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RESEARCH ARTICLE

A STUDY ON CORRELATION BETWEEN VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER IN VARICOSE VEINS OF LOWER LIMBS

*Dr. R. Alagar Samy, Dr. N. Murugesan, Dr. M. S. Viswanathan and Dr. R. Anbzhakan

ESIC Medical College and PGIMSR, K.K. Nagar, Chennai, Tamilnadu, India

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ABSTRACT

The study was aimed at studying the correlation between VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER in Varicose veins of lower limbs. This study was conducted in the Department of General surgery, ESI-PGIMSR, over a period of 18 months. The study group consisted of 75 patients between 24 to 75 yrs (mean 44.41 ± 12.967), inclusive of both males (n=70) and females (n=5). They were assessed for severity of varicose veins by documenting a detailed history, clinical examination findings and imaging studies on a pre structured proforma. It was found that majority of the patients were ≤ 60 yrs and the right lower limb was predominantly affected in both sexes. Using the VCSS system, 66.7%(n=50) cases had mild disease, 33.3%(n=25) cases had moderate disease and none had severe disease. In the present study, as per the VDS system, majority of the patients (n=71, 94.7%) had grade II disability. And 76%(n=57) of the patients had severe grade of venous reflux i.e. venous reflux duration > 1 second. A statistically significant correlation was found between clinical manifestations of varicose veins and the degree of reflux in the veins, assessed using the VCSS and VRS system, respectively.

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INTRODUCTION

Varicose veins of the lower limbs is a common clinical condition (Russell *et al.*, 2004) that we encounter in the surgical clinics of our hospital – the ESIC Medical college and PGIMSR. The term varicose is derived from the latin word "varix" meaning bent and refers to dilated, tortuous & lengthened veins of lower limbs (Joe J. Tjandra *et al.*, 2005) Varicose veins of lower limb occur due to loss of valvular efficiency (Richard S Snell *et al.*, 2002) which is a product of the resultant venous hypertension in standing position. Most commonly occurs in females (Richard S Snell *et al.*, 2002) compared to males according to western studies. In contrast to western studies, males are more affected than females in our hospital as per statistics.

AIM OF THE STUDY

To find out the correlation between the venous clinical severity score, venous disability score with the grading of venous reflux by venous Doppler in varicose veins of lower limbs.

MATERIALS AND METHODS

After consulting with the statistician the sample size set was 75 Patients in the study. Both Venous clinical severity score [VCSS] & Venous disability score [VDS] were evaluated by *Questionnaire and Clinical examination*. The Noninvasive standard color Doppler examination had performed for assessing the following parameters. i) Grading of venous reflux at SFJ. ii) Competency of SPJ. iii) Patency and competency of deep venous system of lower limb. In this study conducted at ESIC Medical college and PGIMSR, K.K. Nagar, Chennai for the period of one year and six months. After obtained informed consent, a total of 75 patients with primary varicose veins, from those who attended the surgical OP, were included. The history was taken recording symptoms, duration of disease and occupation. The degree of disability was assessed by questionnaire. The site of varicose veins, system involved (LSV or SSV or Perforator incompetence) and if any associated complications were assessed by clinical examination. Abdominal and pelvic examination were done to rule out abdominal tumors and other causes of raised intra abdominal pressure. Cardio vascular system and peripheral arterial pulses were carefully examined

*Corresponding author: Dr. R. Alagar Samy,
ESIC Medical College and PGIMSR, K.K. Nagar, Chennai, Tamilnadu, India

to exclude arterial disease associated with varicose vein. The patients underwent standard color Doppler ultra sonogram to find out system of involvement [LSV or SSV]. In patients with LSV involvement further grading of venous reflux at sapheno-femoral junction was assessed. By using color Doppler, sapheno-popliteal junction and deep venous system were assessed for reflux and thrombosis respectively. In Doppler studies, the patients were examined A. In standing position B. During the valsalva maneuver. Valsalva maneuver: (to test the competency of proximal deep veins, SFJ). Reflux was elicited at above sites during this maneuver in the standing position. C. Augmentation of venous return of lower limbs by calf compression in prone position was done. Augmentation by Calf compression: (for evaluating the venous competency). A gentle calf squeeze at the proximal veins of lower limb and the Foot squeeze at the level of calf veins of lower limb were done by means of Pneumatic calf cuff inflation and deflation. Then calf compression was abruptly removed and looked for any backflow of blood from venous valves and if so the duration of venous reflux was noted. In color Doppler examination, 5MHz and 10 MHz probe were used for Quantifying the flow and obtaining hemodynamic information. Both were observed at rest, during valsalva maneuver and augmentation by calf compression. In patients with venous incompetence during valsalva maneuver and augmentation, abnormal reflux towards probe (red) at SFJ was seen. The reflux at the SPJ in the popliteal fossa and the patency of deep venous system were also assessed in prone or sitting position. After history and clinical examination and color Doppler examination patients were categorized into three groups. The three groups were divided as mild, moderate and severe according to the scores 0-9, 10-20, 21-30 respectively. After categorization correlation was done by Pearson method. The venous reflux are of three types. They are grade I, grade II, grade III according to the duration elicited by venous Doppler examination. Normally venous reflux is absent at SFJ. Presence of reflux is considered as abnormal. The duration of reflux was measured and graded as follows. The grade I—upto 0.5 second. Grade II – 0.5 to 1 second, Grade III – more than 1 second. Clinically all 75 patients were classified as mild, moderate and severe category according to venous clinical severity score (VCSS) to correlate with VRS. a) Mild(0-9) .b) Moderate(10-20) c) Severe(21-30) with the Venous reflux score(Grade1/2/3). Further all the patients were classified according to venous disability score (VDS) into mild, moderate and severe category for correlation with VRS. a) Mild (1) b) Moderate (2) c) Severe (3) with the Venous reflux score (Grade 1/2/3).

DISCUSSION

This study was designed to assess the correlation between VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING (VRS) BY VENOUS DOPPLER in Varicose veins of lower limbs. Seventy five patients between 24 to 75 yrs were recruited in this study which was conducted over a period of 18 months. A detailed history and clinical examination along with Doppler imaging was done. The information thus collected was documented in a pre structured proforma. Among the 75 patients 70(93.3 %) were males and 5(6.7%) females. In both

the sexes right lower limb was found to be predominantly affected. On analyzing the Venous clinical severity score (VCSS) of the 75 patients, a minimum pain score of 1 was seen in 40.0% of the cases under study and a maximum of 3 in 2.7% (mean 1.63 ± 0.540). Four percent of the cases had a varicosity score of 1 and 1.3% had a score of 3 (mean 1.97 ± 0.231). There was no edema in 10.8% of the cases whereas a maximum score of 5 was seen in 1.3% (mean 1.91 ± 0.808). Twenty eight percent of the cases had no skin changes whereas 2.7 % cases had a maximum score of 5 (mean 2.23 ± 1.494). sixty four percent of the patients did not have any ulcers and 8% of them had a maximum score of 4 (mean 1.16 ± 1.577). On categorizing our patients as per the VCSS system, we found that 66.7% (n=50) fell into mild and 33.3% (n=25) into moderate category, whereas none came under the severe group. Hence as per VCSS 66.7% cases had mild disease. On analyzing the Venous disability score (VDS) of the 75 patients, it was found that majority of them had Grade II disability (n=71) (94.7 %), only 5.3%(n=4) of them had Grade III disability and none had grade I VDS. Hence as per VDS system 94.7% (n=71) of the patients had grade II disability. On analyzing the Venous reflux score grades among the 75 patients, a significant proportion of them (n=57, 76%) had grade 3 reflux and grade 1 and 2 reflux was seen in only 1.3 % (n=1) and 22.7% (n=17), respectively. Hence in our study 76.0% (n=57) patients had severe grade of venous reflux (VRS). After analyzing the results of individual scoring system, we looked for correlation between each of the scoring systems and found that there was a statistically significant correlation between VCSS and VRS (N=75, Pearson correlation coefficient =0.285, P value =0.013). There was no correlation between VDS and VRS (Pearson correlation coefficient =0.129, P value =0.268) (Persson et al., 1989). We also found that the clinical features assessed as per VCSS correlated well with the disability caused by varicose veins in lower limbs, assessed using the VDS. This observation was statistically significant (Pearson correlation coefficient =0.266, P value=0.021). In 2000 Havoc et al. (2007) Studied the relationship between lower limb venous symptoms with the venous reflux by duplex ultrasound in 1900 patients and concluded that the presence of venous reflux on duplex ultrasound scanning has relationship with few symptoms of lower extremity venous disease (p value <0.07). Edinburgh vein study from Scotland by vascular surgery department in 2002 (Rachel et al., 2002) showed a strong correlation between lower limb clinical features and venous reflux by Doppler ultrasound scanning. (n=466 patients, p value: 0.012). Vasquez (Vasquez et al., 2007) done a study to assess the quality of life changes in varicose vein treatment in 499 patients by venous clinical severity score and found to be useful (p value;0.002) to measure the changes in the varicose vein treatment. Passman et al. (2002) found global application of VCSS in measuring the varicose vein related risk and changes with the treatment in 45 patients. Along with VCSS, he applied CEAP and CVIQ (chronic venous insufficiency affecting quality of life). Wang et al. (2007) done a study at New York as to how well the VCSS is helpful to assess the efficacy of varicose vein treatment by radiofrequency wave ablation and concluded that VCSS was a single scoring system helpful in assessing the efficacy and reasons for failure of treatment. (n= 1460 patients, p value: 0.025). Nicholls (Nicholls et al., 2002)

studied to identify the usefulness of VCSS system in varicose vein risk assessment and to evaluate the changes after varicose vein treatment in 68 patients. The study concluded that VCSS was useful (p value: 0.015) in the above measurement. In 2006 Miami (Miami *et al.*, 2006) done a study include 2894 patients to compare the parameters between VCSS and CEAP in varicose vein management and concluded that the VCSS was a very good system (p value: 0.001) in diagnosis and follow up of chronic venous insufficiency of lower limbs. Padberg *et al.* (2000) in 2000 done a study in 191 patients to find out which one was better in varicose vein clinical features assessment and measure the changes after treatment for varicose vein among CEAP and VCSS and found VCSS would be the ideal tool (p value: 0.001) to measure the outcome and risk assessment in varicose vein compared to CEAP which already existed for many years.

Conclusion

Seventy five cases of primary varicose veins of the lower limb have been studied in a prospective manner strictly abiding to the objectives, inclusion and exclusion criteria. An analysis of the data has enabled us to arrive at the following conclusions.

- 1) Varicose vein clinical features including pain, varicosity, oedema, skin changes and ulcer significantly correlates with the venous reflux at SFJ.
- 2) Varicose vein develops as a result of venous reflux and the same is responsible for the clinical features and its complications. Intervention in Grade II and III venous reflux in asymptomatic patients can be the ideal treatment to prevent complications.
- 3) The VCSS and VRS have a significant role as compared to VDS in planning the better modality of treatment to prevent disease related morbidity and its complications.
- 4) VCSS- venous clinical severity score is easily applicable to all patients as a bed side score compare to traditional scoring systems.

Footnotes

Source of Support: Nil

Conflict of Interest: Nil.

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