ENDOVASCULAR TREATMENT OF HAEMODIALYSIS ARTERIOVENOUS FISTULA

Jernej Lučev

Department of Radiology, University Medical Centre Maribor, Maribor, SI
DISCLOSURE

Speaker name: Jernej Lučev

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
INTRODUCTION

The end-stage renal disease is a major healthcare problem.\(^1\)

65% of patients on renal replacement therapy have haemodialysis.\(^2\)

Vascular access dysfunction is a major cause of hospitalization \((NIH, \text{stenosis})\).\(^3\)

\(^1\)Bittl JA. JACC Cardiovascular interventions. 2010.
\(^3\)Asif A et al. Kidney international. 2005.
VASCULAR ACCESS

Native AVF
most common, 2-3 months maturation

PTFEG
no maturation needed

Double-lumen Catheter
temporal solution

PB PTA - poor mid- to long-term results

Vascular damage and manipulations - NIH

Upstream events: Damage of endothelium and smooth muscle cells

Downstream events: Neointimal hyperplasia

NEOINTIMAL HYPERPLASIA

Systemic treatment – not very successful

Local treatment – limited success in the past

LOCAL DRUG APPLICATION

Bare-metal Stents
Superiority of DES in comparison with BMS in AVF stenosis treatment.

Drug-eluting Stents

Leave Nothing Behind
More favorable in our opinion.

Drug-coated balloons
To compare the effect of DCB PTA with PB PTA

To assess the effect of Vessel Preparation

### OUR RESULTS

#### TABELE 1

**PP in DCB and PB group at 6 m, 1 y and 2 y**

<table>
<thead>
<tr>
<th></th>
<th>DCB (n=31)</th>
<th>PB (n=31)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 m</td>
<td>90.3%</td>
<td>61.3%</td>
<td>0.016</td>
</tr>
<tr>
<td>1 y</td>
<td>77.4%</td>
<td>29%</td>
<td>0.0004</td>
</tr>
<tr>
<td>2 y</td>
<td>45.2%</td>
<td>16.1%</td>
<td>0.026</td>
</tr>
</tbody>
</table>

DCB: **534.2 days** (SE 36.4; 95% CI 462.8 – 605.6)
PB: **315.7 days** (SE 38.3; 95% CI 240.65 – 390.8)

log-rank test: p = **0.0004**

---

**K-M survival curve for PP in DCB and PB group**
Alarming new data!

Risk of Death Following Application of Paclitaxel-Coated Balloons and Stents in the Femoropopliteal Artery of the Leg: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Konstantinos Katsanos, MD, PhD, MSc; EBIR; Savvas Spiliopoulos, MD, PhD; Panagiotis Kitrou, MD, PhD; Miltiadis Krokidis, MD, PhD; Dimitrios Kanabadis, MD, PhD

Background—Several randomized controlled trials (RCTs) have already shown that paclitaxel-coated balloons and stents significantly reduce the rates of vessel restenosis and target lesion revascularization after lower extremity interventions.

Methods and Results—A systematic review and meta-analysis of RCTs investigating paclitaxel-coated devices in the femoral and/or popliteal arteries was performed. The primary safety measure was all-cause patient death. Risk ratios and risk differences were pooled with a random effects model. In all, 28 RCTs with 4663 patients (89% intermittent claudication) were analyzed. All-cause patient death at 1 year (28 RCTs with 4432 cases) was similar between paclitaxel-coated devices and control arms (2.3% versus 2.8% crude risk of death; risk ratio, 1.08; 95% CI, 0.72–1.61). All-cause death at 2 years (12 RCTs with 2316 cases) was significantly increased in the case of paclitaxel versus control (7.2% versus 3.8% crude risk of death; risk ratio, 1.68; 95% CI, 1.15–2.47; number-needed-to-harm, 29 patients [95% CI, 19–59]). All-cause death up to 5 years (3 RCTs with 863 cases) increased further in the case of paclitaxel (14.7% versus 8.1% crude risk of death; risk ratio, 1.93; 95% CI, 1.27–2.93; number-needed-to-harm, 14 patients [95% CI, 9–32]). Meta-regression showed a significant relationship between exposure to paclitaxel (dose-time product) and absolute risk of death (0.6±0.1% excess risk of death per paclitaxel mg-year; P=0.001). Trial sequential analysis excluded false-positive findings with 99% certainty (2-sided α, 1%).

Conclusions—There is increased risk of death following application of paclitaxel-coated balloons and stents in the femoropopliteal artery of the lower limbs. Further investigations are urgently warranted.

Clinical Trial Registration—URL: www.cr4.york.ac.uk/PROSPERO. Unique identifier: CRD42018099447. (J Am Heart Assoc. 2018;7:e011245. DOI: 10.1161/JAHA.118.011245.)

Key Words: balloon angioplasty + paclitaxel + paclitaxel-coated balloon + paclitaxel-eluting stent
CONCLUSIONS

DCBs increase PP during the first 24 months.\(^1\)

In SP and PAP statistically significant differences were not observed.\(^1\)

DCBs increase PP and decrease the rate of repeated procedures.\(^1\)

PP after DCB PTA is longer in comparison with PB PTA (paclitaxel inhibition of NIH).\(^1\)

Increased long-term risk of death after paclitaxel-coated technology use?\(^2\)

\(^1\) Lucev J et al. Cardiovascular and interventional radiology. 2018.
\(^2\) Katsanos K at al. Journal of the American Heart Association. 2018
Thank you for your attention!
ENDOVASCULAR TREATMENT OF HAEMODIALYSIS ARTERIOVENOUS FISTULA

Jernej Lučev

Department of Radiology, University Medical Centre Maribor, Maribor, SI