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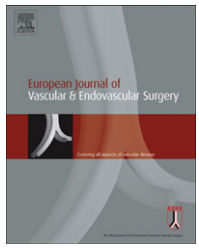

Clinical Presentation and Patterns of Venous Reflux in Thai Patients with Chronic Venous Insufficiency (CVI)

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Abstract *Objective:* To study the extent of chronic venous insufficiency (CVI) in Thai patients by assessing venous clinical severity scores (VCSSs), venous disability scores (VDSs) and prevalence of lower limb venous reflux in a cohort of patients attending a vascular surgery clinic.
Design: Prospective comparative cohort study.
Material: All patients presenting with CVI (Clinical, Etiology, Anatomy and Pathophysiology (CEAP) C4–6) in our vascular surgery clinic between October 2006 and December 2008 were enrolled and compared with the same number of control patients.
Method: A standardised interview was conducted to document each patient's history of venous disease, VCSS and VDS. Duplex ultrasonography of selected superficial and deep veins was performed.
Results: There were 41 patients, mean age 58 years and a mean body mass index (BMI) of 26.7. Of 58 limbs, 35%, 19% and 47% were of CEAP clinical stages C4, C5 and C6, respectively. Previous deep vein thrombosis (DVT) was reported by 7% and major leg trauma by 9% of patients. The mean VCSS was 9.7 and mean VDS was 1.0. VDS 2 or 3 were found in 10% of patients. The VCSS 2 and 3 for pain, oedema and inflammation were found in 22%, 26% and 0% of C6 legs. The prevalence of combined superficial and deep vein reflux was 71%. The prevalence of isolated superficial and deep vein reflux were 8% and 17%, respectively. One patient had iliac vein occlusion. Compared with the control group, risk factors that were found to be significant were physical findings of varicose veins, history of leg trauma, standing posture and BMI.
Conclusions: Thai patients with CVI were relatively young. Visible varicose veins, pain, oedema and inflammation were uncommon and most patients could maintain their usual activities

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despite advanced venous disease. An association with obesity was not common. Despite a low prevalence of a history of previous DVT, the prevalence of deep vein reflux was high and commonly combined with superficial venous reflux.

Chronic venous insufficiency (CVI) generally refers to an advanced form of chronic venous disease with skin changes and ulceration (Clinical, Etiology, Anatomy and Pathophysiology (CEAP) clinical stages C4–C6).[1] This is a common health problem in Western countries but the clinical features of CVI in Asian countries, of which there is no published report, is poorly defined. The few available publications concerning the Asian population in Western countries[2–5] suggest that the characteristics of venous disease in these patients may differ from the white ethnic population. The aim of this study is to investigate the clinical presentation, venous clinical severity score (VCSS), venous disability score (VDS) and prevalence and pathological reflux in superficial and deep leg veins in Thai patients.

Methods

Patients attending the Bangkok Metropolitan Medical College and Vajira Hospital Vascular Clinic between 1 October 2006 and 31 December 2008 were considered for inclusion in this study and their data collected prospectively. Only patients presenting with CVI, defined as those with CEAP clinical classes 4–6, were included. In patients with bilateral CVI, clinical severity was classified according to the more severely affected limb. All patients underwent history taking and physical examination according to a standard protocol. Patients were asked specifically about features in the medical history suggestive of previous deep vein thrombosis (DVT) including swelling of the limb that required medical attention; blood clots in the leg vein; and long-term anticoagulant treatment or warfarin/coumadin medication for problems with the veins. A history of previous major leg trauma defined as long bone fracture of the lower extremities or an injury involving major soft tissue loss and requiring hospitalisation was sought. To define the risk factors, the same number of age-matched (difference not more than 1 year) control patients were randomly recruited from those admitted during the same period for the management of unrelated diseases. The risk factors that were accessed in the control group included body mass index (BMI), number of children (in women), family history of varicose veins, history of previous DVT, physical finding of visible varicose vein, history of leg trauma and proportion with upright posture during working hours. Patients with chronic gastrointestinal disease and cancer that may lead to malnutrition were excluded from the control group. The VCSS and VDS[6] were recorded. The VCSS of varicose veins was based on visible characteristics of the veins with the patients in the standing position. The VDS was based on the ability to carry their usual work or activity. The patients' veins were evaluated by duplex ultrasonography (Phillips HDL 5000® and GE Logic 9®, 5–12 MHz probe). Ultrasound examination of the venous system was performed with the patients standing and supporting their weight on the contralateral limb. Venous reflux was elicited by means of distal manual compression and rapid release. A reflux time of more than 0.5 s was defined as venous reflux. The venous segments examined included common femoral, femoral, popliteal, saphenofemoral junction and great saphenous veins, while the small saphenous veins were examined in the final 36 limbs. The Bangkok Metropolitan Administration Ethics Committee approved this study.

Descriptive statistics used are the mean and standard deviation. Differences between patient groups were analysed using Student's *t*-test for continuous data, chi-squared and Fisher's exact test for contingency tables.

Results

The patient data are compared to control subjects in Table 1. There was a total of 58 CVI limbs in 41 patients, 18 of the patients (44%) were male and 23 (56%) were female. The average age for patients with C 4, 5 and 6 were 60 years (range 31–84 years), 57 years (range 45–65 years) and 56 years (range 35–82 years), respectively. Seventeen patients (42%) had CVI in both legs. Of the 58 limbs, 20 (35%), 11 (19%) and 27 (47%) were categorised as C4, C5 and C6, respectively. A reduced range of ankle movement from recurrent venous ulceration and fibrosis was found in 11 limbs (19%). Four limbs (7%) in four patients had a prior history of DVT and five limbs (9%) had a prior history of major trauma. The mean BMI of the whole patient group was significantly greater than the control group. The mean BMI in stages C4, C5 and C6 were 29.2 (range 22.8–40.3), 26.0 (range 20.4–28.3) and 25.7 (range 17.1–35.9), respectively, but these did not differ statistically. Nineteen (46%) were overweight (BMI 25–30) and seven (17%) patients were obese (BMI > 30). Patients (44%) with venous disease spent more of their working hours in an upright posture (walking or standing) (Table 2).

Compared to the control group, risk factors that were found to be statistically significant were BMI ($p = 0.0002$), physical evidence of varicose veins ($p = 0.01$), history of ipsilateral leg trauma ($p = 0.01$) and proportion of upright posture during working hours ($p = 0.02$) while past history of DVT ($p = 0.45$), family history of varicose veins ($p = 0.1$) and number of children in female patients ($p = 0.289$) were not found to be significant.

The mean values of VCSS in 58 CVI legs and VDS in 41 patients were 9.7 S.D. 4.0 (range 3–19) and 1.0 S.D. 0.5 (range 0–3), respectively. The mean values of VCSS in C4, C5 and C6 legs were 6.2 S.D. 2.3 (3–11), 8.2 S.D. 2.6 (range 4–15) and 13.0 S.D. 2.5 (8–19), respectively. The mean value of VDS in C4, C5 and six patients were 0.9 S.D. 0.3 (range 0–1), 1.0 S.D. 0.6 (range 0–2) and 1.1 S.D. 0.6 (range 0–3), respectively. Only one patient had a VDS of 3.