EVIDENCE BASED STATEMENT

DOMAIN 04, Statement 07

TOPIC: "Venous malformations diagnostic and treatment protocol"

SEARCH TERMS & SOURCES

(("Vascular Malformations/diagnostic imaging"[Mesh] OR "Vascular Malformations/surgery"[Mesh] OR "Vascular Malformations/therapy"[Mesh])) AND "Lower Extremity"[Mesh]

INCLUSION CRITERIA

- Lower limb only
- Reviews
- Publication < 10 years, only ENG

SEARCH RESULT BEFORE - AFTER SELECTION

16 (before) - 16 (after selection)

PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH

1. Markovic JN, Shortell CK. Venous malformations. J Cardiovasc Surg (Torino). 2021 Oct;62(5):456-466.
2. Hage AN, Treatment of Venous Malformations: The Data, Where We Are, and How It Is Done. Tech Vasc Interv Radiol. 2018 Jun;21(2):45-54.
3. Clemens RK, Baumann F, Husmann M, et al. Percutaneous sclerotherapy for spongiform venous malformations - analysis of patient-evaluated outcome and satisfaction. Vasa. 2017 Oct;46(6):477-483

EVIDENCE BASED STATEMENT

Domain 4; Statement 7

IDENTIFIED REFERENCES

1. Ornelas-Flores MC, Rojas-Reyna GA, Hinojosa-Gutiérrez CG, Leo SG. Endovascular management of a complex high-flow lower limb arteriovenous malformation: Case report and literature review. Cir Cir. 2021;89(S1):14-9.
2. Mariani E, Andreone A, Perini P, Azzarone M, Ucci A, Freyrie A. Endovascular Treatment of Persistent Sciatic Artery Occlusion: Case Report and Literature Review. Ann Vasc Surg. 2021;74:526.e13-.e23.
3. James JD, Agarwal H, Kumar V, Kumar A, Hemachandran N, Gupta A. Traumatic Arterio-Enteric Fistula-A Report of 2 Cases With Review of Literature. Vasc Endovascular Surg. 2021;55(6):631-7.
4. Maharaj MM, Biju R, Khashram M, Hussain Z. Delayed Fragmentation and Distal Embolization of Retained Microcatheter Causing Lower Limb Ischemia: Case Report and Review of the Literature. World Neurosurg. 2020;140:369-73.
5. Gao X, Guo J, Tong Z, Guo L, Zhang J, Gu Y. Successful Treatment of Acquired Arteriovenous Fistulas after Iliac Vein Thrombosis. Ann Vasc Surg. 2020;62:499.e15-.e20.
6. Lauener S, Bütikofer A, Eigenheer S, Escher R. Thrombophlebitis hiding under a KILT - case report on 40 years long-term follow-up of neonatal renal vein thrombosis. BMC Pediatr. 2019;19(1):183.
7. Bertino F, Braithwaite KA, Hawkins CM, Gill AE, Briones MA, Swerdlin R, et al. Congenital Limb Overgrowth Syndromes Associated with Vascular Anomalies. Radiographics. 2019;39(2):491-515.
8. Pomeranz CB, Cullen DL, Bellah RD. Deep venous thrombosis in a child with inferior vena cava and renal anomalies: KILT syndrome. Pediatr Radiol. 2018;48(10):1521-5.
9. Kaltenmeier CT, Erben Y, Indes J, Lee A, Dardik A, Sarac T, et al. Systematic review of May-Thurner syndrome with emphasis on gender differences. Journal of vascular surgery Venous and lymphatic disorders. 2018;6(3):399-407.e4.
10. Qiu J, Zhou W, Zhou W, Xiong J. Bilateral Persistent Sciatic Artery: Literature Review and Case Report Follow-up for More than Five Years. Ann Vasc Surg. 2017;41:282.e5-.e10.
11. Parin L, Madhu G, Anil T, Sonali B. Anesthetic Management of a Patient with Cowden Syndrome and Review of Anesthetic Concerns. J Clin Anesth. 2017;38:173-4.
12. Slama R, Long B, Koyfman A. The emergency medicine approach to abdominal vascular graft complications. Am J Emerg Med. 2016;34(10):2014-7.
13. Cook TS. Computed Tomography Angiography of the Lower Extremities. Radiol Clin North Am. 2016;54(1):115-30.
14. Ahn S, Min SK, Min SI, Ha J, Jung IM, Kim SJ, et al. Treatment Strategy for Persistent Sciatic Artery and Novel Classification Reflecting Anatomic Status. Eur J Vasc Endovasc Surg. 2016;52(3):360-9.
15. Ahmad W, Majd P, Luebke T, Gawenda M, Brunkwall JS. Clinical outcome after surgical and endovascular treatment of symptomatic persistent sciatic artery with review of the literature and reporting of three cases. Vascular. 2016;24(5):469-80.
16. Yang S, Ranum K, Malone M, Nazzal M. Bilateral persistent sciatic artery with aneurysm formation and review of the literature. Ann Vasc Surg. 2014;28(1):264.e1-7.

EVIDENCE BASED STATEMENT

Domain 4; Statement 7

TEXT FOR INCLUSION IN THE DOCUMENT

(300 words, not counting the references)

DOMAIN 04, Statement 07, TOPIC: "Venous malformations diagnostic and treatment protocol"

Venous malformation (VM) is the most common type of congenital vascular malformation with an incidence of 1 to 2 in 10,000 and a prevalence of 1%. VMs are composed of ectatic venous channels found in the head, neck, limbs, and trunk and are thought to be sporadic in most cases.
[Vikkula M, Boon LM, Mulliken JB. Molecular genetics of vascular malformations. Matrix Biol. 2001;20(5-6):327-35].
[Cox JA, Bartlett E, Lee EI. Vascular malformations: a review. Semin Plast Surg. 2014;28(2):58-63.]
X-rays can image calcified phleboliths and the degree of dystrophic calcification in VMs, which can be useful in suggesting the presence of VMs, as it has been shown that over 1/3 of VMs have bony changes.
[Legiehn GM, Heran MK. Venous malformations: classification, development, diagnosis, and interventional radiologic management. Radiol Clin North Am. 2008;46(3):545-97, vi].
Duplex US is a useful, non-invasive imaging technique and should be used as the first modality when investigating the presence of a vascular malformation, especially for superficial lesions or those in the extremities.
***[Lee BB, Baumgartner I, Berlien P, Bianchini G, Burrows P, Gloviczki P, et al. Diagnosis and Treatment of Venous Malformations. Consensus Document of the International Union of Phlebology (IUP): updated 2013. Int Angiol. 2015;34(2):97-149.]**
Contrast-enhanced MRI and MRA are the preferred imaging modalities for pre-procedure diagnosis and interventional planning as well as post-procedure evaluation of the vascular malformation. Conventional MRI has 100% sensitivity and 24% to 33% specificity in differentiating VMs from non-VMs.
[van Rijswijk CSP, van der Linden E, van der Woude H-J, van Baalen JM, Bloem JL. Value of Dynamic Contrast-Enhanced MR Imaging in Diagnosing and Classifying Peripheral Vascular Malformations. American Journal of Roentgenology. 2002;178(5):1181-7].
There may be instances when it is prudent to delay intervention in favor of observation, or to avoid intervention if there are no significant symptoms and risks. In such cases, associated complications, such as pain or anemia caused by bleeding, should be treated. Patients with VMs in the extremities should be given compression therapy to minimize symptoms like swelling and thrombophlebitis forcing venous blood from the VMs into the deep venous system.
[Behravesh S. Venous malformations: clinical diagnosis and treatment. Cardiovasc Diagn Ther. 2016;6(6):557-69.]
Surgical intervention was traditionally considered to be the initial form of treatment if the lesion could be completely resected and had minimal anatomic and functional consequences. However, sclerotherapy is now the established gold standard, first-line treatment for VMs.
[Horbach SE, Lokhorst MM, Saeed P, de Goüyon Matignon de Pontouraude CM, Rothová A, van der Horst CM. Sclerotherapy for low-flow vascular malformations of the head and neck: A systematic review of sclerosing agents. J Plast Reconstr Aesthet Surg. 2016;69(3):295-304].

EVIDENCE BASED STATEMENT

Domain 4; Statement 7

STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

DOMAIN 04, Statement 07

"**Venous malformations are often underdiagnosed and require expert evaluation, together with at least ultrasound and, potentially, magnetic resonance assessment.**"

SELECTED REFEREENCES

1. Lee BB, Baumgartner I, Berlien P, Bianchini G, Burrows P, Gloviczki P, et al. Diagnosis and Treatment of Venous Malformations. Consensus Document of the International Union of Phlebology (IUP): updated 2013. Int Angiol. 2015;34(2):97-149.
2. van Rijswijk CSP, van der Linden E, van der Woude H-J, van Baalen JM, Bloem JL. Value of Dynamic Contrast-Enhanced MR Imaging in Diagnosing and Classifying Peripheral Vascular Malformations. American Journal of Roentgenology. 2002;178(5):1181-7
3. Horbach SE, Lokhorst MM, Saeed P, de Goüyon Matignon de Pontouraude CM, Rothová A, van der Horst CM. Sclerotherapy for low-flow vascular malformations of the head and neck: A systematic review of sclerosing agents. J Plast Reconstr Aesthet Surg. 2016;69(3):295-304
4. Vikkula M, Boon LM, Mulliken JB. Molecular genetics of vascular malformations. Matrix Biol. 2001;20(5-6):327-35

identified LITERATURE BIAS

Lack of homogeneity in severity staging

SUGGESTED NEXT LINES OF RESEARCH

Venous malformation surveillance timeline best protocol identification