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Catheter directed thrombolysis and mechanical thrombectomy in submassive pulmonary embolism

Abstract: P1622

Catheter directed thrombolysis and mechanical thrombectomy in submassive pulmonary embolism

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Topic(s):

Acute pulmonary embolism

Citation:

European Heart Journal (2017) 38 (Supplement), 349

Introduction: Percutaneous thrombectomy and catheter directed thrombolysis (CDT) represent well established techniques for the treatment of submassive pulmonary embolism (SPE). The purpose of CDT is to dissolve thrombus in the main and distal pulmonary branch.

Methods: Clinical, interventional and echocardiographic data from 72 consecutive patients with SPE who were treated with CDT were evaluated. Diagnosis was made by transthoracic ultrasound and computer tomography. Primary end-points were: technical success, major cardiac and cerebral events (MACCE) and invasive pulmonary pressure. Secondary end-points: rate of procedural and access site complications. The access site for CDT was the femoral vein. CDT was done with Alteplase (10 mg bolus and 1 mg/h maintenance dose) over a pig-tail catheter for 24 hours. After 24 hours, control pulmonary angiography was performed and manual thrombectomy was performed when the thrombus burden was flow limiting or the systolic pulmonary pressure has not decreased by 25% or to normal level. Postoperatively, patients were treated with systemic anticoagulation, compression hose, and interval follow-up.

Results: 72 patients were treated with a mean age of 59.0±16.5 years. CDT was successful after the first post-operative day in 65 patients (90.3%) but in 7 patients (9.7%) thrombus aspiration and fragmentation was performed after failed thrombolysis due to failed thrombolysis. The mean CDT time in SPE was 28.9±9.9 hour. In 4 patients (5.5%) caval filters were implanted. Technical success was 95.8%. Invasive pulmonary pressure has been dropped from 57.60 [32.0–66.0] to 39.58 [19.0–46.0] Hgmm (p<0.001). MACCE and mortality rate at one year was 9.72% and 6.9%, respectively. Access site complications were encountered in 9 patients (12.5%) (5 major and 4 minor).

Conclusion: Submassive pulmonary embolism has excellent results with catheter directed thrombolysis, however additional mechanical thrombectomy and angioplasty is necessary in some patients to achieve good clinical outcome.