EVMS Emergency Medicine Journal Club
Therapy Worksheet

Resident Kyle Resendes

Date: 9/27/15

CITATION: ShariSi M**, Moderate pulmonary embolism treated with thrombolysis** The "MOPETT" Trial. Am J Cardiol. 2013 Jan 15;111(2):273-7.

A. What is being studied? (Answer below)	**Comments**
1. Study Objective	Does **low dose** thrombolysis with anticoagulation reduce pulmonary artery systolic pressure in patients with "moderate" PE at 28 months compared to anticoagulation alone?
2. Study Design	Non blinded prospective single-center RCT on adult patients with moderate PE. (Outcome review blinded) 121 total patients out of 178 with PE over a 22 month period
3. Inclusion Criteria	**Two or more** of the following signs or symptoms**: chest pain, tachypnea (RR ≥ 22 breaths/min), tachycardia (HR ≥ 90 beats/min), dyspnea, cough, oxygen desaturation (SpO2 ≤ 95%), and elevated jugular venous pressure ≥ 12 cm H2O .** V/Q or CT confirmed PE (moderate PE = 70% thrombus in greater than or equal 2 lobar r left or right main pulm arts OR high probability VQ in 2 or more lobes)
4. Exclusion Criteria	Contraindication to thrombolysis, (**platelet count < 50K/mm3; major bleeding within 2 months; surgery or major trauma within 2 weeks; brain mass; neurologic surgery, intracerebral hemorrhage, or within one year; terminal illness with no plan for PE treatment; and inability to perform echocardiography (ECHO).** Onset >10 days, >8 hours of AC or BP greater than 200/100 or systolic less than 95

5. Interventions Compared	Lovenox/Enoxaparin (1mg/kg BID) or Heparin 80u/kg followed by 18u/kg/kr vs. TPA (10mg bolus plus 40mg within 2 hours) plus standard Lovenox dosing as above. Warfarin was started at admission in all patients.
6. Outcomes Evaluated	Primary: Development of pulmonary HTN assessed by ECHO (Pa press. >40) at 28 months Secondary: Recurrent PE, Mortality, Mortality and recurrent PE, Bleeding
B. Are the results of the study valid? Answer questions below	
1. Were patients randomized?	Yes, determined by call center after informed consent given
2. Was randomization concealed (Blinded)	Yes. The randomization process was concealed through an off-site telephone service.
3. Were patients analyzed in the groups to which they were randomized?	Yes.
4. Were patients in the treatment and control groups similar with respect to known prognostic factors?	Yes. Age, Hx. of cancer, h/o DVT & PE, baseline ECHO, BNP and Troponin I similar in both groups.
C. Did experimental and control groups retain a similar prognosis after the study started (answer the questions below)?	
1. Were patients aware of group allocation?	Yes. Was an open-label study. Based upon outcome measures would be unlikely for patients to be vulnerable to performance bias.
2. Were clinicians aware of group allocation?	Yes. Could make clinicians vulnerable to performance bias.

3. Were outcome assessors aware of group allocation?	No. Interpretation of the ECHO findings was performed by a cardiologist who was unaware of the patient group assignment.
4. Was follow-up complete?	Not complete. 58 of 61 in treatment group and 56 of 60 in the control group lost to follow-up. F/U otherwise was complete with a mean f/u of 28 months
D. What were the results?	
1. How large was the treatment effect? (difference between treatment and control group).	Significant, at follow-up, 9 patients in the treatment group (16%) vs. 32 (57%) in the control group with increased Pa Press. at 28 months. ($p < 0.001$): Absolute risk reduction: ARR 41% NNT = 1/ARR =2.4 Pulmonary hypertension plus recurrent PE was noted in 9 (16%) patients in the Treatment group vs. 35 (63%) in the control group ($p < 0.001$): ARR 47% 1/ARR=NNT 2.1 No difference in secondary outcomes except hospital LOS 2.2 in treatment group vs. 4.9 in control group p=0.001
2. How precise was the estimated treatment effect at a 95% confidence interval?	Confidence intervals were not reported in this trial.
D. How can I apply the results to patient care	
IV. Were the study patients similar to my patients?	Maybe, middle aged, multiple comorbidities. Single center study as opposed to broader representative group.
1. Were all clinically important outcomes considered?	Questionable. No consideration of heart failure after failed/suboptimal treatment. Did consider bleeding and had markedly decreased numbers of ICH or catastrophic bleeds compared to other studies looking at this question. May infer that their patient population was less ill. No patient centered outcomes such as exercise tolerance or other functional measures. No economic impact data.

2. Are the likely treatment benefits worth the potential harms and costs?	Possibly, if reinforced by further, larger studies. Initial data suggests yes, there is some benefit. Zero bleeds brings into question severity of illness of patients

Limitations:
Small study
Single center
Varying definition of moderate PE compared to prior studies
Primary outcomes were not patient centered and did not include functional status.

Clinical Bottom Line:
Small study suggests that in this population there was evidence of a benefit regarding the development of pulmonary hypertension in those who underwent use of thrombolytics at dose described in the setting of moderate PE. Brings into question severity of illness of their patient population.
Also raises issue of better safety profile with half-dose thrombolysis.