Abstract

Pulmonary hypertension (PH) is defined by the elevation of the mean pulmonary artery pressure above 20 mmHg. PH affects about 1% of population. Based on the similar pathophysiological mechanisms, clinical and hemodynamic characteristics, and therapeutic possibilities, PH is classified into 5 groups. Right heart catheterization is a crucial assessment to establish the diagnosis. Supraventricular tachycardias (SVTs), including atrial fibrillation (AF) and other atrial tachycardias (AT), are frequently found in patients with PH with a reported cumulative incidence of 10-36 %. The presence of an SVT in a PH patient leads to further deterioration and worsens the prognosis. This thesis is based on four distinct analyses focused on the SVTs in PH.

The first analysis described the arrhythmias in patients with chronic thromboembolic pulmonary hypertension. The prevalence of AF/AT reached 29% and their presence was associated with reduced functional capacity. Despite the improved hemodynamics, the incidence of arrhythmias rose significantly after the pulmonary endarterectomy.

The second analysis retrospectively studied the SVT prevalence and its association with PAWP values in patients with pre-capillary PH. Patients with PAWP above 11mmHg had higher arrhythmia prevalence, possibly because of the involvement of the left-sided substrate.

The third analysis tested the acute effect of arrhythmia termination on the hemodynamic status. The sinus rhythm restoration led to only slight changes in hemodynamics, irrespective of the PH presence. Cardiac output rose significantly after the AF termination. The termination of an organized AT did not have an impact on the cardiac output value.

The fourth analysis compared the limited and extended approach to catheter ablation of SVTs in PH patients. There was not a significant difference in arrhythmia recurrence rate between the groups during the follow-up. Despite right atrial enlargement, the right-sided substrate was rare.

Further research is needed to gain deeper knowledge about the mechanisms of heart rhythm disorders in pulmonary hypertension to establish the best possible ways of their management.
Key words: Pulmonary hypertension, supraventricular arrhythmia, catheter ablation