

Half Dose Tissue Plasminogen Activator for Intermediate-Risk Pulmonary Embolism

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Abstract : Introduction: In the absence of hypotension, pulmonary embolism (PE) causing right ventricular dysfunction or strain, whether confirmed by imaging or cardiac biomarkers, is deemed to be an intermediate-risk category. Urgent treatment of intermediate-risk PE can prevent progression to hemodynamic instability and death. Management options include thrombolysis, thrombectomy, or systemic anticoagulation. We aim to evaluate the short-term outcomes of a half-dose tissue plasminogen activator (tPA) for the management of intermediate-risk PE. Methods: We retrospectively identified adult patients diagnosed with intermediate-risk PE between the years 2000 and 2021. Demographic data, lab values, imaging, treatment choice, and outcomes were all obtained through chart review. Primary outcomes measured include major bleeding events and in-hospital mortality. Patients on standard systemic anticoagulation without receiving thrombolysis or thrombectomy served as controls. Patient data were analyzed using SAS® Software (version 9.4; Cary, NC) to compare individuals that received half-dose tPA with controls, and statistical significance was set at a p-value of 0.05. Results: We included 57 patients in our final analysis, with 19 receiving tPA. Patient characteristics and comorbidities were comparable between both groups. There was a significant difference between PE location, presence of acute deep vein thrombosis, and peak troponin level between both groups. The thrombolytic cohort was more likely to demonstrate a 60/60 sign and thrombus in transit finding on echocardiography than controls. The thrombolytic group was more likely to have major bleeding (17% vs 7.9%, $p=0.4$) and in-hospital mortality (5.3% vs 0%, $p=0.3$); however, this was not statistically significant. Patients who received half-dose tPA had non-significantly higher rates of major bleeding and in-hospital mortality. Larger scale, randomized control trials are needed to establish the benefit and safety of thrombolytics in patients with intermediate-risk PE.

Keywords : pulmonary embolism, half dose thrombolysis, tissue plasminogen activator, cardiac biomarkers, echocardiographic findings, major bleeding event

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