Original Article

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Evaluation the Early Effects of Compression Stockings on Patient Satisfaction in Acute Proximal Deep Vein Thrombosis

Akut Proksimal Derin Ven Trombozlarında Medikal Tedavi ile Kullanılan Kompresyon Çoraplarının Hasta Memnuniyetine Erken Dönem Etkilerinin Değerlendirilmesi

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ABSTRACT

Objective: The effective treatment of acute deep vein thrombosis (DVT) has great importance in the prevention of major complications [pulmonary embolism, postthrombotic syndrome (PTS)]. Compression stockings (CS) can also be used to improve the outcome. The aim of this study was to evaluate the effectiveness of CS on PTS prevention in patients with proximal DVT and the effectiveness of the visual analog score (VAS) method to assess patient's satisfaction about pain.

Methods: Between January 2016 and August 2018, 92 patients with proximal acute DVT included in study .They were divided into two groups according to the use of CS. Under knee level and medium pressure computed tomography were used in addition to standard medical treatment. Both groups were followed for 6 months. Baseline, 3rd month, 6th month VAS scores were calculated and also baseline and 6th month visual clinical severity score (VCSS) and Villalta score were calculated.

Results: There was no significant difference between the two groups when VAS scores were compared at baseline and 3rd month follow-up. At the 6th month follow-up, VAS values were significantly lower in favor of Group II, that used CS ($p<0.05$). No statistically significant difference was found between the basal and 6th month results of Villalta and VCSS scores between the groups.

ÖZ

Amaç: Alt extremite proksimal tutulumlu akut derin ven trombozu (DVT) tedavisinin etkinliği, hastalığın önemli komplikasyonlarının [pulmoner emboli, posttrombotik sendrom (PTS)] önlenebilmesinde büyük önem taşımaktadır. Planlanan (medikal ve/veya girişimsel) tedaviye ilaveten kullanılabilen kompresyon çorapları (KÇ) tedavi sonuçlarını etkileyebilmektedir. Bu çalışmada proximal DVT'li hastalarda KÇ kullanımının PTS gelişimi üzerine etkinliği ile aynı semptomatik tedavide ağrıya yönelik hasta memnuniyetinin vizuel analog skor (VAS) yöntemi ile değerlendirilmesinin etkinliği araştırıldı.

Yöntemler: Çalışmaya Ocak 2016 ile Ağustos 2018 tarihleri arasında akut DVT tanılı 92 hasta dahil edildi. Proksimal tutulumu olan 92 hasta kompresyon kullanımına göre 2 gruba ayrıldı. Dizaltı ve orta basınçlı kompresyon çorabı kullanıldı. Her iki grup standart medikal tedaviye ilaveten 6 ay süre ile takip edildi. Bazal, 3. ay, 6. ay VAS skorları ile bazal ve 6. ay visual clinical severity score (VCSS) ve Villalta skorları hesaplandı.

Bulgular: Hastaların bazal ve 3. ay takiplerindeki VAS değerleri karşılaştırıldığında her iki grup arasında anlamlı bir fark saptanmadı. Altıncı ay takiplerinde ise VAS değerleri KÇ kullanan Grup 2 lehine istatistiksel olarak anlamlı şekilde düşük tesbit edildi

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Conclusion: CS has no effect on preventing PTS at the patients with proximal acute DVT but has an impact on reducing pain symptoms. VAS is an effective method to evaluate the effect of CS on patient satisfaction about pain.

Keywords: Acute proximal deep vein thrombosis, compression stockings, visual analog scale

(p<0,05). Gruplar arasında Villalta ve VCSS skorlarının bazal ve 6. ay sonuçları arasında istatistiksel olarak anlamlı bir farklılık tespit edilmedi.

Sonuç: Proksimal tutulumlu alt extremite akut DVT'si olan hastaların tedavisinde kullanılan KÇ'nin PTS gelişimi üzerine etkinliği saptanmamış olup ağrı semptomunun azaltılmasında etkinliği bulunmaktadır. KÇ kullanımının hasta memnuniyetine etkisinin değerlendirilmesinde VAS etkili bir yöntemdir.

Anahtar Sözcükler: Akut proksimal derin ven trombozu, kompresyon çorabı, vizuel analog skala

Introduction

Acute deep vein thrombosis (DVT) is seen with a frequency of 1/1,000 in the general population and is an important cause of mortality and morbidity, especially in the hospitalized patients, when evaluated in terms of the complications it may cause (pulmonary embolism, post thrombotic syndrome) (1). Today, in the treatment of acute DVT with lower extremity proximal involvement (common femoral vein and/or iliac venous involvement), new catheter-based interventions (2) and accompanying medical treatments are important steps in the prevention of post thrombotic syndrome (PTS), which is the most frightening long-term complication of the disease. has been recorded. However, PTS can still develop in 30-50% of all patients (3). In addition to these treatments; compression stocking (CS) is used in acute DVT in order to relieve edema due to stasis and venous hypertension and the associated pain, and to prevent the development of PTS. When current guidelines are examined, routine use of CS is not recommended in preventing the development of PTS after acute DVT (4). Although CS contains difficulties in terms of patient compliance, it is still used in routine practice because it regresses patients' symptoms.

A visual analogue scale (VAS) can be used to numerically express the satisfaction of the patients with DVT with symptomatic acute proximal involvement who used CS in addition to medical treatment, in terms of the reduction of pain in the follow-up (5). VAS is a method that provides patient-based measurement between "no pain" and "the most severe pain" in vertical or horizontal plane of 10 cm length divided into equal parts. In this study, the effectiveness of CS added to the medical treatment of patients with acute proximal DVT on the development of PTS in the early period and the effectiveness of evaluating patient satisfaction with VAS method in the same patient group who were given symptomatic treatment for pain were investigated.

Method

Between January 2016 and August 2018, 151 patients who were admitted to our clinic with a diagnosis of acute DVT and were treated with CS in addition to medical treatment were retrospectively analyzed and 92 were included in the study who met the inclusion criteria. Three patients with active cancer, 10 patients who underwent percutaneous interventional procedure, 14 patients with popliteal and/or distal segment involvement, 4 patients with recurrent DVT, 4 patients who were pregnant, 8 patients below 20 years of age or over 70 years of age, and 16 patients whose follow-up records could not be accessed were excluded from the study. Medium pressure (23-32 mmHg) below-knee CS was given to the patients. Thirty-seven patients who could not comply with CS in the 1st week outpatient controls were followed up with only medical treatment and were identified as Group I. Fifty-five patients who were compliant with the use of CS were named as Group II. The VAS scores of the patients were calculated before the treatment, in the 3rd month and 6th month of the treatment (Figure 1). The Villalta (Figure 2) score and the venous clinical severity score (VCSS) (Figure 3) of the patients in the beginning of the treatment and in the 6th month were calculated. In medical treatment, subcutaneous enoxaparin treatment at a dose of 1 mg/kg/12 hours was started in all patients, followed by oral warfarin at a dose that would provide the effective INR (2-2.5) level, on a patient-based basis. The study was approved by the local ethics committee and all data were evaluated retrospectively before and after treatment. The patients were informed about the treatment to be applied to them, and their consent was obtained.

Statistical Analysis

Baseline, 3rd month and 6th month VAS scores and baseline, 6th month Villalta and VCSS measurements were expressed as mean ± standard deviation. Independent sample t-test was used to compare VAS, Villalta, VCSS scores between Group I and Group II. Descriptive data were presented as mean standard deviation, median (minimum, maximum) or frequency (%). Independent samples t-test and χ^2 test were used to compare groups according to normality test results. SPSS (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) package program was used for statistical analysis and p<0.05 was considered statistically significant.

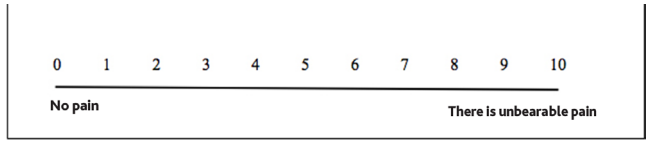

Figure 1. Visual analogue scale

Results

Ninety-two patients who were planned to use CS in the medical treatment of acute DVT were included in the study. The demographic characteristics of all patients are shown in Table 1. The basal, 3rd month and 6th month average VAS scores of the patients before CS treatment were 7, 7 and 5 in Group I, and 7, 6 and 5 in Group II, respectively (Table 2). When the VAS scores at baseline and 3rd month follow-up were compared, no significant difference was observed between the two groups, while a statistically significant difference was found in favor of Group II, which used CS, in terms of VAS values at the 6th month follow-up ($p<0.05$). Basal and 6th month average Villalta scores of the patients before compression therapy were 8 and 6 in Group I, and 7 and 6 in Group II, respectively (Table 2). The basal and 6th month average VCSS scores of the patients before compression therapy were; 6 and 5 in Group I, and 6 and 5 in Group II, respectively. There was no statistically significant difference in terms of the baseline and 6th month Villalta and VCSS scores between the groups.

Discussion

In this study, the early results of the use of medium pressure CS in patients with symptomatic DVT with acute proximal

Symptoms	Clinical findings
Pain	Edema
Cramp	Skin hardness
Feeling of heaviness	Hyperpigmentation
Rash	Redness
Paresthesia	Pain during calf compression
	Venous ectasia
Every symptom /Clinical findings; 0 (no), 1 (light), 2 (middle), 3 (severe)	
Scoring	
0-4	PTS no
5-15	Light-middle PTS
>15 or venous ulcer stenosis	High PTS

Figure 2. Villalta score

Clinical descriptors	No (-)	Light (1)	Middle (2)	High (3)
Pain	No	Rare	Does not restrict daily life	Restricting daily life
Varicose vein	No	Little	Calf and thigh region	Calf and thigh region
Venous edema	No	Foot and wrist	Under the knees	Knee and above
Skin pigmentation	No	Perimalleolar region limited	Common sub 1/3 calf region	Much more common top 1/3 calf region
Inflammation	No	Perimalleolar region limited	Common sub 1/3 calf region	Much more common top 1/3 calf region
Skin hardening	No	Perimalleolar region limited	Common sub 1/3 calf region	Much more common top 1/3 calf region
Number of active venous ulcers	No	1	2	≥3
Venous ulcer duration	No	<3 month	3-12 month	>1 year
Active venous ulcer diameter	No	<2 cm	2-6 cm	>6 cm
Compression therapy	No	Intermittent	Most days	Throughout the treatment

Figure 3. VCSS scoring

Table 1. Demographic characteristics of the patients

	Group I (n=37)	Group II (n=55)	p
Gender (female)	22 (59%)	33 (60%)	0.958[a]
Age	46.33±11.21 (18-72)	48.09±10.31 (18-72)	0.601[b]
Extremity side (left/right)	26 (70.2%)/11 (29.8%)	35 (63.6%)/20 (36.4 %)	0.509[a]
BMI	24.72±11.20 (20-33)	24.73±20-35	0.992 [b]
CEAP category			
C1	7 (18.9%)	8 (14.5%)	
C2	14 (37.8%)	21 (38.1%)	
C3	16 (43.2%)	26 (47.2%)	

Data are presented as mean ± standard deviation (min-max), median (min-max), or n (%).
BMI: Body mass index, CEAP: Comprehensive Classification System for Chronic Venous Disorders, [a]x^2 test, [b]Independent sample t test

involvement were examined. While CS had no effect on the development of PTS, it was found to have a reducing effect on the pain as assessed by VAS. In the follow-up of patients with DVT, many evaluation systems have been used to evaluate both the development of PTS and the regression of symptoms, and VCSS and Villalta scores are the most accepted, valid and up-to-date methods (6).

There are studies showing that the use of CS prevents the development of PTS, which is a long-term complication of acute proximal DVT, as well as there are studies showing that it has no effect on PTS (7,8). In our study, the early 6th month Villalta score results in patients using CS were compared with patients not using CS, and no significant difference was found in terms of preventing the development of PTS.

It has not yet been clarified in the literature whether choosing a higher pressure and high level CS is effective in the development of PTS or in reducing symptoms. Ten Cate-Hoek et al. (9) found no significant difference between different CS pressures and levels in terms of the efficacy, and a regression in symptoms was observed regardless of the pressure and level of CS. Similar results were obtained in studies in which only low-pressure or high-pressure CS was used and the venous filling index was measured (10,11). In our study, we preferred the use of below-knee and medium-pressure CS for each patient in order to increase patient compliance, we did not use higher pressure and high-level stockings.

Study Limitations

When the results of studies using VAS scoring were examined to investigate the effect of CS use on pain symptoms in patients with DVT, it was found that CS especially used in the early period, had positive effects on reducing pain (12). Similarly, in our study, a statistically significant difference was found between the 6th month VAS scores of the patients who used CS and those who did not. In the evaluation of pain satisfaction, VAS can be preferred as a valuable measurement method in DVT with acute proximal involvement. Although it is an advantage that this scoring system is easy to understand and re-applicable, it is a disadvantage that difficulties ocur due to declining cognitive functions, especially in older age groups.

Conclusion

Considering the early results of CS in the treatment of patients with proximal lower extremity DVT, no significant effect was found on the development of PTS. However, in daily practice, they can still be used in symptomatic treatment. Studies that evaluate more patients and include long-term results are needed for efficacy analysis.

Ethics

Ethics Committee Approval: The study was approved by the local ethics committee and all data were evaluated retrospectively before and after treatment.

Informed Consent: The patients were informed about the treatment to be applied to them, and their consent was obtained.

Peer-review: Externally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: C.K., M.Ş.B., Concept: C.K., M.Ş.B., E.A., Design: C.K., M.Ş.B., E.A., Data Collection or Processing: C.K., M.Ş.B., A.Ö., E.Ş.D.Y., F.B., Analysis or Interpretation: C.K., M.Ş.B., A.Ö., E.Ş.D.Y., F.B., E.A., Literature Search: C.K., M.Ş.B., Writing: C.K., M.Ş.B.

Conflict of Interest: No conflict of interest was declared by the authors.

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Table 2. VAS, Villalta and VCSS scores of the patients

VAS	Group I (n=37)	Group II (n=55)	p
Basal	7.32±1.14	7.28±1.15	0.859
3rd month	7.24±1.19	6.68±1.09	0.232
6th month	5.64±1.07	5.1±1.10	0.021
Villalta score			
Basal	8±2.53	7.89±2.34	0.839
6th month	6.24±2.25	6.17±1.92	0.153
VCSS			
Bazal	6.51±1.46	6.70±1.45	0.546
6th month	5.55±1.05	5.61±0.87	0.717

VAS: Visual analog scale, VCSS: Visual clinical severity score

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