Importance of Multidisciplinary Approach to Vascular Malformation Management

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Vascular malformations (VMs) are developmental abnormalities of blood vessels (arteries, veins, or lymphatics) that affect a wide array of children and adults throughout the world and can occur anywhere in the body. Patients may present with symptoms of pain, the feeling of heaviness, edema, disfigurement, or more severe symptoms such as cardiac output failure or associated hematological effects. There is no absolute cure for these malformations and surgery is usually reserved only for focal cases because the risk of recurrence, if the lesion is not totally resected, is extremely high.

Before deciding upon treatment and management of VMs, it is best that patients be seen in a multidisciplinary setting with the expertise of subspecialties that have an interest in these disorders.^{1,2} The interventional radiologist should be prepared to work in multidisciplinary teams to optimize patient outcomes. These patients typically have multiple associated problems and can benefit from the aid of subspecialties such as dermatology, general surgery, plastic surgery, otolaryngology, hematology, pathology, ophthalmology, orthopedics, physical and occupational therapy, and social services. Established treatment centers have most of these subspecialties in place for optimal patient care leading to accurate diagnoses and management (► **Table 1**).

Multiple disciplines serve different roles in treatment while supporting each other in meeting a common goal, that is, the patient. Most VMs are diagnosed in childhood; thus, the parent and/or the guardian is also involved. Providing resources for patients in a single visit reduces travel time, cost, and delay in treatment, thus relieving frustration. Families often feel frustrated and are overwhelmed while searching for answers about a worrisome “discoloration and/or bump” on their child. More often than not, this search for answers involves multiple physician referrals and endless Internet searches. Many patients travel great distances to specialized tertiary centers. Patients appreciate a multidisciplinary center with physicians and professionals from the treatment team available, allowing for much of the plan of care to be developed in one visit.

Our practice consists of co-medical directors in pediatric surgery and medicine. The strength of our program lies within the multiple disciplines such as dermatology, plastic surgery, otolaryngology, interventional radiology, general surgery, and hematology (most of which specialize in pediatrics). Other services such as physical therapy, orthopedics, and ophthalmology are present and consulted on an as-needed basis. Also of importance is a central clinical provider who helps coordinate patient intake and follow-up as well as questions/concerns that the patient or patient’s family may have. Furthermore, a diagnostic sonographer should be present in the clinic for real-time imaging to aid in quick diagnosis.

For the interventional radiologist, it is important to have a multidisciplinary team to help with the diagnosis of complex disorders. One must remember that just because you can do a procedure does not mean that you should do a procedure. Our patients are treated conservatively when possible, that is, with anti-inflammatory medications and/or compression therapy when indicated. Given that procedures are not without risk, it is beneficial to collaborate with a team where team members can support the prevention or treatment of complications. Moreover, interventional radiologists can play a role in hybrid-staged procedures such as sclerotherapy for malformations in preparation for surgical debulking by plastic surgery.

Treatment of VMs varies depending on diagnosis and associated symptoms and risks. Most training for treatment occurs in academic pediatric centers; however, practitioners can also apply skills acquired in comprehensive interventional radiology training programs. In addition, a great deal of learning is through collaboration with the different specialties comprising the multidisciplinary team. It is important that each member of the treatment team is aligned in patient management, thus making it imperative for confidence and trust in the team.

Interventional radiologists use different tools when treating malformations. Percutaneous sclerotherapy and endovascular embolic therapy are the most common methods of treatment.³

Table 1 Key components for the treatment of multidisciplinary vascular malformations

<ul style="list-style-type: none">• Dedicated clinic time• Dedicated clinic coordinator• Dedicated interventional radiologist, pediatric surgeon, plastic surgeon, dermatologist, ENT specialist, hematologist^a
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^aOther services such as orthopedics, vascular surgery, rehabilitation, and ophthalmology are important in select cases and should be identified when needed.

Sclerosants such as ethanol, sodium tetradecyl sulfate, doxycycline, and bleomycin can usually be found in the hospital formulary. Adhesive and nonadhesive/cohesive liquid embolics (n-butyl cyanoacrylate and ethylene vinyl copolymer) are usually available in centers with neurointerventional services. Interventional suites should have the capability of multiple imaging modalities and different options of sedation. These procedures can be painful with cardiopulmonary risks; thus, the support of higher-level anesthesia teams is very common and usually necessary for patient safety and better outcomes.

In conclusion, multidisciplinary care for VMs is paramount for effective diagnosis and treatment. The interventional radiologist serves as an integral part of the therapy and management of these patients. Our expertise in percutaneous sclerotherapy and embolization is a minimally invasive means

of treating complex conditions that are not usually amenable for surgery. Our participation in these multidisciplinary programs optimizes patient care and outcomes for these care disorders.

References

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