Abstract: P6515

Balloon pulmonary angioplasty in patients with chronic thromboembolic pulmonary hypertension: a systematic review and meta-analysis

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Introduction: Balloon pulmonary angioplasty (BPA) is a percutaneous treatment option for patients with chronic thromboembolic pulmonary hypertension (CTEPH) judged inoperable or with persistent symptoms after surgery.

Purpose: We performed a systematic review of the literature to better understand the effectiveness and safety of balloon pulmonary angioplasty.

Methods: PubMed and EMBASE were searched for studies reporting BPA results in patients with CTEPH. Differences in clinical and hemodynamic parameters including 6-minute walking distance, NYHA class, mean PAP, pulmonary vascular resistance, and cardiac output, before and after the procedure were analyzed. Weighted mean proportion and 95% confidence intervals (CIs) of adverse events were calculated.

Results: Of the 1084 potentially eligible studies, 13 were included in the final analysis, yielding an overall cohort of 676 patients. BPA was associated with a reduction in mean pulmonary artery pressure (median: from 43 to 30 mmHg), reduction in pulmonary vascular resistance (median: from 10.22 to 5.00 Woods Units), increase in cardiac index (median: from 2.45 to 2.72 l/min/m²), and improvement of 6-minute walking distance (median: from 328 to 442 meters). Estimated peri-procedural mortality was 2.2% of patients (95% CI 0.7–4.4) with a low risk of publication bias. Mortality rate tends to be higher in older studies and this is consistent with the progressive experience gathered by operators. Reperfusion and pulmonary vessel injuries occurred in 9.5% (95% CI 2.7–19.6) and 2.5% (95% CI 0.8–5.0) of the total BPA sessions, respectively, with an overall high risk of publication bias.

Conclusions: Our findings suggest that BPA in CTEPH patients is an effective and safe treatment option in inoperable patients or patients with persistent-recurrent symptoms after surgery. Balloon pulmonary angioplasty might be considered as a second line-treatment in patients with chronic thromboembolic pulmonary hypertension not amenable for surgery.

Haemodynamic parameters and 6-minute wal...