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KLIPPEL TRENAUNAY SYNDROME- WIDE VARIATION IN PRESENTATION: OUR EXPERIENCE OF 5 PATIENTS.

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Abstract:

AIM: this is to report a case series of klippel trenaunay syndrome in our hospital and to make medical practitioners more aware of this rare condition and improve their diagnostic awareness.

BACKGROUND: Klippel trenaunay syndrome is characterized by a triad of port wine stain, varicose veins and soft tissue and bony hypertrophy. In 1900, two French physicians klippel and trenaunay first described this syndrome in 2 patients. Although 100 hundred years have past exact incidence, etiology and pathogenesis is yet to be elucided. Although clinical presentation ranges from minimal symptomatic disease to life threatening bleeding and embolism management includes careful diagnosis, prevention and treatment of complications.

CONCLUSION: Complexity of vascular malformation made it difficult not only to classify but also to diagnose its rare subtypes, usually klippel trenaunay syndrome present at later stages with complications due to lack of awareness. This case series is to indentify different presenting symptoms and management modalities.

Keywords: klippel trenaunay syndrome, varicose veins, port wine stain

Introduction

Klippel trenaunay syndrome formerly klippel trenaunay weber syndrome sometimes angio-osteo-hypertrophy syndrome and hemangiectatic hypertrophy is a rare congenital disorder[1] . Classical features are 1) vascular malformations of capillary , venous and lympatic vessels, 2) varicosities of unusual distribution and 3) unilateral soft and skeletal tissue hypertrophy usually lower extremity. Although this condition could also be associated with other anomalies like distal limb lipodermatosclerosis, affection of abdominopelvic vasculature. This condition has a rare incidence of 3-5/ 100,000 which presents at birth or during childhood, sporadic with males and females affected equally.[2,3] It can lead to significant morbidities such as bleeding, deep vein thrombosis and embolic complications.[4,5] In this article we are describing a series of 5 cases documented in Safdarjung Hospital, New Delhi during the time period of January 2015- October 2019 including a review of the syndrome and treatment modalities.

CASE REPORT

This case report is an elaborative presentation of a typical A 12 years old female who was born out of non-consanguineous marriage delivered at home with pregnancy and immediate post-partum period uneventful presented to Safdarjung Hospital, New Delhi with complaints of progressive enlargement of left lower limb and port wine stain and dilated veins on lateral aspect of thigh since birth. She gave history that the dilatation over the limb increased on walking and standing and subsided on lying down with limb raised. She had pain over the port wine stain and also complained of altered gait due to discrepancy in limb length. There was no history of ulceration, paresthesia or cellulitis.

On examination, she had multiple varicose veins over lateral aspect of left lower limb extending above ankle upto upper thigh, with port wine stain over the lateral aspect of left leg, thigh, gluteal region upto lower back. Brodie trendelenburg test showed competent saphenofemoral valve and perforators, pratt's test demonstrated competent deep venous system. Cutaneous hyperpigmentation with raised margins was present over the lateral aspect of right

lower limb, more expressed over lateral knee. On measurement left lower limb was 2 cm longer than right lower limb. All peripheral pulses were palpable with no evidence of bruits. Abdominal examination was normal and no abnormality was detected on respiratory and cardiovascular system examination.

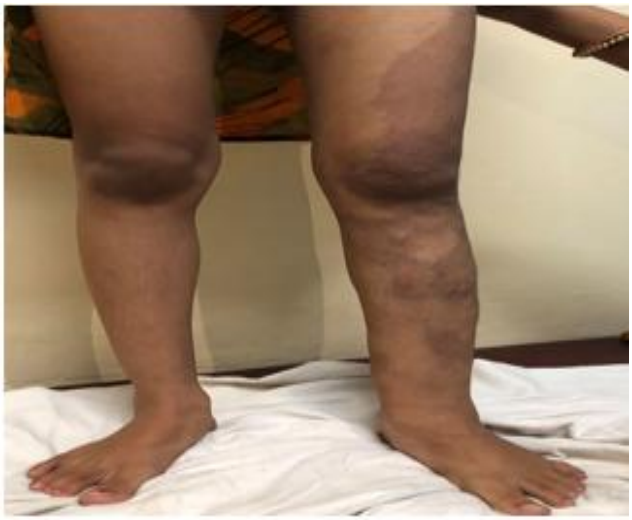

Figure 1: left lower limb hypertrophy and varicose veins with portwine stain.

Figure 2: showing anomalous vein running over lateral aspect of thigh with portwine stain extending from ankle to gluteal region.

Color Doppler of the patient revealed multiple varicosities in middle third of leg anteromedially and posteriorly and flow was not visualized in the left Saphenofemoral vein just after its bifurcation from Common femoral vein, however there was reconstruction of the vein in distal thigh to form popliteal vein. Hematological examination showed normal blood profile. CT angiography showed evidence of soft tissue hypertrophy of left lower limb below the knee region with anomalous vein seen in lateral aspect of left lower limb in subcutaneous plane starting from middle third of leg , coursing over lateral aspect of thigh and draining into deep veins of buttocks along with multiple superficial varicosities. MR angiography confirmed the above findings with evidence of persistent left lateral marginal vein of servelle, persistent left sciatic vein with hypoplastic left Saphenofemoral vein. No arterial abnormality was detected(figure 3,4,5).

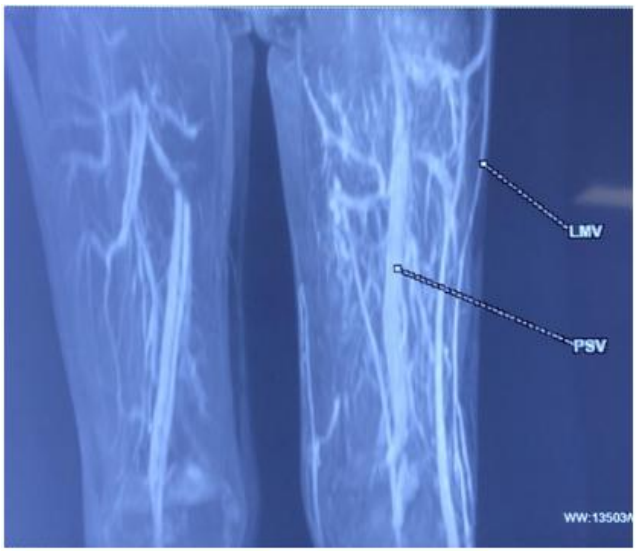

Figure 3: MR angio longitudional section showing presence of PERSISTANT SCIATIC VEIN (PSV) and abnormal lateral vein (lateral marginal vein of SERVELEE), both draining into INTERNAL ILIAC VEIN with absence of great saphenous vein.

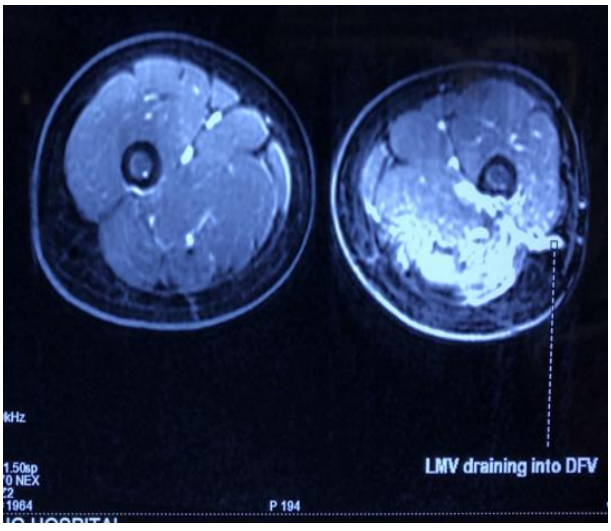

Figure 4: axial view of MR angiography showing lateral marginal vein of SERVELLE draining into deep femoral vein with hypertrophied subcutaneous tissue of left lower limb and absence of great saphenous vein in mid thigh region.

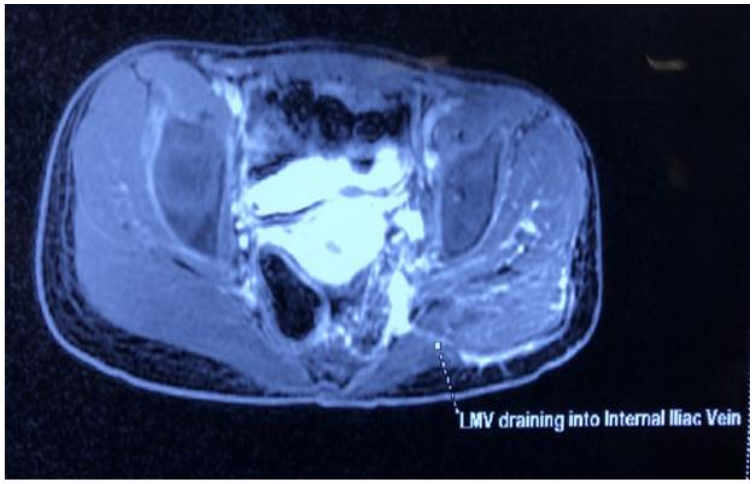

Figure 5: showing axial section at pelvic region with another lateral marginal vein of SERVELLE draining into internal iliac vein.

On the basis of above clinical triad and imaging reports diagnosis of klippel trenaunay syndrome was confirmed. Patient was treated with multimodality approach with elastic compression stockings and limb elevation. And was adviced serial sclerotherapy and was placed on regular follow up. Its an elaborately described case report of typical presentation of Klippel Trenaunay Syndrome.

Table 1: Other 4 case reports have been elucided in tabular form

SN	Age/sex	Presenting complaints	Imaging	Management
1	5y/M	Port-wine stain in right lower limb and limb lengthening	Color doppler – multiple venous collaterals and no arteriovenous malformation. No evidence of thrombosis MRI- diffuse irregular tortous channels in subcutaneous plane	Reassurance, conservative management
2	14y/M	Port-wine stain on right hands and feet, right lower limb varicosities with cellulitis	Color Doppler- multiple varicosities over right lower leg	Elastic compression stockings, antibiotics and pain relief.
3	17y/M	Left lower limb varicosities and port-wine stain	Color Doppler- multiple varicosities all over the leg and lower thigh. Saphenofemoral junction and Saphenopopliteal junction were competent	Elastic compression stockings
4	46y/F	Left lower limb varicosities, extensive port wine stain over torso and left thigh with left limb hypertrophy	Color Doppler- multiple varicosities over anterior and lateral aspect of left leg	Elastic compression stockings, anticoagulation, heel inserts

DISCUSSION

Klippel trenaunay syndrome was initially described in 1900[2], by two French physicians, Maurice klippel and paul trenaunay in two patients with hemangiomatous lesions of skin with asymmetric soft tissue and bone hypertrophy and coined the term 'naevus variqueux osteohypertrophique'[3] . Some authors use the term klippel trenaunay weber syndrome to describe the condition affecting those individuals who also have significant arteriovenous malformations as one of the component, however other authors prefer to separate these two conditions and use the term parkes-weber syndrome for ones with arteriovenous malformations [4]. There are two types of KTS- typical and atypical [5]. Typical one always includes a port wine stain while the atypical one does not [5] which are quite rare. KTS has a wide spectrum of presentation, from truncular to extratruncular, from infiltrating to limited forms.

The etiology is unknown; however a few theories have been postulated. 1) servelle's theory of a primary obstruction of venos system resulting in

venous hypertension and therefore development of abnormal venous pathways and tissue overgrowth[6]; 2) failure of regression of lateral limb bud vein; 3)bliznak and staple suggested intrauterine damage to the sympathetic gangliaor intermediolateral tract leading to dilated microscopic arteriovenous anastomosis[7]; 4) Baskerville et al[8] contend that a mesodermal defect during fetal development causes mainteinance of microscopic arteriovenous communications; 5) alteration of tight balance between angiogenesis and vasculogenesis.

Most cases are sporadic, although a few cases in the literature report an autosomal dominant inheritance [9]. The association between angiogenic factor AGGF1 and KTS is significant [10]. KTS affects males and females equally [11] with no racial predilection at birth or during early infancy or childhood

Although KTS generally affects a single extremity cases of multiple affected limbs have been reported. The leg is the most common site followed by arms , the trunk and rarely head and neck.one report describes only upper limb involvement[12] Most patient demonstrate all 3 signs : port-wine stain, varicose veins and bony and soft tissue hypertrophies. In a series of 252 patients at the mayo clinic, 63% of patients had all 3 features and 37% had 2 features. Port-wine stain was seen in 98% of patients, varicosities in 72% and limb hypertrophy in 67%.

On examination, port-wine stain usually presents first, it has a distinct linear border that respects midline. Its depth is variable, may be limited to skin or extend deeper to subcutaneous tissue including muscle and bone. Visceral organs such as the pleura, spleen, liver, bladder and colon may be affected which portends greater morbidity secondary to internal hemorrhage. If large enough, may sequester platelets, leading to kasabach-merritt syndrome, a type of consumptive coagulopathy.[13]

Varicose veins are congenital, maybe extensive. klippel – trenaunay vein is a large, lateral, superficial vein sometimes seen at birth. Rarely, varicosities have been found in the bladder, colon and pulmonary vessels. Arteriovenous fistulas, the feature that distinguishes KTS from parkes-weber syndrome, are rarely found in affected extremity. Bony and soft tissue hypertrophies are the third sign which lead to limb hypertrophy. Hypertrophy may be appreciated at birth; it usually progresses during the first years of life.

Complications of hemangiomas include skin breakdown and ulceration, bleeding and secondary infection. Due to varicosities include paresthesia, stasis ulcers, pulmonary emboli, thrombophlebitis, hemorrhage and cellulitis. Hypertrophy of a limb may lead to subsequent vertebral scoliosis, gait abnormalities and compromise of function and degenerative joint disease at an early age. [14]

Diagnosis is mainly clinical. Investigations should focus on evaluation of the type, extent and severity of the malformation, and on confirming the absence of any clinically significant arteriovenous shunting. Detailed color duplex scanning of venous system of leg to establish patency, incompetence, thrombosis, arteriovenous shunting. Plain x rays to measure bone length. MRI for differentiating bone, fat, muscle hypertrophy and lymphatics. CT venography to evaluate deep venous system and collaterals. [15]

Management is multidisciplinary approach to treatment and prevention of possible complications. It is mainly symptomatic and conservative. Compression garments are indicated for chronic venous insufficiency, lymphedema, recurrent cellulitis, and recurrent bleeding from capillary or venous malformations. Pain management canbe very important aspect of caring for patients with Klippel trenaunay syndrome.

Cellulitis and thrombophlebitis can be managed with analgeics, limb elevation, antibiotics and corticosteroids. Anticoagulant therapy is indicated in acute thrombosis and prophylactically prior to surgical procedures. [16] Regarding limb hypertrophy, heel inserts are generally sufficient for limb discrepancies of 1.5cm or less. For greater discrepancies, orthopeadiac procedures may be required. For overgrowth of one limb epiphyseodesis and for severe arthritis total knee arthroplasty has shown good results. [17]

Laser (flashlamp- pumped pulsed dye laser) treatment of the hemangioma can be effective in lightening the color of port-wine stain.[18] Surgical interventions for varicosities and venous malformations is controversial. One might consider surgery for significant cosmetic deformity or pain, heaviness in leg, bleeding and infectious complications. Venous stripping, ligation, excision or sclerotherapy are the available options. Lymphaticovenular anastomosis may represent a desirable approach. [19] Debulking procedures have limited use and may damage venous and lymphatic

channels leading to increased edema in the affected limb.

Patients with Klippel trenanuay syndrome should be monitored at least annually and more often if clinically indicated

CONCLUSION

Presentation of klippel trenaunay syndrome is varied and may be confused with parkes weber syndrome [20]. the absence of clinically significant arteriovenous shunting distinguishes both. Exact incidence and pathogenesis is yet to be elicited. Diagnosis is mainly clinical and management is conservative with lifelong follow up. Multidisciplinary approach is a must as the disease affects multiple organs

REFERRENCES

1. Oduber CE, van der Horst CM, Hennekam RC. Klippel–Trenaunay syndrome: Diagnostic criteria and hypothesis on etiology. Ann Plast Surg 2008;60:217-23.
2. Klippel M, Trenaunay P. Du naevus variquex osteohypertrophique. Arch Genet Med Paris 1900;3:611-72.
3. Klippel M, Trenaunay P. Du naevus variquex osteohypertrophique. Arch Gen Med. 1900;3:641–672.
4. Weber FP. Angioma-formation in connection with hypertrophy of limbs and hemi-hypertrophy. Br J Dermatol. 1907;19:231.
5. Baskerville P.A, et al. The etiology of the Klippel Trenaunay syndrome. Ann Surg. 1985;202:624–627.
6. Servelle M. Klippel and Trenaunay's syndrome. 768 operated cases. *Ann Surg*. 1985 Mar. 201(3):365-73.
7. Bliznak J, Staple TW. Radiology of angiodysplasias of the limb. *Radiology*. 1974 Jan. 110(1):35-44.
8. Baskerville PA, Ackroyd JS, Browse NL. The etiology of the Klippel-Trenaunay syndrome. *Ann Surg*. 1985 Nov. 202(5):624-7.
9. Ceballos-Quintal JM, Pinto-Escalante D, Castillo-Zapata I. A new case of Klippel-Trenaunay-Weber (KTW) syndrome: evidence of autosomal dominant inheritance. *Am J Med Genet*. 1996 Jun 14. 63(3):426-7.
10. Hu Y, Li L, Seidelmann SB, et al. Identification of association of common AGGF1 variants with susceptibility for Klippel-Trenaunay syndrome using the structure association program. *Ann Hum Genet*. 2008 Sep. 72:636-43.
11. Sung HM, Chung HY, Lee SJ, Lee JM, Huh S, Lee JW, et al. Clinical Experience of the Klippel-Trenaunay Syndrome. *Arch Plast Surg*. 2015 Sep. 42 (5):552-8.
12. Akcali C, Inaloz S, Kirtak N, Ozkur A, Inaloz S. A case of Klippel-Trenaunay syndrome involving only upper limbs. *G Ital Dermatol Venereol*. 2008 Aug. 143(4):267-9.
13. Bhat L, Bisht S, Khanijo K. Klippel-Trenaunay-Weber Syndrome with Kasabach-Merritt Coagulopathy and Hydronephrosis. *Indian Pediatr*. 2015 Nov. 52 (11):987-8.
14. Willis-Owen CA, Cobb JP. Total hip arthroplasty in Klippel-Trenaunay syndrome. *Ann R Coll Surg Engl*. 2008 Nov. 90(8):W6-8.
15. Gloviczki P, Driscoll DJ. Klippel-Trenaunay syndrome: current management. Phlebology. 2007;22:291–298.
16. Lee A, Driscoll D, Gloviczki P, Clay R, Shaughnessy W, Stans A. Evaluation and management of pain in patients with Klippel-Trenaunay syndrome: a review. Pediatrics. 2005;115:744–749.
17. Catre MG, Kolin A, Waddell JP. Total knee arthroplasty in Klippel-Trenaunay syndrome. Can J Surg. 2005;48:494–495.
18. Berry SA, Peterson C, Mize W, Bloom K, Zachary C, Blasco P, Hunter D. Klippel-Trenaunay syndrome. Am J Med Gen. 1998;79:319–326.
19. Onoda S, Komagoe S. Lymphaticovenular anastomosis for Klippel-Trenaunay-Weber syndrome. *Int J Surg Case Rep*. 2019 Apr 16. 58:67-69.
20. Biesecker LG, Happle R, Mulliken JB, Weksberg R, Graham JM Jr, Viljoen DL, Cohen MM Jr. Proteus syndrome: diagnostic criteria, differential diagnosis, and patient evaluation. Am J Med Genet. 1999; 84:389–395.