

Title

Hospital acquired Pulmonary Embolism: Temporal Changes in Patient Characteristics and Outcomes

Authors

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Background

Pulmonary embolism (PE) developing during hospitalisation represents a substantial clinical challenge, associated with high mortality and prolonged hospital stays. Understanding changes in patient characteristics and outcomes may inform preventive strategies and healthcare resource planning. This study compared hospital length of stay and in-hospital mortality between two periods among patients who developed PE during hospitalisation.

Methods

We conducted a cohort study comparing consecutive patients diagnosed with PE during hospitalisation in 2009–2012 and 2020–2023. Cases were identified using International Classification of Diseases, Tenth Revision (ICD-10) codes and confirmed by manual review by an investigator. Sociodemographic, clinical and prognostic characteristics were collected, together with hospital length of stay and in-hospital mortality. Categorical variables were compared using Pearson's χ^2 test, supplemented by Cramér's V and Bayesian analysis.

Results

A total of 548 patients were included. Median age was 66 years, and 52.9% were men. Cancer was present in 43.4% of patients, of whom 67.7% had metastatic disease. Diabetes mellitus and chronic lung disease were present in 20.0% and 19.6%, respectively, while 45.6% were current or former smokers. Syncope was recorded in 8.4% and bleeding in 38.4%. Most PE events were classified as intermediate-low risk (66.7%). Overall in-hospital mortality was 17.4%. Hospital length of stay decreased significantly from 18.5

days in 2009–2012 to 13 days in 2020–2023 ($p = 0.002$). In-hospital mortality did not differ significantly between periods (18% vs. 15%; $p = 0.37$).

Conclusions

Patients who developed PE during hospitalisation had a substantial burden of comorbidity and high in-hospital mortality. Hospital length of stay was significantly shorter in the more recent period, while no significant difference in in-hospital mortality was detected. Further investigation is needed to identify the factors underlying these changes.