Treatment Of Vascular Malformations In Infants

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Disclosures
• No Financial Disclosures
• Off-label use of drugs and devices

Vascular Anomalies Needing Early Treatment
• Lymphatic malformations - cystic
• Venous malformations affecting function
• AVM/AVF
• Hemangiomas/ tumors

LM With Potential Airway Obstruction

Technique; doxycycline

2 months after e1
5 months old, post e2
Imaging Before and After Sclerotherapy

3 week old with VM of Hand

MRI / Venogram

AVM; Advantages of Early Treatment

- Control of cardiac overload
- Prevention of secondary effects
  - Cerebral development
  - Tissue damage
  - Portal Hypertension

Sclerotherapy with foam, double needle technique and bleomycin

VM Lower Lip
Disadvantages of Treatment in Infancy

- Femoral artery thrombosis
- Fragility of vessels
- Limitations: fluid, contrast, ETOH, DMSO
- Poor tolerance of PA embolization

AVF Presenting in Infancy

- Intracranial
  - Galen
  - Dural
  - Pial
- Neck
- Arterioporal
- Other

Posterior Dural AVF, CHF, PHTN

Post E1, NBCA to lungs
PHTN worse
Would use micro-balloon occlusion catheter with Onyx

E 5, Onyx, detachable long coils
B Type Natriuretic Peptide

Embolization

Inc ventricular size

Normal RV function

7 months old

O2 saturation 40%

Multiple AVF
Arterioportal Fistula
- Embolization, fiber coils

One month post embolization

AVM 2 w to 6 months

AVF + Nidus

AVF: venous coils, ETOH

Now Just Nidus
3 MONTHS LATER

Percutaneous etoh injection

2 months after 2nd embo

10 years old

Indications for Embolization of Hemangioma

• CHF
  Unresponsive to medical treatment
• Pre-op
• Bleeding

Multifocal Infantile Hemangioma
Mutifocal; Hepatic Angiogram

Embolization of Porto-venous Fistulae

IH with Arteriportal and Portovenous Fistulae

Multifocal Infantile Hemangioma

IH with Arteriportal and Portovenous Fistulae

Embolization of Porto-venous Fistulae
RICH; Congenital Rapidly Involuting Hemangioma

- Develop prenatally, fully formed at birth
- Can be highly vascular
- Usually involute rapidly
- In liver, can have AVF, venous varix, circumferential veins

RICH
Cardiomegally
Transient platelet consumption

Rapid involution

Congenital Hemangioma
Focal aneurysms; direct AVF

Hepatic RICH
- Varix and circumferential veins
- Often misdiagnosed as AVM

Focal Hemangioma
With Varix
Embolization with NBCA, coils

Arterioportal shunt

Arterioportal Shunt

4 weeks old

8 weeks old

10 weeks old
Kasabach Merritt Phenomenon

- Kaposiform hemangioendothelioma or other variant histology
- Intralesional platelet consumption
- Vincristine
- High mortality rate (20%)

Kaposiform Hemangioendothelioma (KHE)

Kaposiform Hemangioendothelioma
Embo > transient increase in platelets
Pre-op