

Use of renal denervation in the electrical storm management

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Background/Introduction: Electrical storm (ES) is a potentially lethal state developing in 4–28% of ICD patients. Neuroaxial modulation (beta-blockers, deep sedation, epidural anesthesia, stellate ganglion blockade etc) is used to decrease arrhythmogenic predisposition of ventricular myocardium to trigger and maintain ventricular arrhythmias. Catheter renal arterial denervation (RDN) is recently described to prevent atrial fibrillation recurrence after pulmonary vein isolation. We used this procedure in addition to standard care to improve the results of ES treatment.

Purpose: This retrospective single-center case-series is aimed to analyze ES patient population and to describe the effect of RDN on the in-hospital number of ventricular tachycardia (VT) episodes and ICD shocks and on the mid-term survival.

Methods: Pts admitted to the CCU for more than 3 sustained VT episodes or more than 3 appropriate ICD shocks during the 24h period in 2017–18 were enrolled into study. Demographic, echocardiographic, ICD check up, renal arteries anatomy and mid-term mortality/transplant data were retrospectively analysed.

Results: Eleven pts (all male, age 69±9 years) were included. Seven pts

(73%) had CAD, 3 pts (27%) – DCM. Echocardiography revealed LVEF 28±8%, and LV EDV - 226±91 ml. Time from ICD implantation to ES onset was from 4 mos to 13 yrs. In 5 pts RDN was performed without VT ablation, in 3 pts – prior to VT ablation, in 2 – after VT ablation and in 1 pt – both RDN and VT ablation were performed during the same procedure. Mean number of renal arteries was 2,5 per pt. Mean number of ablations was 4,8 per artery. The power was 2 to 11 Wt and lesion duration was 90 sec. Dramatic decrease in the number of VT episodes (49±52 vs. 6±2) was found in 6/11 pts directly after RDN procedure. In-hospital rhythm control was accessed in 10/11 pts, 1 pt with DCM was transferred for heart transplant due to recurrence of VT after VT ablation and RAD (excluded from survival analysis). There were no RDN procedure related complications in this group of pts. In mean 6 mos of follow-up 9/10 pts are free from ES recurrence, 1/10 was lost for the follow up.

Conclusion(s): Catheter renal artery denervation is effective and safe additional procedure to treat ES patients. It allows to decrease the number of ICD shocks and stabilize arrhythmogenicity of ventricular myocardium. Larger multi-center randomized trials are warranted.