Assessing adequate clot removal after lysis

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“Where the mouth goes the brain follows”
Post Procedure IVUS
Deciding lesion stenosis - CIV

Area % stenosis = \((114.0 - 42.2/114) \times 100 = 63\%\)

Min diam % = \((9.5 - 3.6/9.5) \times 100 = 62\%\)

CIV stenosis at vessel-crossing, focal, normal wall - NIVL
Deciding lesion stenosis – EIV, CFV

**Occluded**
Area % stenosis = 100%
Min diam % = 100%

**Size of patent distal CFV**
Min diam = 7.6mm
Max diam = 13.6 mm
Area 85.7 mm²
McGuiness et al., Thromb & Haem (2001)
Saha et al., Circulation (2013)
Pre-intervention thrombus MRI characterisation

**Example 1**

<table>
<thead>
<tr>
<th>MR Venogram</th>
<th>MR Venogram</th>
<th>T1 map</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Left EIV</td>
<td>Thrombus</td>
<td>No signal</td>
</tr>
<tr>
<td>%MTR: 50.0</td>
<td>T1: 428 (ms)</td>
<td></td>
</tr>
<tr>
<td>ADC: 0.13x10^-3 mm^2/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%MTR/cm^3 = 57.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYSABLE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| D | E | F |
| Left CFV | No signal | No signal |
| %MTR: 41.0 | T1: 710 (ms) |
| ADC: 0.55x10^-3 mm^2/s |
| %MTR/cm^3 = 30.0 |
| LYSABLE |
Example 2

Pre-intervention thrombus MRI characterization

**MR Venogram**

A. CIV

B. Vein wall

C. T1 map

- % MTR: 26.0
- % MTR/cm³: 203.0
- ADC: $1.7 \times 10^{-3}$ mm²/s

**Prediction**

UNLYSABLE NEEDS STENT

D. Left CFV

E. No signal

F. T1: 557 (ms)

- % MTR: 44.0
- % MTR/cm³: 38.0
- ADC: $1.3 \times 10^{-3}$ mm²/s

LYSABLE
Example 3

Pre-intervention thrombus MRI characterization

<table>
<thead>
<tr>
<th>MR Venogram</th>
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<th>T1 map</th>
</tr>
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<tbody>
<tr>
<td>Left EIV</td>
<td>Signal</td>
<td>%MTR: 23 MTR (%/cm³)=143.6 ADC: 1.6x10⁻³ mm²/s</td>
</tr>
<tr>
<td>Left CFV</td>
<td>Signal</td>
<td>%MTR: 22 MTR (%/cm³)=196 ADC: 2.8x10⁻³ mm²/s</td>
</tr>
</tbody>
</table>

UNLYSABLE
NEEDS STENT

UNLYSABLE
Patency

- Stent Choice
- Placement
- Errors
- Mistakes

Technical

Flow

Clotting

Inflow!!!

CFV

APLS

Behcet’s

Anti-coagulation
All truth passes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident.
Conclusion

• Look for outflow obstruction
• Use IVUS
• Follow your patients closely
• Get better data
• Work together
• Its all about the patient
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