Pressure Measurements and IVUS

Mandatory or fancy?

R. de Graaf, MD PhD
Interventional Radiologist
Clinic of Friedrichshafen
Disclosure

Speaker name:

...........................................................................................................

I have the following potential conflicts of interest to report:

- Consulting: Cook medical; Optimed GmbH; Bard; Volcano/Philips; TVA Medical; Vesper Medical;
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest
Background

Pressure measurements and IVUS

+ Distinct outcome measures
- Arbitrary cut-off values

Clinical correlation is missing

• Degree of obstruction -> Complaints

Not convincingly caught by clinical scoring systems
(i.e. venous claudication)
Measuring pressure

Examples

• **Chronic liver disease**
  • Portal hypertension: 5mm Hg
  • Clinical significant portal hypertension: 10mmHg

  • Between left renal vein and IVC
    • 3mm Hg

• **Iliofemoral obstruction** (De Almeida et al. J Vasc Surg Venous Lymphat Disord. 2018)
  • Between VF and IVC
    • 2mm Hg rest; 3mm Hg active
Measuring pressure

Challenges

• Patient during angiography
  • Supine, non-active, anesthesia, ..

• Collaterals (Kurstedtens et al. Phlebology. 2015 Mar;30(1 Suppl):27-34)
  • Decrease pressure, may cause complaints

• Location of measurement and extent of disease
  • Foot vein; popliteal vein; common femoral vein?
Pressure measurements
CFV Pressure
IVUS
IVUS Indications

- Determining significant Stenosis
  - >50% lumen reduction
- Determining landing spot
  - Healthy segment
- Post-stenting evaluation
  - Residual stenosis/compression
  - Thrombus
- Primary and secondary thrombectomy
  - Residual thrombosis
May-Thurner without IVUS
Determine stent landing spot

CFV Proximal

CFV Distal
Determine stent landing spot

CFV Confluence

Distal from CFV Confluence
Determine stent landing spot

Pre-Stenting at CFV Confluence

Post-Stenting at CFV Confluence
Landing spot without IVUS
Detect Residual Thrombus
Both IVUS and pressure measurements rely on arbitrary cut-off values.

- Need to learn when and how to use and how to interpret.

Clinical correlation is lacking.

- Clinical evaluation should be in the lead, therefore we need to optimize scoring systems.

IVUS mandatory?

- Maybe not, however...
... what you don’t know, you will not see

and

what you don’t see, you won’t miss
Pressure Measurements and IVUS

Mandatory or fancy?

R. de Graaf, MD PhD
Interventional Radiologist
Clinic of Friedrichshafen