The timing of death in acute pulmonary embolism patients regarding the mortality risk stratification at admission to hospital

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On behalf of Regional Pulmonary Embolism Registry (REPER)

Funding Acknowledgement: Type of funding sources: None.

Background: The management of patients with acute pulmonary embolism (aPE) depend on the risk stratification at hospital admission. It is unknown when normotensive aPE patients with some other risk factors deteriorate.

Patients and methods: Patients with objectively established acute PE diagnosis enrolled in the regional PE registry from January 2015 to December 2021, were studied in this investigation. According to European Society of Cardiology criteria patients were stratified during admission to hospital in four risk strata: I. low-risk, II. intermediate-low risk, III. intermediate-high risk and IV. high risk PE. The timing for death and the main reason for death were recorded. PE-related death was defined if patient has died because of cardiac arrest or obstructive shock if there is no another possible reason for that.

Results: In the REPER registry. Among 1541 patients (514 low risk, 366 intermediate-low risk, 472 intermediate-high risk and 189 high risk) with aPE, 101 (6.6%) have died primary from aPE and 64 (4.2%) have died from other reasons during the 30-day follow-up. PE-related death across the mortality risk groups were 0.8%, 1.1%, 8.5% and 28.5% in low-risk, intermediate-low, intermediate-high and high risk PE, respectively. Median time from hospital admission to PE related death was significantly longer in intermediate-high than in high risk patients 4.5 (2.0–9.0) vs 1.0 (1.0–4.5) days, p=0.001. In the high risk group 50.9% of patients died during the first 24 hours, 9.0% in the next 24 hours and 83.0% of patients died during the first 5 days from admission. In the intermediate-high risk group 17.5% died in the first 24 hours, 12.5% died in the next 24 hours and next 25% died till the fifth day. There was no difference in timing of non PE-related death between intermediate-high and high risk patients 9.5 (6.0–18.5) vs 7.0 (3.0–23.5) days, p=0.631.

Conclusion: There is significant delay in timing of death in intermediate-high compared to high risk PE patients, however, almost 50% of patients who died in the intermediate-high risk PE patients have died inside the first 5 days from hospital admission.