Low flow malformations
the Radboud experience

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ISSVA classification for vascular anomalies

Vascular tumors
- benign
- locally aggressive or invasive
- malignant

Vascular malformations
- single
- combined
- more than 5 vessels
- associated with other anomalies

- Capillary malformations
- venous malformations
- lymphatic malformations
- arteriovenous malformations
- arteriovenous shunts

* defined as two or more vascular malformations found in one lesion

Hecovan Expertise group
Expertise center for Hemangiomas and Congenital Vascular malformations Nijmegen

12 different specialties
2015
- 2300 patients seen.
- 550 IR treatments

- European Reference network
  - vascular

European Reference Network
vascular anomalies

Multiple Treatment options
personalized medicine

Propranolol
Wait & See
Compression bandages
Radiodense coils
Endovascular techniques
Surgery
Compression bandages
Propranolol
Wait & See

No Disclosures
Therapeutic options Low Flow malformations
venous/macrocytic lymphatic

- Sclerotherapy
- Bleomycin
- Hypertonic saline
- STS (sodium tetradecyl sulfate)
- Polidocanol (Foam)
- Doxycycline
- OK432
- Ethibloc
- Ethanol 96 %

Max 600 IE/kg per treatment
Max 10000 IE per treatment
Max 4 treatments per year
Max 150,000 IE per person

Ethanol: 0.14 cc/kg/10 min
Max: 1 cc/kg
Success rates (n=859)

Success rates:
• Between 60-90%
• Multiple sessions often needed
• Success depends on the extent of the malformation

Complications (n=859)

Complications: (6%)

- Venous malformations
  • Ethanol (n=546)
    - Skin necrosis: 16 (all minor)
    - Nerve injury: 15 (8 fully recovered)
    - Contracture: 2
    - DVT: 1
    - Sepsis: 1
  • Polidoc. foam (n=87)
    - Skin necrosis: 9 (all minor)
  • Foam + ethanol (n=48)
    - Skin necrosis: 9 (all minor)

- Lymphatic malformations
  • Bleomycin (89)
    - Skin necrosis: 1 (minor)
  • Bleomycin/foam (88)
    - Nerve injury: 1

Take home messages

• Ethanol is our preferred agent for venous malformations. But not always ....
• Results presented are single institute, single operator
• Long-term commitment
• Vascular malformation team is needed
• Multiple treatments often needed
• Results depend on the extent of the malformation, location etc