Abstract: P3673

Electroanatomical mapping of right atrium in patients with pulmonary hypertension

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Topic(s):
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Introduction: Atrial fibrillation (AF) and related atrial tachycardia (AT), including cavo-tricuspid isthmus dependent atrial flutter (AFL), are a known complication of pulmonary hypertension (PH). Catheter ablation is an established method of treatment of selected patients with heart rhythm disorders. The aim of the work was to evaluate arrhythmogenic substrate in the right atrium (RA) of the group of patients who underwent catheter ablation with electroanatomical mapping.

Methods: The findings in electroanatomical mapping with contact force of RA were evaluated in a group of 22 patients (16 men, median and scattering age 73, range 45-87 years) indicated for catheterization ablation for AFL or other right-sided AT. During electroanatomical mapping, 8 patients had sinus rhythm and 14 patients had AF or AT (all AT with cycle length under 350 ms). Areas with reduced atrial electrogram voltages (AEGM) <0.1 mV in sinus rhythm or <0.04 in AF or AT, existence of double and fragmented potentials were identified.

Results: Out of the 22 patients, 3 patients had hypoxic PH, 13 individuals had chronic thromboembolic PH (7 undergoing surgical treatment) 4 patients had idiopathic PH and 2 patients had combined PH. The median mean pulmonary arterial pressure was 44 (range 22 - 72) mmHg. The median RA CARTO volume was 225 (range 151-383) ml. Out of all patients, 2 subjects manifested scattering of the surface proportion RA with a defined reduced voltage over 10% (maximum 15%). 6 subjects had surface proportion with defined reduced voltage in interval 1-9% and 14 subjects had scattering below 1% of total surface area of RA. The predominant localizations of pathological AEGMs was the area adjacent to the vena cava superior and posterior portion of RA between caval veins. Regular finding in patients following surgical treatment of thromboembolic PH was a scar after atriotomy.

Conclusion: Dilatation of RA is present in all PH patients. However, the proportion of tissue with reduced AEGM voltage in RA does not appear to be extensively high in this population.
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