BARODENERVATION DENERVATION OF THE SYMPATHETIC NERVOUS SYSTEM OF THE RENAL ARTERY

Poster Contributions
Hall C
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Session Title: Renal Denervation and Critical Limb Ischemia: The Hottest Topics in Vascular Medicine
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Background: Serious limitations with available renal denervation treatments have provided an opportunity for novel technologies to emerge. The aim of the study is to evaluate in an animal model the direct effect of balloon angioplasty (BA) on the sympathetic nerve fibers of the renal artery.

Methods: We used fifteen juvenile Landrace swine (3-5 months old, weight 28.5±0.6 kg) to study the effect direct damage of BA on the sympathetic nerve fibers of the renal artery. A 6Fr introducer sheath was inserted though the right femoral artery. A conventional non-compliant balloon angioplasty catheter, was inflated in the proximal 25 mm of renal arteries at nominal pressure. The inflation was performed twice and only unilaterally. The contralateral renal arteries were left intact and were used as controls. Animals were euthanized 28 days after the index procedure. The renal arteries and perirenal arterial stroma containing renal nerves were sectioned transversely at 8 equal intervals of 2mm and immunohistology with neuron specific enolase was performed. The total number of nerves in the vessel wall was quantified in each histological section.

Results: In all animals, renal artery angioplasty was successful and uncomplicated. A total of 120 sections were assessed in each group. The mean number of intact nerves in all sections was significantly lower in the group of BA compared to the control group (4.52±0.78 versus 5.42±0.54, p=0.034).

Conclusions: Mechanical denervation of the sympathetic nerve fibers of the renal artery is feasible and effective in an experimental model.