# Clinical Characteristics and Risk Factors Of Nosocomial Pulmonary Embolism: 10-year Data From A Single Center

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### Objective:

To analyze the clinical characteristics, morbidity, mortality, and risk factors associated with death in patients with in-hospital pulmonary embolism (IH-PE).

### Methods:

All patients with pulmonary embolism (PE) in Yichang Central People's Hospital from January 1, 2014 to December 31, 2023 were retrieved, and patients with out-of-hospital PE and chronic PE were excluded. A total of 287 IH-PE patients were included. The clinical data of IH-PE patients were collected, and their causes, risk factors, and disease outcomes were analyzed to explore the factors affecting the risk level of disease and mortality of patients.

### Results:

Among the 1464 patients with first PE during the study period, 19.60% (n=287) were IH-PE. Among the IH-PE patients, 51.57% were male, average age 65.27(±11.79) years, and 12.54% (n=36) of the patients died during hospitalization. The white blood cell count of patients who died in the hospital was significantly higher than that of the patients in the survival group (p=0.012) at admission.Patients in the in-hospital death group had a faster heart rate after IH-PE (p<0.001), lower systolic blood pressure (p<0.001) and diastolic blood pressure (p=0.002), and were more likely to experience syncope (p<0.001). Concurrent infection with the new coronavirus (p=0.015) would also significantly increase the risk of death in patients.Multivariate regression analysis showed that increased heart rate after IH-PE (p=0.003), decreased systolic blood pressure (p=0.021), and concurrent novel coronavirus infection (p=0.03) were independent factors affecting the increased risk of death in patients.In 2019, the construction of a comprehensive system for the prevention and treatment of deep vein thrombosis (DVT) and the implementation of a multidisciplinary pulmonary embolism response team (PERT) in the hospital failed to reduce the mortality rate of IH-PE patients in the short term (p=0.501), but the proportion of VTE prevention during hospitalization was significantly increased (p<0.001). At the same time, with the clinicians' awareness, more IH-PE patients were screened out among high-risk groups for VTE, such as those undergoing surgery, severe pneumonia, and central venous catheterization (p<0.05).

### Conclusion:

Active and effective prevention is the key to reducing the incidence and mortality of IH-PE. Heart rate and blood pressure are important factors affecting in-hospital mortality of IH-PE patients. The implementation of PERT is helpful for early screening of IH-PE.