the quality of life in patients with chronic venous disease. Larger studies are still needed in this field.

Key words: quality of life, compression therapy, chronic venous insufficiency

Introduction

Epidemiological studies carried out in Poland have indicated that chronic venous disease (CVD) affects 47% of women and 37% of men. The frequency of CVD occurrence increases with age, and in the 60–70-year-old cohort it rises even up to 60% [1, 2].

The disease has been known for 3500 years. As our knowledge about venous diseases has grown throughout ages, so did our understanding of their treatment. One of the CVD conservative treatment methods, compression therapy, was for the first time mentioned in the works of Hippocrates. In 1525, Ambroise Paré described, as an effective method for venous ulcer treatment, wrapping the distal part of the lower limb, from the foot to the knee. In 1676, Wiseman made first compression stockings out of leather. The next major step followed in 1854 in Vienna when Unna's boot was applied to the treatment of venous insufficiency [3]. Currently, compression therapy is considered the gold standard for prophylaxis and treatment of venous and lymphatic system diseases.

CVD, because of its symptoms, not only impacts the patient's everyday functioning, but also constitutes a serious health and socio-economic hazard, as well as therapeutic challenge. The advancing course of the disease and chronic character of the treatment may significantly impact the patients' quality of life (QoL) [4, 5]. Data related to the QoL for patients using compression garments is scarce because the medical community has been concentrated only on the effectiveness of compression therapy (reduction of oedema or size of varices, healing of ulceration) for many years, not taking into

account the patients' perception or acceptance of the proposed therapy. Furthermore, lack of objective tools for QoL assessment put into question the usefulness of such analyses.

Currently, specific questionnaires are applied to assess QoL, which investigate the most pertinent issues relating to everyday life, as well as consider symptoms characteristic of specific illnesses. Everyday functioning of the patient, their physical, social, and psychological conditions are all taken into account. Only this comprehensive assessment does reveal a full picture of the disease and its effects on QoL.

The aim of our study was to evaluate the QoL of patients suffering from CVD of the lower limbs who were treated with compression garments. The hypothesis was put forward that the application of properly selected compression therapy significantly reduced pain, improved local symptoms, and, consequently, raised the QoL, despite the chronic nature of the therapy.

Subjects and methods

Patients of both sexes, without comorbidities which could influence the perception of compression therapy (leg ischaemia, leg deformities, skin inflammation), aged 30–75 years, who during the specialist consultation (vascular medicine) were prescribed 2nd class compression therapy because of the occurrence of at least varices (2C according to the clinical, aetiological, anatomical, and pathological [CEAP] classification) [6, 7] were qualified to the study.

The exclusion criteria were venous disorders of a degree lower than 2C or active venous ulceration (6C according to

CEAP). Patients with comorbidities which could influence the perception of compression therapy, such as leg ischaemia, leg deformities, or skin inflammation, were also excluded.

Patients were recruited in the first quarter of 2014 in the Specialist Surgical Practice in Zgorzelec, Poland. All participants were informed about the aim and regulations of the experiment and provided their written informed consent to participate. To assess the patients' QoL, the Polish version of the Chronic Venous Insufficiency Questionnaire (CIVIQ-20) [8] was used. The evaluation carried out twice: before the compression therapy and four weeks after its implementation.

The patients were instructed about the rules of the compression garments usage: every morning before they started their daily activity, with a break for the sleep period. They received a prescription for appropriate garments on the basis of the recorded results (morning circumference and length) of the limb measurement. All participants were also instructed about the possible benefit from physical activity, avoiding constipation, cool showers, as well as leg elevation.

The CIVIQ-20 form consists of 20 questions relating to the patient's subjective assessment of QoL, self-esteem, and health status during the disease. The questions describe the functioning and QoL of the patient in terms of perceived pain (questions 1–4), physical acuity (questions 5–7, 9), social functioning (questions 8, 10, 11), and psychological condition (questions 12–20). According to the QoL research guidelines from 1996 [8], each of the 20 questions receives points on the Likert scale, ranging from 1 to 5. In the cases of blank answers to a question, the accepted value is 1, and when there are two answers, the higher value is accepted. An analogue scale (from 0 = worst to 100 = best) is used to assess the QoL, as well as self-esteem of the patient [9].

The acquired research data were analysed together with demographic information (age group, sex, career, sitting or standing work), which, in the researchers' opinion, could significantly impact the results.

The linear regression function was applied to assess the correlation between variables. The Pearson correlation coefficient was used to indicate the correlation level. The chi-squared test was employed to analyse the hypothesis. The statistical significance was set at the value of $p \leq 0.01$.

The study was performed in accordance with the ethical standards of the Declaration of Helsinki.

Results

The total of 47 patients were recruited and then included in the study: 25 women and 22 men, aged 30–75 years. The average age was 54.4 years (52.3 years for women and 56.7 years for men). In the studied group, 51–60-year-olds formed the majority (Table 1). None of the recruited patients had contraindications to use compression therapy. During the physical examination, all of the patients presented varices and declared swelling after their daily activity (3C in the Clinical classification according to CEAP). All participants denied previous deep venous thrombosis (DVT) and the observed pathology was considered idiopathic by the surgeon (E_p in Etiology according to CEAP). There was no information in the subjects' medical records about deep vein patency (no ultrasonographic assessment before the decision to apply compression therapy) as none of the patients presented signs or symptoms of DVT ($A_n P_n$ according to CEAP). Compression therapy is routinely prescribed to patients with CVD despite the deep venous status and the pathophysiology of the observed disturbances.

Table 1. Number of patients according to the age range

Age range (years)	Number of patients		
	Women	Men	Total
30–40	4	1	5 (10.6%)
41–50	6	3	9 (19.1%)
51–60	10	11	21 (44.7%)
61–70	4	6	10 (21.3%)
> 70	1	1	2 (4.3%)
Total	25	22	47 (100%)

As far as their professional work is concerned, 46.8% of the participants were employed, 29.8% were retired, and 23.4% were unemployed. Additionally, the employed patients were further subdivided according to the work type (standing work, 54.5%; sitting work, 45.5%).

The declared compliance (everyday usage of the garments) was 100%. The combined value of points achieved in the CIVIQ scale in the assessed group was 2890 points (61.49%) before the compression therapy and 3533 points (75.17%) after the treatment ($p \leq 0.01$) (Table 2).

No statistically significant correlations between sex, age, career status, or type of work and the averaged CIVIQ score were found (Table 3).

Discussion

Until now, studies about QoL in patients with venous insufficiency have been carried out mostly among patients with advanced disease. The research [5, 10] proves that patients with CVD and chronic ulcerations are characterized by disturbed functioning in everyday life, not only owing to physical pain, but also social problems (e.g. maintaining employment), which significantly decreases their QoL. That is why the European Society for Vascular Surgery recommends QoL assessment as a routine practice for the purposes of evaluating the total disease burden of the patient [11].

Prevention of the most advanced form of CVD, venous ulcer, is the basis for each patient care. Compression therapy reduces CVD symptoms through improving the function of the venous system and increasing the venous return; currently, it forms the foundation of conservative therapy in this group of patients. Unfortunately, each degree of venous insufficiency (not only the most advanced ones) can become a cause of reduced QoL. In the case of small changes, i.e. spider veins, the problem is more cosmetic in nature but oedema or ulceration are more burdensome because of pain or social difficulties. Each of the mentioned changes may have a significant impact on the everyday life, as well as QoL of the patients, depending on their expectations. This also relates to the chronic nature of the treatment and its potentially cumbersome applications, such as the everyday usage of compression garments. Psychological problems are common in patients with CVD, most often taking the form of anxiety, depression, low self-esteem, and social exclusion [12]. These issues are often ignored during traditional therapeutic procedures [13–15], whereas the full knowledge about the patient and their attitude to the disease and to the proposed treatment has a tremendous influence on maintaining the patient's compliance [10].

Table 2. CIVIQ values expressed in percentage of points before (A) and after (B) the compression therapy, according to the socio-demographic characteristics of the subjects

Socio-demographic characteristics		CIVIQ points (%)		Median		Standard deviation	
		A	B	A	B	A	B
Total		61.49	75.17	61	75	7.45	7.24
Sex	Women	61.44	75.80	60	75	8.21	7.52
	Men	61.55	74.45	61	74.5	6.89	7.02
Age	30–40	68.20	84.60	70	86	5.07	8.81
	41–50	61.67	76.22	61	75	7.47	5.58
	51–60	61.40	75.33	61	75	6.80	5.87
	61–75	60.10	71.90	62.5	72.5	8.87	7.14
Professional status	Employed	62.64	76.14	61.5	75	5.53	5.43
	Unemployed	63.09	79.09	61	78	8.98	7.20
	Retired	59.43	70.57	56.5	70.5	8.68	7.78
Type of work	Standing	62.50	76.50	61	76	6.11	6.46
	Sitting	62.80	75.70	62.5	74	5.05	4.21

CIVIQ – Chronic Venous Insufficiency Questionnaire

Table 3. Correlation and linear regression function for CIVIQ according to the socio-demographic variables

Socio-demographic characteristics		Correlation r_{xy}	Linear regression $y = ax + b$
Sex	Women	0.89	$y = 0.82x + 21.41$
	Men	0.94	$y = 0.96x + 15.12$
Age	30–40	0.85	$y = 0.68x + 37.89$
	41–50	0.88	$y = 0.66x + 35.48$
	51–60	0.93	$y = 0.81x + 25.87$
	61–75	0.95	$y = 0.77x + 25.77$
Professional status	Employed	0.86	$y = 0.85x + 22.88$
	Unemployed	0.95	$y = 0.76x + 30.86$
	Retired	0.95	$y = 0.88x + 20.78$
Type of work	Standing	0.93	$y = 0.99x + 14.76$
	Sitting	0.73	$y = 0.88x - 3.59$

CIVIQ – Chronic Venous Insufficiency Questionnaire

In this study, we observed that regular, properly performed short-term compression therapy significantly improved QoL in all its aspects in patients suffering from CVD. The level of QoL in patients with CVD of the lower limbs improved as a result of applying compression garments by 22.25% in all the assessed aspects of life. It was no surprise that the largest improvement was noted in terms of functioning and QoL with regard to pain (44.31%).

Compression therapy with the use of compression garments has an accepted position as an effective form of CVD therapy and forms the basis of conservative treatment for this disease. However, data in the literature are ambiguous. Staszkiwicz et al. [4], who assessed the effects of treatment on the improvement of QoL in patients with CVD of the lower limb, indicated that (besides pharmacological therapy) compression therapy significantly contributed to better QoL.

Studies by Özdemir et al. [13] confirmed that even short-term (4-week) compression therapy might improve QoL, which was linked with the diminishment of ‘venous symptoms’. Charles [14] studied the effect of lower leg ulceration and compression therapy on the QoL of 65 patients by the use of the SF-36 questionnaire. He confirmed that proper treatment of the venous ulcer with compression therapy significantly improved QoL in two groups of patients: with healed and with unhealed ulcerations. However, there are also reports which do not seem as enthusiastic. Renner et al. [15] did not find a statistically significant improvement in QoL even in patients (treated with compression garments) who had healed ulcerations. They attributed the result to the numerous comorbidities in the studied group.

Because of the limited and ambiguous nature of to-date studies, it is necessary to expand the subject research to a wider scale. In the current model of therapy, patients are encouraged to actively participate in their treatment. Without analysing if the effect of therapy, as well as its form are acceptable to the patients and lead to improve their status and/or QoL, we cannot expect good compliance. At present, because of the lack of large scale clinical studies, smaller ones may have a significant contribution to the medical knowledge and may attempt to answer the question if the effective treatment pertains to every aspect of the patients’ lives.

Limitation

Owing to the small size of the treated group, the study should be considered a pilot one, possibly requiring corrections of several methodological aspects in the future. This refers to both the number of participants and the follow-up time. It cannot be ruled out that the necessity of everyday therapy application will have a negative effect on the results in a longer follow-up despite the objective decrease of CVD signs. As mentioned above, an improvement in the local or general status (in our study, the perception of pain), as well as potential side effects of the therapy may play a significant role in the patients’ perception. Therefore, despite the objective improvement in the patients’ status, certainly being significant, the subjective QoL experience should not be disregarded.

Conclusions

Compression therapy with special garments significantly improves QoL in patients with CVD. Larger studies are needed to support the results.

Conflict of interest statement:

Authors state no conflict of interest.

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