Vascular malformations – therapeutic options

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Disclosure

Speaker name:
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I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest
Terminology

- "Cavernous hemangioma" > Venous malformation
- "Cystic hygroma" > Lymphatic malformation
- Term "Hemangioma" misused (71.3%)
- Chance of wrong treatment in 20.3% of cases

Imaging

MRI: T2-weighted fat-sat.        T1-weighted image post KM
Venous Malformation

- Most frequent slow flow malformation
- Congenital (often seen at birth)
- 90% with cutaneous involvement with bluish appearance of cutaneous lesions
- Somatic mutation (except GVM and cutaneomucosal venous malformations)
Risk of Progression in VM

Venous Malformation
Imaging features

- **MRI:**
  - Phleboliths
  - Thin membranes
  - Fluid filled spaces
  - Fluid-Fluid levels

- **US:**
  - Compressible
  - Slow venous flow, if any
2 YOF with multiple VMs including large tongue lesion.

1st procedure: STS 5 mL, ETOH 3 mL

Treatment with Sclerotherapy
Lymphatic Malformation

- Abnormal development of the lymphatic vessels
- Common sites: neck, axilla, and pelvis
- Three subtypes:
  - Microcystic, macrocystic, combined
- Intermittent swelling:
  - Intralesional bleeding, Infection, systemic illnesses
Macrocystic Lymphatic Malformation
Sclerotherapy: Doxycycline, Ethanol
Microcystic Lymphatic Malformation

Sclerosotherapy: Bleomycin, Doxycyline, Ethanol
Arteriovenous Malformation (AVM)

Four clinical stages (Schobinger):

1. Quiescent
2. Expansion
3. Destruction (ulceration, bleeding and pain)
4. High outflow heart failure (rare)
Arteriovenous Malformation (AVM)
## Risk of Recurrence

<table>
<thead>
<tr>
<th>Risk of Recurrence</th>
<th>Embolization Only (254 Treatments in 102 Patients)</th>
<th>Resection with or without Embolization (118 Treatments in 98 Patients)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability (%)</td>
<td>95% CI (%)</td>
<td>95% CI (%)</td>
</tr>
<tr>
<td>Overall</td>
<td>98</td>
<td>81</td>
</tr>
<tr>
<td>Stage I</td>
<td>80</td>
<td>21</td>
</tr>
<tr>
<td>Stage II</td>
<td>99</td>
<td>85</td>
</tr>
<tr>
<td>Stage III</td>
<td>99</td>
<td>81</td>
</tr>
<tr>
<td>Stage IV</td>
<td>100</td>
<td>69</td>
</tr>
</tbody>
</table>

Embolization Nidus (AVM)
Pre embolization

Post embolization

3 months later
Arteriovenous Malformation (AVM)
Embolization of draining vein (AVM)

Medical treatment of vascular malformations

• Limited, off-label use

• Addition to surgical and/or interventional treatment
  • Reduce risk of recurrence
  • Enhance primary treatment effect

• m-TOR-inhibitor (Sirolimus) for AVMs and BRBNS
• PI3K inhibitors
• Bevacizumab and interferon reduce venous recanalization
Summary

• Interventional
  • First or additional
  • Embolization for fast-flow
  • Sclerotherapy for slow-flow

• Surgical
  • Total excision possible
  • Overgrowth, tissue
  • «Deal» > function, esthetic

• Medical
  • Limited, additional, off-label use

RARELY CURABLE, CONTROL OF SYMPTOMS, MULTIPLE SESSIONS
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