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THE EFFICACY AND SAFETY OF THE BALLOON PULMONARY ANGIOPLASTY (BPA) FOR INOPERABLE CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION (CTEPH) – PRELIMINARY RESULTS.

Purpose:

The purpose of this study was to assess safety and benefits of the BPA procedure. Hemodynamic measures and functional NYHA class, before and after BPA, were compared within the group of patients undergoing BPA (group A). Comparison of outcomes between the group A and the historical control group on targeted PAH therapy (sildenafil, bosentan, treprostinil, riociguat) was also performed.

Methods:

From 36 patients (aged $62,2 \pm 14,66$; 20 females) diagnosed with CTEPH between 2001 and 2013, who were disqualified from pulmonary endarterectomy (PEA) due to distal localization of thrombi, 8 patients (aged $56,5 \pm 17,4$; 6 females) were found suitable for BPA. The remaining 28 patients (aged $63,85 \pm 13,7$; 14 females) who received optimal medical therapy for at least 3 months served as control group (group B). The total of 11 BPA procedures were performed in group A. Overall 34 segmental pulmonary arteries have undergone angioplasty. For each patient in group A, a right heart catheterization (RHC) was performed directly before and after each BPA procedure. In group B results from RHC performed at baseline and after at least 3 months of targeted therapy were compared. Baseline and follow-up functional capacity (NYHA class) and hemodynamic measures including pulmonary vascular resistance (PVR), mean pulmonary artery pressure (mPAP), cardiac index (CI), cardiac output (CO) and mean right atrial pressure (mRAP) were recorded.

Results:

Comparisons within the group A, before and after BPA, showed significant decrease in PVR ($11,00 \pm 6,01$ vs $10,08 \pm 5,65$ Wood units; $p < 0,032$) and mPAP ($52,90 \pm 15,19$ mm Hg vs $48,18 \pm 12,92$ mm Hg; $p < 0,021$) and improvement of at least one NYHA functional class in group A vs group B (50% pts vs 3,6 % pts; $p = 0,005$). No improvement of hemodynamic measures or NYHA class was noticed within the follow-up period for patients from group B. There were no deaths in group undergoing BPA, but several complications occurred including hemoptysis (n=3), dyspnea (n=3), reperfusion pulmonary injury (n=2), desaturation (n=3), atrial arrhythmia (n=1) and subcutaneous hematoma (n=1).

Conclusions:

Despite mild complications, in selected CTEPH patients, BPA may offer an additional option for patients not suitable for PEA. It provides early significant improvement of functional NYHA class and reduction of PVR and mPAP. More information on early and long term results are required.