

ORIGINAL ARTICLE

UNUSUAL CAUSES OF SECONDARY VARICOSE VEINS

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Background: Varicose veins are among the most common ailments of the affluent nations. Primarily it is considered to be caused by valvular dysfunctions, but it may be secondary to other pathologies. This study was conducted to evaluate the unusual secondary causes of varicose veins. **Methods:** This case-series was conducted at department of vascular surgery Combined Military Hospital Rawalpindi from January 2009 to January 2012 over a period of two years. All cases of varicose veins reporting to vascular surgical department CMH Rawalpindi were studied over a period of 02 years. Detailed history and thorough physical examination was performed in all cases. Cases secondary to deep vein thrombosis (DVT) of limb up to common femoral vein (CFV) and pelvic malignancy were excluded. Duplex Ultrasonography (USG) was performed in all cases while CT angiography/Venography was conducted in those suspected of having secondary cause. **Results:** A total of 288 cases were found eligible and included in the study. Ten patients (3.47%) were having unusual secondary cause most common being traumatic arterio-venous fistula (AVF) (60% cases) followed by iliac vein thrombosis (20%). One patient had Klippel Trenaunay syndrome (KTS) and another suffered arterio-venous malformations (AVM). **Conclusion:** An unusual secondary varicose vein is important but rare clinical entity. Diagnosis is often delayed/overlooked and patients are mismanaged for extended period of time. Exact delineation of aetiology, prompt recognition and appropriate operative technique significantly alters outcome.

Keywords: Secondary varicose veins, AVF, KTS, duplex ultrasound

J Ayub Med Coll Abbottabad 2013;25(3-4):81-5

INTRODUCTION

Varicose veins, an under estimated and under treated disease, have long been considered a cosmetic problem affecting emotional well being only. However disease significantly deteriorates quality of life (QOL) and may even lead to loss of limb.¹ Varicose veins are among the most common ailments of the affluent nations affecting 23% (3.6% females and 19% males) of adult population in the USA, 6% having advanced chronic venous disease (CVD).² Yearly, 20556 patients in USA are newly diagnosed with the disease. Prevalence of varicose veins is >20% in adult western population and active ulcers are present in up to 0.5% of the patients.³ Direct medical cost of CVD is estimated to be \$ 1 billion annually in the US while 2% of the United Kingdom health budget is spent per year for the same cause.²

Disease is considered usually to be caused by valvular dysfunction of long saphenous (LSV), short saphenous (SSV) or perforator veins and treatment is straight forward.⁴ It must, however, be kept in mind that disease may be due to other sinister causes which are often treatable if recognized in a timely manner. Secondary varicosities are commonly caused by deep vein thrombosis (DVT) and pelvic malignancy while

arterio-venous (A-V) shunts and KTS are among the rare culprits.^{5,6}

Most patients present with aching pain, muscle cramps, sensation of throbbing, restless legs and fatigue.⁷ Inspection and palpation are essential part of clinical examination while auscultation is particularly useful to identify vascular malformations and A-V fistula (AVF).⁸ Corona phlebectasia is sign of advanced disease. Clinical, Etiologic, Anatomic and Pathophysiologic (CEAP) classification is recommended to categorize the disease⁹ while revised venous clinical severity score (VCSS) and the short form 36-Item Health Survey (SF-36) are used to assess well being and quantify outcome post intervention.¹⁰

Duplex USG is traditional, safe, non-invasive, cost effective, and reliable modality used as the first diagnostic tool.¹¹ Other available modes are contrast Venography, plethysmography, CT/MR Venography and intravascular ultrasonography (IVUS).¹² Treatment options include conservative management^{13,14} injection sclerotherapy^{15,16} endovascular interventions^{17,18} and conventional gold standard surgery^{19,20} choice being affected by symptoms, cost, patient preference, available resources, and physician training.⁶

Current study focuses on unusual causes of secondary varicose veins, recognition of which has significant bearing on disease management.

MATERIAL AND METHODS

This descriptive case-series was carried out at the department of vascular surgery CMH Rawalpindi over a period of 2 years. CMH Rawalpindi is a tertiary care hospital receiving referrals from military hospitals all over the country as well as civil, public and private sector hospitals from upper Punjab, Khyber Pakhtunkhwa (KPK) and adjacent Rawalpindi/Islamabad regions. All patients meeting inclusion criteria were included in the study. Patients with varicosities secondary to DVT of lower limbs up to common femoral vein (CFV), pregnancy, and intra-abdominal pathology were excluded. A detailed history and thorough physical examination was performed in all cases. All patients underwent duplex USG while CT

angio/Venography was carried out only in those cases suspected of having unusual aetiology underlying the facade of varicose veins. Data was analysed using SPSS-12.

RESULTS

We studied 288 patients of varicose veins over a period extending from January 2009 to January 2012. Ten patients (3.47%) were found having unusual aetiology and most common cause present was traumatic AVF inflicting 60% of the cases (Table 1). Second commonest cause was iliac vein thrombosis affecting 2 patients. AVM and KTS were found in one patient each. Surgical management was carried out in 5 patients while 4 were managed medically/conservatively. One patient refused surgery and lost to follow up. All patients were followed for minimum of six months and had marked symptomatic improvement post intervention.

Table-1: Unusual causes of secondary varicose veins; an overview of cases (n=10)

| Age | Average time till diagnosis(years) | Cause | Management | Follow up/outcome |
|-----|------------------------------------|---------------------------------------|---------------------|-------------------|
| 80 | 15 | Traumatic AVF CFA & vein | Surgical repair | Recovery |
| 18 | 6 | Traumatic AVF CFA & vein | Surgical repair | Recovery |
| 40 | 10 | Traumatic AVF CFA & vein | Surgical repair | Recovery |
| 51 | 15 | Traumatic AVF CFA & vein | Surgical repair | Recovery |
| 65 | 19 | Traumatic AVF Popliteal artery & vein | Endovascular repair | Recovery |
| 50 | 19 | Traumatic AVF Popliteal artery & vein | Refused surgery | Lost |
| 15 | 6 | KTS | Conservative | Follow up |
| 20 | 7 | AVM | Conservative | Follow up |
| 30 | 1 | Common Iliac vein thrombosis | Anticoagulation | Follow up |
| 38 | 0.3 | Inferior vena cave thrombosis | Anticoagulation | Follow up |



Figure-1: Unusual location of varicosities, pigmented spots and unilateral limb hypertrophy lead to the diagnosis of KTS and patient was managed conservatively.



Figure-2: This patient presented with varicosities of two decades duration. Clinical examination revealed bruit over his popliteal fossa clinching diagnosis of AVF, confirmed by

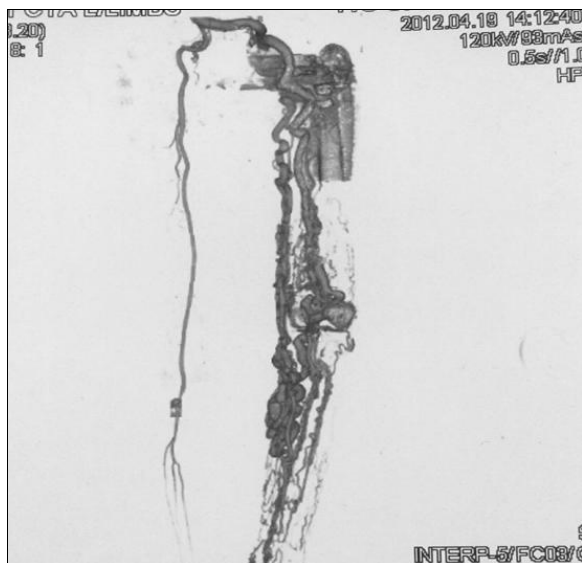


Figure-3: CT angiography. Inflicting cause was forgotten dagger injury.

Average time till diagnosis depicts the agony patients had undergone over extended period of time. Six patients were suffering from AVF, all caused by penetrating trauma in vessel proximity. Common femoral artery (CFA) and vessel were involved in 04 cases while two cases had involvement of popliteal artery and vein. Average time from infliction of injury till diagnosis was in years ranging from 6 to 19 years (average 14 years) and most of the patients had actually forgotten the original injury. Two patients suffered thrombosis of common iliac vein and inferior vena cava respectively and were on conservative management of varicosities for quite some time. KTS was present in a young patient (Figure-1) who had been advised Tredenlenberg procedure with multiple stab avulsions. He was found to have hypoplastic deep veins and a major catastrophe prevented by avoiding surgery.

DISCUSSION

Varicose veins involving lower limb is quite a common problem consuming huge amount of resources each year.² Disease is primarily caused by valvular reflux while common secondary causes include DVT, pregnancy and raised intra abdominal pressure usually secondary to pelvic malignancy.⁵ However, there are some other sinister unusual secondary causes which should be kept in mind for accurate diagnosis and appropriate management thus preventing considerable morbidity.⁶ Current study focused on these unusual causes of secondary varicose veins in our set up. We studied all cases reporting to vascular surgical department satisfying inclusion/exclusion criteria. Ten patients (3.47%) were found to have unusual cause out of total 288

cases studied over a period of 2 years. Diagnosis significantly altered the management and favourable outcome was seen in patients seeking treatment from different prongs of health system for many years.

Most common cause found was traumatic AVF present in 60% of the cases. Hunter was first to describe AVF in 1757. AVF may be congenital or acquired, penetrating trauma being the commonest cause for acquired variety.²¹ High prevalence of extremity injury in recent conflicts had led to increased incidence of acquired AVF. Battle injuries are the most frequent culprits.²² Missile/shell fragments injure the blood vessel without actually striking it.²³ Presentation is variegated dictated mainly by aetiology, location and duration of abnormal communication.²⁴ Patient may present months to years later with venous hypertension, overt congestive cardiac failure (CCF) and limb ischemia due to steal phenomena.²⁵ Diagnosis is usually made clinically but often delayed and over looked. In our series average time found was 14 years (6–19 years) while time as long as 52 years has been reported in literature.²⁵ Most reliable sign is bruit while angiography not only confirms the diagnosis but also helps in deciding modality of management.²¹ Various methods to repair include resection and reconstruction using autologous vein or bifurcated Dacron prosthetic graft/segmented graft, primary arterial repair, patch graft repair, suture closure of the venous communication, ligation of the vein and lateral suture venous closure.²⁶ AVF between CFV and artery was most common followed by popliteal artery and vein, all caused by penetrating trauma in our series confirming to literature cited worldwide.²¹ Five patients were subjected to intervention while one patient refused surgery. Surgical repair was contemplated in 4 and endovascular modality utilized in one (Figure-2), all having marked symptomatic and clinical improvement at 6 months follow up. The patient who refused any intervention was lost to follow up.

Thrombosis of iliac vein or IVC is rare and early diagnosis is often difficult. Left sided iliac vein thrombosis may be caused by arterial compression, the so called May- Thurner syndrome.²⁷ Our patients suffered from common iliac vein and IVC thrombosis, both managed conservatively with anticoagulation. Follow up revealed satisfactory recovery. One patient suffered AVM involving calf, was managed conservatively and is on regular follow up. AVM are abnormal communication of arteries and veins without capillaries.²⁸ They may occur in any organ or tissue, symptoms dictated by dimension, location and their impact on surrounding structures. Haemorrhage is the most feared complication but fortunately is rare. Various modes to counter them

include conservative management, embolization, stereotactic radio surgery and conventional open surgery.²⁹ American Heart Association (AHA) does not recommend surgery for leg lesions, those involving deep veins and those with Spetzler-Martin grade IV/V. Their early recognition is of utmost importance to initiate appropriate treatment.²⁹

One patient was referred for conventional surgery but unusual location of the veins, hypo pigmented marks and unilateral limb hypertrophy clinched the diagnosis of KTS (Figure-1). Duplex USG revealed hypo plastic deep veins and surgery was abandoned preventing a major catastrophe. KTS, a term coined by French physician Marcie Klippel and Paul Trenaunay³⁰, is a complex congenital anomaly characterized by triad of cutaneous capillary malformations, soft tissue or bone hypertrophy and varicose veins and venous malformations³¹. Manifestations are protean and diagnosis is clinical based on the presence of 2 or more features.³² Venous disease of the lower limbs is a major source of morbidity being present in 72% of the patients with KTS. Affected patients are best managed in multidisciplinary centre with targeted expertise. Treatment is primarily non-operative with surgery reserved for symptomatic patients with patent deep veins.³³

CONCLUSION

Varicose veins are one of the most common ailments of the affluent nations draining huge amount of resources. Disease is usually caused by valvular dysfunction having straight forward treatment. Minority of cases are attributed to secondary cause while unusual causes of secondary varicosities are a further clinical rarity, however, bearing significant impact on patient management. Diagnosis is often delayed/overlooked and patients are mismanaged for extended period of time. High index of suspicion is the key especially in cases with unusual presentation. Exact delineation of aetiology, prompt recognition and appropriate operative technique significantly alters outcome.

REFERENCES

1. Korn P, Patel ST, Heller JA, Deitch JS, Krishnasastri KV, Bush HL, *et al.* Why insurers should reimburse for compression stockings in patients with chronic venous stasis. *J Vasc Surg* 2002;35:950-7.
2. Kaplan RM, Criqui MH, Denenberg JO, Bergan J, Fronck A. Quality of life in patients with chronic venous disease: San Diego population study. *J Vasc Surg* 2003;37:1047-53.
3. Rabe E, Pannier F. Epidemiology of chronic venous disorders. In: Gloviczki P, editor. *Handbook of venous disorders: guidelines of the American Venous Forum*. 3rd ed. London: Hodder Arnold, 2009; p.105-10.
4. Gollidge J, Quigley FG. Pathogenesis of varicose veins. *Eur J Vasc Endovasc Surg* 2003;25:319-24.

5. Sadick NS. Advances in the treatment of varicose veins: ambulatory phlebectomy, foam sclerotherapy, endovascular laser, and radiofrequency closure. *Dermatol Clin* 2005;23(3):443-55.
6. Jones RH, Carek PJ. Management of Varicose Veins. *Am Fam Physician* 2008;78(11):1289-94.
7. Bradbury A, Ruckley CV. Clinical presentation and assessment of patients with venous disease. In: Gloviczki P, editor. *Handbook of venous disorders: guidelines of the American Venous Forum*. 3rd ed. London: Hodder Arnold 2009; p. 331-41.
8. Eklof B, Perrin M, Delis KT, Rutherford RB, Gloviczki P, American Venous Forum *et al.* Updated terminology of chronic venous disorders: the VEIN-TERM transatlantic interdisciplinary consensus document. *J Vasc Surg* 2009;49:498-501.
9. Gloviczki P, Comerota AJ, Dalsing MC, Eklof GB, Gillespie DL, Gloviczki ML, *et al.* The care of patients with varicose veins and associated chronic venous diseases: Clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum. *J Vasc Surg* 2011;53:2S-48S.
10. Vasquez MA, Rabe E, McLafferty RB, Shortell CK, Marston WA, Gillespie D, *et al.* Revision of the venous clinical severity score: venous outcomes consensus statement: Special communication of the American Venous Forum Ad Hoc Outcomes Working Group. *J Vasc Surg* 2010;52:1387-96.
11. Abai B, Labropoulos N. Duplex ultrasound scanning for chronic venous obstruction and valvular incompetence. In: Gloviczki P, editor. *Handbook of venous disorders: guidelines of the American Venous Forum*. 3rd ed. London: Hodder Arnold, 2009; p. 142-55.
12. Park UJ, Yun WS, Lee KB, Rho YN, Kim YW, Joh JH, *et al.* Analysis of the postoperative hemodynamic changes in varicose vein surgery using air plethysmography. *J Vasc Surg* 2010;51:634-8.
13. Amsler F, Willenberg T, Blättler W. In search of optimal compression therapy for venous leg ulcers: a meta-analysis of studies comparing diverse [corrected] bandages with specifically designed stockings. *J Vasc Surg* 2009;50:668-74.
14. Palfreyman SJ, Michaels JA. A systematic review of compression hosiery for uncomplicated varicose veins. *Phlebology* 2009;24(suppl1):13-33.
15. Pittaluga P, Chastanet S, Locret T, Rousset O. Retrospective evaluation of the need of a redo surgery at the groin for the surgical treatment of varicose vein. *J Vasc Surg* 2010;51:1442-50.
16. O'Hare JL, Stephens J, Parkin D, Earnshaw JJ. Randomized clinical trial of different bandage regimens after foam sclerotherapy for varicose veins. *Br J Surg* 2010;97:650-6.
17. Perrin M. Endovenous radiofrequency ablation of saphenous vein reflux. The VNUS Closure procedure with Closurefast. An updated review. *Int Angiol* 2010;29:303-7.
18. Christenson JT, Gueddi S, Gemayel G, Bounameaux H. Prospective randomized trial comparing endovenous laser ablation and surgery for treatment of primary great saphenous varicose veins with a 2-year follow-up. *J Vasc Surg* 2010;52:1234-41.
19. Coleridge-Smith PD. Leg ulcer treatment. *J Vasc Surg* 2009;49:804-8.
20. Rasmussen LH, Bjoern L, Lawaetz M, Lawaetz B, Blemings A, Eklof B. Randomized clinical trial comparing endovenous laser ablation with stripping of the great saphenous vein: clinical outcome and recurrence after 2 years. *Eur J Vasc Endovasc Surg* 2010;39:630-5.
21. Ha JF, Sieunarine K. Arteriovenous fistula secondary to recurrent metacarpophalangeal joint dislocation: A Case Report. *Ochsner J* 2009;9:14-6.
22. Huang W, Villavicencio JL, Rich NM. Delayed treatment and late complications of a traumatic arteriovenous fistula. *J Vasc Surg* 2005;41:715-7.

23. Oliveira PPM, Petrucci O, Vilarinho KAS, Silveira LM, Vieira RW, Braile DM. Traumatic fistula between the brachiocephalic trunk and the brachiocephalic vein due to gunshot wound. *Arq Bras Cardiol* 2008;90(4):20-2.
24. Brewster DC, Cambria RP, Moncure AC, Darling RC, Lamuraglia GM, Geller SC, *et al.* Aortocaval and iliac arteriovenous fistulas: recognition and treatment. *J Vasc Surg* 1991;13:253-64.
25. Chaudry M, Flinn WR, Kim K, Neschis DG. Traumatic arteriovenous fistula 52 years after injury. *J Vasc Surg* 2010;51:1265-7.
26. Queiroz AB, Mulatti GC, Aun R, Valentim LA, Leão PP. Endovascular repair of a traumatic arteriovenous fistula involving the iliac bifurcation using an iliac branch device. *J Vasc Surg* 2012;55:1474-6.
27. Kim DK, Koo JH, Song SH, Lee JH. Deep vein thrombosis associated Withmay-Thurner syndrome in an amyotrophic lateral sclerosis patient-a case report. *Ann Rehabil Med* 2011;35:441-4.
28. Oto O, Metin SK, Guzeloglu M, Gulcu A, Karabay N, Gurel D, *et al.* A congenital arteriovenous malformation originating from the aorta locating in the posterior mediastinum. *Ann Thorac Cardiovasc Surg* 2012;18:487-90.
29. Ito Y, Okumura T, Suzuki K, Matsumura A, Tokue K, Tsuboi K. Long term outcome of proton beam radio surgery for arteriovenous malformations larger than 30 mm in diameter. *Neurol Med Chir* 2011;51:624-9.
30. Klippel M, Trenaunay P. Du naevus variqueux osteohypertrophique. *Arch Gen Med* 1900;3:641-72.
31. Delis KT, Gloviczki P, Wennberg PW, Rooke TW, Driscoll DJ. Hemodynamic impairment, venous segmental disease, and clinical severity scoring in limbs with Klippel-Trenaunay syndrome. *J Vasc Surg* 2007;45:561-7.
32. Zea MI, Hanif M, Habib M, Ansari A. Klippel-Trenaunay Syndrome: a case report with brief review of Literature. *J Dermatol Case Rep* 2009;4:56-9.
33. Jung SC, Lee W, Chung JW, Jae HJ, Park E, Jin KN, *et al.* Unusual causes of varicose veins in the lower extremities: CT Venographic and Doppler US findings. *Radio Graphics* 2009;29:525-36.

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