Real World Outcomes for "Intermediate-High" Mortality Risk Patients Presenting with Submassive Pulmonary Embolism in a Tertiary Cardi Thoracic Centre

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Background: Thrombolysis is an established recommended therapy for patients presenting with acute pulmonary embolism (PE) and shock. The management of “intermediate-high” risk patients is not as clear and the use of thrombolysis splits opinion and as such it remains a “consideration” for these patients in both the ESC and BTS guidelines. Both efficacy and safety of thrombolysis in this patient group have been variable in the major studies.

Aim: We aimed to report real-world outcomes for all patients coded with a diagnosis of “intermediate-high” PE (SBP >90mmHg without a drop in SBP of >40mmHg, but evidence of right ventricular (RV) strain and/or cardiac biomarker rise) in our hospital between January 2016 and December 2017.

Methods: Baseline characteristics, clinical and echocardiographic outcomes were obtained, via clinical note review and Northern Ireland Electronic Care Record.

Results: 41 patients (mean age 65 +/- 14 years, female sex 59%) met the diagnosis criteria. 25% patients had an active/prior cancer diagnosis, 30% had a prior VTE/PE and the lead symptom at presentation was dyspnoea in 89% patients. Cardiac arrest was the initial presentation for 2 patients. All patients had a cardiac biomarker rise (mean troponin T-hs 121.67 +/- 304 ng/L, mean NTpro-BNP 1666 +/- 2313 ng/L). 75% patients had a TTE performed acutely and RV systolic dysfunction/strain were seen in 63% patients, while 46% patients had an RVSP>40mmHg (mean RVSP 51 +/- 22mmHg).

16% (n=3, all had severe RV systolic dysfunction & RVSP>40mmHg) patients received IV thrombolysis (Alteplase) and no patients had percutaneous therapy. 2 patients had an absolute contraindication to lysis agents. All of the lysed patients survived to discharge while 5% (n=2) of the non-lysed patients died as inpatients. No patients in either group required vasopressors, inotropes or mechanical ventilation. Major bleeding occurred only in the lysis group (33%, n=1) while minor bleeding occurred only in the non-lysed group (8%, n=3, all non-intracranial). Non-haemorrhagic stroke wasn’t seen and there were no allergic reactions to Alteplase.

At 30 days, 1 lysed patient had an extracranial major bleed, and mortality, only seen in non-lysed patients, was 8%.

1-year mortality for lysed and non-lysed patients was 0% and 16% (all non-PE/cardiac-related) respectively. 39% patients had a recurrent VTE/PE event on anticoagulation. 23 patients (3 lysed, 20 non-lysed) had a repeat TTE performed (median time to diagnosis 120 days) in whom evidence of possible chronic thromboembolic hypertension (CTEPH, RVSP>40mmHg) and/or RV systolic dysfunction was present in 67% (n=2) of lysed and 20% (n=4) non-lysed patients respectively.

Conclusion: IV PE lysis was administered safely and effectively in a small group of selected PE patients with severe RV systolic dysfunction and biomarker rise. The lack of cardiac mortality at 1 year in those not lysed, alongside the modest freedom from potential CTEPH, is reassuring. Further study is required to correctly allow for prediction of patients that will benefit from IV thrombolysis for submassive PE.

Conflict of Interest: None