



Outcomes With Hybrid Catheter-Directed Therapy Compared With Aspiration Thrombectomy for Patients With Intermediate-High Risk Pulmonary Embolism

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Accepted: 14 February 2024

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Abstract

Purpose Intermediate-high-risk pulmonary embolism (IHR PE) is a challenging form of embolism obstruction that causes right ventricular (RV) dysfunction. The optimal management of IHR PE has not been established. This single-center prospective, observational study aimed to evaluate the efficacy and safety of complex catheter-directed therapy (CDT) — catheter-directed mechanical aspiration thrombectomy (CDMT) supplemented with catheter-directed thrombolysis (hybrid CDT) in comparison to CDMT alone for IHR PE.

Methods A propensity score based on the pulmonary embolism severity index class and Miller obstruction index (MOI) was calculated, and 21 hybrid CDT cases (mean age 54.8 (14.7) years, 9/21 women) were matched with 21 CDMT cases (mean age 58.8 (14.9) years, 13/21 women). The baseline demographics, clinical, and treatment characteristics were analyzed.

Results No significant differences were detected regarding baseline demographics and PE severity parameters. Hybrid CDT demonstrated a higher reduction in mean pulmonary artery pressure (mPAP) (hybrid CDT: median mPAP reduction 8 mmHg (IQR: 6–10 mmHg) vs CDMT: median mPAP reduction 6 mmHg (IQR: 4–7 mmHg); $P=0.019$), MOI score (hybrid CDT: median change – 5 points (IQR: 5–6 points) vs CDMT median change – 3 points (IQR: 3–5 points); $P=0.019$), and median RV: left ventricular ratio (hybrid CDT: median change 0.4 (IQR: 0.3–0.45) vs CDMT median change 0.26 (IQR: 0.2–0.4); $P=0.007$). No major bleeding was observed. Both the hybrid CDT and CDMT alone treatments are safe and effective in managing IHR PE.

Conclusions Hybrid CDT is a promising technique for the management of IHR PE with insufficient thrombus load reduction by CDMT.

Trial Registration NCT0447356—registration date 16 July 2020.

Keywords Catheter-directed mechanical thrombectomy · Catheter-directed thrombolysis · Right ventricular dysfunction · Pulmonary obstruction

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