Pre-clinical and histology findings from different DCBs

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Disclosure

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

☐ Consulting: Spectranetics, Terumo, Medtronic, Bard, Boston

☐ Employment in industry

☐ Stockholder of a healthcare company

☐ Owner of a healthcare company

☐ Other(s)

☐ I do not have any potential conflict of interest
All DCBs are created different

<table>
<thead>
<tr>
<th></th>
<th>Lutonix Bard</th>
<th>IN.Pact Medtronic</th>
<th>Ranger Boston</th>
<th>Stellarex Spectranetics</th>
<th>Passeo-18 Lux Biotronik</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PTX Dose</strong></td>
<td>2</td>
<td>3,5</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Excipient</strong></td>
<td>Polysorbate Sorbitol</td>
<td>Urea</td>
<td>Citrate ester</td>
<td>Polyethylene glycol</td>
<td>BTHC</td>
</tr>
<tr>
<td><strong>PTX Formulation</strong></td>
<td>Hybrid Crystalline + amorphous</td>
<td>Crystalline</td>
<td>Microcrystalline</td>
<td>Hybrid Microcrystalline + amorphous</td>
<td>Microcrystalline</td>
</tr>
<tr>
<td><strong>Technique of PTX deposition</strong></td>
<td>Pulverization</td>
<td>Micro-pipetting</td>
<td>Pulverization</td>
<td>Pulverization</td>
<td>Micro-pipetting</td>
</tr>
<tr>
<td><strong>Balloon state during deposition</strong></td>
<td>Inflated</td>
<td>Inflated</td>
<td>Deflated</td>
<td>Inflated</td>
<td>Deflated</td>
</tr>
</tbody>
</table>
Advantages and drawbacks of crystalline PTX

- Crystals enter the arterial wall and serves as long term PTX reservoir
- It allows sustained anti-proliferative effects

Torii et al., J Endovasc Ther 2017
Distal embolization of crystalline PTX causes fibrinoid necrosis with serious clinical consequences.

Ibrahim T et al., JACC Cardiovasc Interv 2016
Thomas SD et al., J Vasc Surg 2014
Emboli of PTX particles?

8.8% vs 3.6%; p = 0.080
Experimental approach

5 different DCBs x 5 specimens each = 25 rabbits
Experimental approach

- Sacrifice H2
- Samples
  - Aorta
  - Plasma
  - DCB
  - Muscles
    - Thigh: TFL, Vastus lateralis
    - Leg: Anterior tibialis
- Blinded dosage PTX by high pressure liquid chromatography
PTX in the 3 muscles

PTX in Tensor Fasciae Latae
- Lutonix
- In.Pact
- Ranger
- Stellarex
- Passeo
- p=0.4115

PTX in Vastus Lateralis
- Lutonix
- In.Pact
- Ranger
- Stellarex
- Passeo
- p=0.3848

PTX in Anterior Tibialis
- Lutonix
- In.Pact
- Ranger
- Stellarex
- Passeo
- p=0.0062

Accepted for publication in EJVES
PTX in the aortic wall

$p=0.0123$

PTX concentration (ng/mg)

Lutonix  In.Pact  Ranger  Stellarex  Passeo
PTX in the Plasma

$p=0.0007$

PTX concentration (ng/mL)

Lutonix  In.Pact  Ranger  Stellarex  Passeo
Random analysis of 2 slides/muscle
Distal emboli found with all DCBs (4.3±2.1 arteries/slide)
No differences between the DCBs (p=0.141)
Conclusions

• DCBs have different embolization and local penetration profiles in this pre-clinical study

• Stellarex and Ranger DCBs seem to have the best profiles, whereas embolization rates with In.Pact and Lutonix DCBs were concerning

• These results may have implications while choosing a DCB, especially for BTK and/or CLI
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