Ethanol Sclerotherapy Of Complex Peripheral Venous And Lymphatic Malformations

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Vein Malformations
• Slow-flow Lesions
• Can Occur Anywhere
• Connected to Veins
• May Be Discontinuous
• Can Have Mixed Lesions

Vein Malformations

Lymphatic Malformations
• Slow-flow Lesions
• Can Occur Anywhere
• Arise From Vein Buds
• Connected to Veins
• May Be Discontinuous
• Can Have Mixed Lesions

MR Imaging
• True For VM or LM
• Bright Signal on T-2
• Fat-Suppression Useful
• STIR sequences excellent
• Decreased Signal in Treated Areas

Lymphatic Malformations

Action of Ethanol
• Ethanol upon contact with blood proteins initiates the clotting cascade.
• Ethanol denudes the endothelial cell from the vascular wall and precipitates its protoplasm.
• Fractures of the vascular wall occur to the level of Internal Elastic Lamina.
• The denuded vascular wall causes platelet aggregation and luminal thrombosis from the vascular wall to the central lumen.
• Because the endothelial cell is destroyed, “Recanalization” and “Neovascular Stimulation” are now noticeably absent because the endothelial cell is gone and cannot secrete “Chemotactic Cellular Factor” and “Angiogenesis Factor”.
• Permanent thrombosis and cures are now possible.
6-year-old male with a painful growing mass in the left buttock area. Biopsy of the lesion only retrieved blood without tissue. MR is consistent with VM in Lt posterior buttock Gluteus muscle group. Pt is referred for ethanol sclerotherapy. MR with STIR sequences demonstrates the VM.

Direct puncture spot film demonstrating contrast filling of a large VM compartment. Note the extravasation. The 21g needle was repositioned into the VM to inject ETOH without extravasation. Serial injections of ETOH were done until it was thrombosed.

Other smaller compartments like this one were treated with single ETOH injections. Pre-Embo DSA#2

Post-Embo DSA#2a: 3 ml ETOH
After 4 sclerotherapy sessions the following result was achieved and documented by MR.
40-year-old male with a large VM of the plantar foot.
61-year-old male with extensive VMs in the Lt chest wall & Lt abdominal wall with port-wine stains.
19-year-old male with testicular involvement of venous malformation with verrucous excoriative hemorrhagic multiple lesions of the testicles.

After 7 serial ethanol treatments, the testicular lesions were ablated and the skin returned to normalcy. No further bleeding occurred.

20-year-old female with vulval, labial, and vaginal venous malformations. Her OB/GYN physician told her never to become pregnant for during delivery, she could tear and have life-threatening hemorrhage. After Rx she has had 3 children uneventfully.
After 8 percutaneous ethanol treatments the Pt was able to have children and now is the mother of two.

Rectal Venous Malformation

- Previously known in the world’s literature as “Rectal Hemangioma”.
- Congenital lesion causing thickening of the rectal wall, abnormal veins on the rectal mucosal surface, and rectal bleeding.
- Bleeding often requires monthly blood transfusions of several units.
- Surgery previously required a pelvic exenteration with stomas for urinary and fecal diversion. Tough thing for a child to undergo.
5-year-old male with intermittent severe abdominal pain due to lymphatic malformation in the root of the mesentery.
21-year-old male with left lumbar back pain limiting activities.
23-year-old female unable to ambulate and wheelchair confined due to extreme pulmonary HTN secondary to repeated PE from the Lt chest and Lt supraclavicular VMs thrombi, congenitally absent Lt Subclavian vein, PE flowing into the Lt Innominate vein stump, that then flows to the lungs, since birth.

Father is an ER physician in Dallas, Texas trying to find a physician to solve all issues and treat his debilitated daughter.