Ethanol Curative Endovascular Treatment of Hand & Foot AVMs

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INTRODUCTION

• AVMs: challenging in clinic
  Different manifestations; Lowe prevalence; Multi-discipline treatment
  AVMs in Hands & Feet: most difficult
  Treatment was first introduced by surgeons: excision or amputation
  Embolization: an effective therapy

• Precise structure in located region;
  Abnormal vascular are close to normal vascular
  Extremities of the body; torturous artery;
  hard to reach NIDUS through feeding artery
  Difficult identification of the NIDUS

• Irreversible necrosis upon reflux into the artery
• Post-operative swelling may lead to distal necrosis
• Seldom influence cardio-pulmonary function

Patients & Methods

• Oct.2000-Dec.2016, 30 AVMs in Hands & Feet
  (12 in hands, 5 in feet), 8F/5M, 9-48y/o, 1 with AVMs in Wedge bone
  Embolization with ETA under general anesthesia
  Direct puncture; Through artery; No. of procedure 1-8
  DOV: occlusion with coils
  Effectiveness: clinical manifestations; angiography; complications
Clinical Manifestations

- Ulcers - common
- Pain
- Pulsatile swelling
- Red plaque
- Dilated outflow vein
- No heart failure or chest distress
Late stage of AVMs

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Indications of Embolization

- Refractory ulcers in the overlying skin/mucosa
- Bleeding-acute/chronic
- PE: dilated veins; Higher skin temperature
- Enhanced vascular mass due to enhanced CT
- Be conservative in Patients without symptoms

Painful AVMs in Feet

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The Goal of AVMs treatment

- Obliterate abnormal vascular mass
- Alleviate ulcers caused by “stealing the blood”
- Control the development of the lesions
- Stop the process of venous arterialization

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Procedures & Aim

- Depending on symptoms and chief complaint
- Pre-surgical enhanced-CT: intraosseous? Location? DOV?
- Intraosseous lesions first; Soft tissue lesions secondly
- Early occlusion of DOV: as soon as possible
- Evaluation of successful treatment:
  Healing of ulcers; Recovery of dilated DOV; Vanished pulsations; No enhanced mass in CT

Key Points of Successful Embolization

- Injection of ETA into the NIDUS; Location of the ulcers
- Coils to occlude the dilated DOV
- Aiming at alleviating clinical symptoms
- Ligation of distal end

Results

- Complete cure is rare (3 cases)
  Clinical cure; Vanished vascular mass in angiography
- 11 cases with alleviating symptoms; 1 case with distal necrosis
Results

- Smaller lesions: Direct puncture or intra-artery pathway- both difficult
- More likely to reflux when injecting ETA: less amount, slower speed
- Soft coils to occlude DOV

AVMS in hands

AVMs in feet

Before & After
Complications

- Injection of ETA into arteries
- Injection of ETA into tissues
- Post-treatment swelling

Conclusions

- Very challenging in embolization of AVMs in hands and feet: chief complaint
- Clarify the aim of endovascular treatment: alleviating clinical symptoms
- Pre-enhanced-CT: Intracranial Lesions? DOV?
- Coils can improve the effectiveness of treatment: Cavity of DOV; DOV; detachable coils
- Choice of embolic/sclerosing agent: according to treatment aim and experience; precise position; absolute ethanol

Thank you for your attention