COMPLEX CAPILLARY-VENOUS MALFORMATIONS AND THEIR ENDOVASCULAR MANAGEMENT

Tarek Radwan, MSc. FRCS
Chief of Vascular Surgery, IMC
Cairo, Egypt

Angiographic ChCh

- CVM are malformed capillaries & veins.
- Arteries are normal but enlarged.
- NO shunt but intense filling of veins.

Literature review

Rarely described Diff. nomenclature
Capillary-Venous Malformation

- CVMs are combined low-flow malformations formed from dysplastic capillary vessels and enlarged postcapillary vascular spaces.
- Dynamic contrast-enhanced MR imaging: they show early homogeneous enhancement whereas only delayed enhancement is seen in venous malformations.


CVM of muscle

- Early described as intramuscular hemanginoma.
- Presented at 2nd to 3rd decades usually as a growing muscle mass mimic sarcoma but normal muscle if biopsied.


Aneurysmal bone cyst (ABC)

- CVM could be described as the vascular type of primary ABC (95% of the cases, other 5% are solid).
- It manifests as a rapidly growing, expansive, destructive lesion causing cortical perforation and soft tissue invasion.
- It shows increased vascularity and bone has cystic changes.


ABC

With permission from Prof Mohamed Abd Alrahman
Musculo-skeletal surgical oncology, Ain Shams University, Cairo Egypt

IMC CVM CASES
Vascular Malformation Cases 2005-2019

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Vascular Malformations</td>
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<tr>
<td>Venous / Veno-lymphatic</td>
<td>186</td>
<td>67.6%</td>
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<tr>
<td>Lymphatic</td>
<td>15</td>
<td>5.5%</td>
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<tr>
<td>Capillary Venous</td>
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<td>5.1%</td>
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<tr>
<td>AVM</td>
<td>54</td>
<td>19.6%</td>
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<tr>
<td>AVF</td>
<td>6</td>
<td>2.2%</td>
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<tr>
<td>Infantile Hemangioma</td>
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</table>

CVM Cases 2015-2019

- Number: 14 cases.
- Gender: 6 Females & 8 Males.
- Age Range: 2ys — 55ys.
- No of treatment sessions: 83
- Treatment protocol: Angiography with direct puncture ethanol injection.

<table>
<thead>
<tr>
<th>Site</th>
<th>Number</th>
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</thead>
<tbody>
<tr>
<td>Head &amp; Neck</td>
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<tr>
<td>Shoulder</td>
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<tr>
<td>Trunk</td>
<td>1</td>
</tr>
<tr>
<td>Upper Limb</td>
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</tr>
<tr>
<td>Lower Limb</td>
<td>3</td>
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<tr>
<td>Pelvis</td>
<td>2</td>
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<tr>
<td>Total</td>
<td>14</td>
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</tbody>
</table>

IMC CVM CASES

CASE 1

Intramuscular CVM: Forearm
Intramuscular CVM: Forearm

0 month 3 month

CASE 2

CVM: Pelvis

CVM: Pelvis

CVM: Pelvis-Follow up (4 treatment sessions)

CASE 3
Intramuscular CVM: Cheek

IMC CVM CASES
CASE 4

IMC CVM CASES
CASE 5

Intramuscular CVM: Cheek

CVM: Foot

CVM: Tibia & LL
IMC CVM CASES
CASE 6

CVM: Tibia & LL

IMC CVM CASES
RESULTS & COMPLICATIONS

Multiple CVM: Lt. Ear (Botryoides)
The IMC, CVM Treatment Results
Total 14 cases:
3 patients were cured with:
- lesion disappearance or significant shrinkage.
11 patients have ongoing treatment with:
- symptom improvement.
- Fibrosis on follow up MRI.
- good devascularization on follow up angiography.

Complications
- Major: None.
- Minor: Small skin ulcers in 1 case healed spontaneously.

Conclusion
- CVMs are Vascular Malformations with malformed capillaries and veins.
- CVMs demonstrate increased vascularity usually with contrast staining without AV shunting.
- Angiography is important for diagnosis to exclude AVM (NO SHUNT).

Conclusion
- Direct puncture into the malformed veins with undiluted ethanol injections and super-selective transcatheter embolization with a 50% mixture of ethanol + non-ionic contrast into the CVM are curative.
- The Orthopedic Medical Literature has termed CVMs of muscle as “Intramuscular Hemangioma” & CVMs of bone as “Aneurysmal Bone Cyst”.
THANK YOU FOR YOUR KIND ATTENTION