CHEMICAL DENERVATION OF THE RENAL ARTERY BY VINCristINE IN SWINE. A NEW CATHETER BASED TECHNIQUE

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Authors: Christodoulos Stefanadis, Konstantinos Toutouzas, Andreas Synetos, Costas Tsioufis, Antonios Karanasos, Georgios Agrogiannis, Leonidas Stefanis, Efstratios Patsouris, Dimitris Tousoulis, 1st Department of Cardiology, Athens Medical School, Hippokration Hospital, Athens, Greece, Department of Pathology, Athens Medical School, Athens, Greece

Background: Renal sympathetic denervation is a promising technique for the treatment of resistant hypertension. We evaluated a novel method for chemical sympathetic denervation of the renal artery by local delivery of vincristine, an antineoplastic drug with potential for peripheral neurotoxicity, using a dedicated catheter in an animal model.

Methods: Local delivery of vincristine by a specially designed catheter, was performed unilaterally in the renal arteries of 14 juvenile Landrace swine. The procedure was repeated in the contralateral renal artery with a placebo mixture. Animals were euthanized at 28 days and histological specimens of renal arteries and perirenal arterial stroma containing renal nerves were extracted and sectioned. The number of uninjured nerves in each histological section was then quantified.

Results: In all animals delivery of vincristine and placebo mixtures was successful and uncomplicated. Both vincristine- and placebo-treated renal arteries were angiographically patent at the end of the procedure. The mean number of intact nerves in all sections was significantly lower in the group of vincristine (p<0.05). Figure presents sections with immunostaining for neuron-specific enolase in (A) vincristine- and (B) placebo-treated arteries.

Conclusions: Catheter-based delivery of vincristine in the renal artery of swine is feasible and results in significant reduction in the number of renal nerves. Our findings warrant further confirmation in animal and human studies.