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POSTER ABSTRACTS

332.THROMBOSIS AND ANTICOAGULATION: CLINICAL AND EPIDEMIOLOGICAL

Long-Term Outcomes of Pulmonary Embolism Requiring Intensive Care Unit (ICU) Admission

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*Introduction:*Pulmonary embolism (PE) requiring intensive care unit (ICU) admission is associated with high in-hospital mortality, however data on long-term survival outcomes and associated contributors remains limited. We sought to further investigate this using a large binational dataset.
*Methods:*Retrospective cohort study of adults aged >16 years admitted to an Australian or New Zealand (NZ) ICU between January 1, 2018 and December 31, 2022 with a primary admission diagnosis of PE using the Australian and NZ Intensive Care Society (ANZICS) Adult Patient Database (APD). Data were available on baseline characteristics - specifically age, gender, admission co-morbidities (active malignancy, chronic cardiovascular, respiratory, renal and liver disease and illness severity as per the Acute Physiology and Chronic Health Evaluation (APACHE) III scoring system. The need for ICU-specific supports (vasopressors or inotropes, invasive and non-invasive ventilation [NIV], extracorporeal membrane oxygenation [ECMO]) was also recorded. All-cause mortality from 30 days to 48 months after ICU admission was obtained. Descriptive analyses, Kaplan-Meier and Cox proportional hazards models were used to describe survival during this time period. Ethical approval was granted by the Alfred Hospital Human Research Ethics Committee (HREC).
*Results:*6447 patients with PE who had been admitted to 193 ICUs across Australia and NZ were identified, representing 9136 patient-years of follow-up. Median age was 66.5 years (interquartile range [IQR], 53-75). 24.5% were admitted to a rural or regional ICU. Median ICU length of stay was 46.6 hours (IQR, 27-79). Median APACHE III score was 42 (IQR, 31-56). Admission co-morbidities included active malignancy (8.1%), chronic respiratory (7.0%), renal (1.4%) and liver (0.4%) disease. Systolic blood pressure was was ≤90 mmHg at time of ICU admission in 1482 patients (23.9% of those in whom this data was available). Vasopressors or inotropes were required in 986 patients (17.6%), NIV was used in 713 (12.6%), invasive ventilation in 453 (8.0%) and 24 patients (0.43%) received ECMO. The mean duration of invasive ventilation where this was required was 14.9 hours.
Kaplan-Meier survival analysis is shown in Figure 1. Overall survival was 92.3% at 30 days (95% CI, 91.6-93.0%), 87.5% at 6 months (95% CI, 86.5-88.3%), 84.4% at 12 months (95% CI 83.4%-85.4%) and 73.0% at 48 months (95% CI, 71.0-74.9%). Active malignancy was the strongest independent predictor of mortality (hazard ratio [HR] 3.3, 95% CI 2.8-4.0). Other independent predictors were chronic liver (HR 2.8), renal (HR 1.7) and respiratory (HR 1.6) disease, immunosuppressive therapy (HR 1.5), and the need for NIV (HR 1.4) or vasopressor and inotropic support (HR 1.3). No significant difference in mortality was observed between rural/regional and tertiary/metropolitan ICUs, however improved survival was observed in patients admitted to Australian ICUs (n = 6032) compared to those in NZ (n = 415) (HR 0.5 [95% CI 0.4-0.8]).
*Conclusions:*Nearly three-quarters of patients admitted to ICU due to PE remain alive 2 years later. The largest risk factor for late mortality is malignancy, along with other chronic diseases, which is similar to previous studies reporting long-term follow-up of PE survivors outside ICU, however patients who need advanced life supports (NIV, ECMO) were also at greater risk. Limitations of this study include retrospective design, broad heterogeneity in admission criteria across different ICUs due to variation in resources across both countries and lack of data therapies such as intravenous thrombolysis and anticoagulation. Further work is needed to understand if changes to acute management of at-risk patients might improve long-term survival outcomes.

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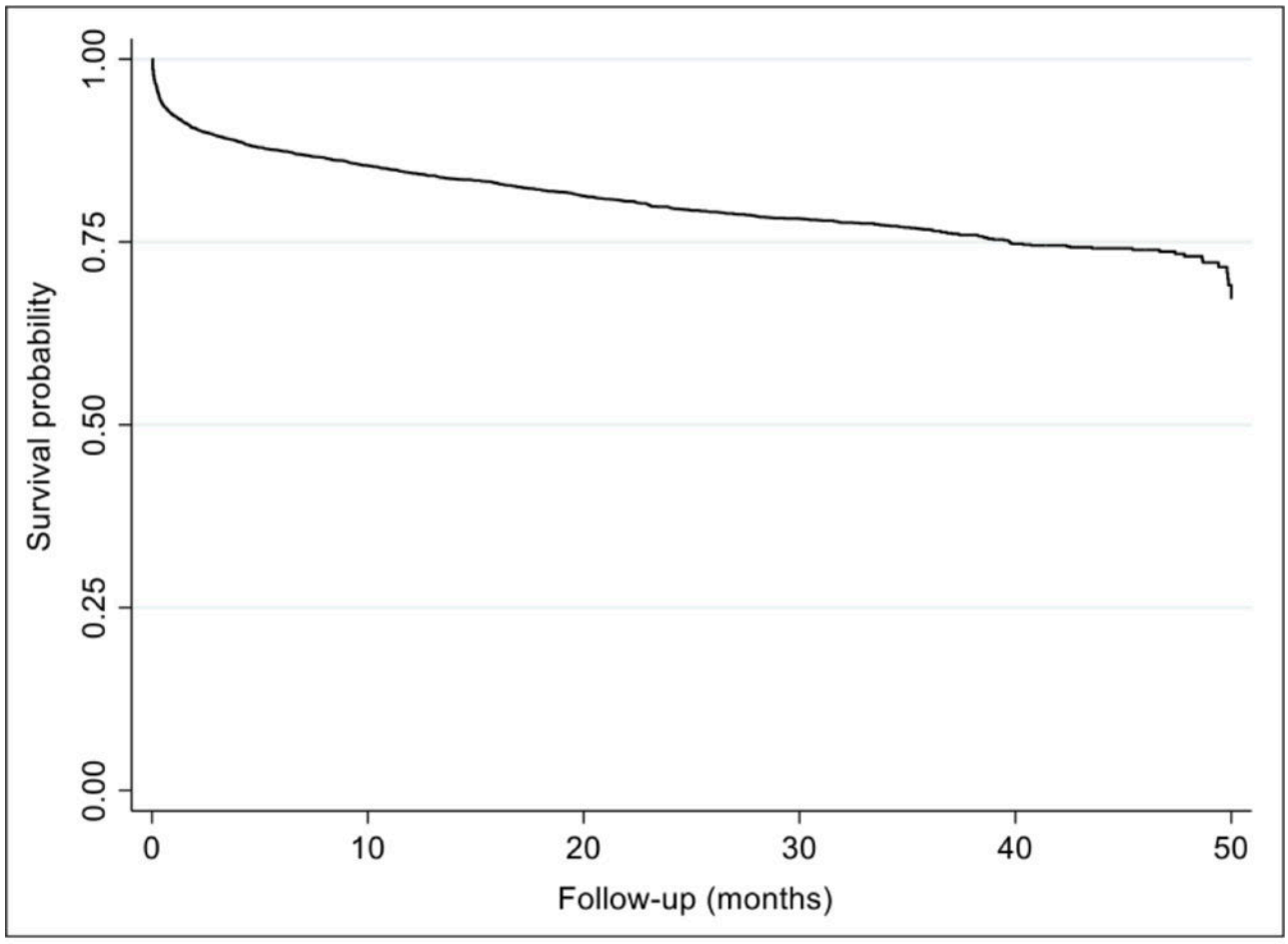

Figure 1: Kaplan-Meier survival curve of survival probability out to 48 months post-ICU admission

Figure 1

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