

COVID-19 infection and its impact on case-fatality in patients with pulmonary embolism

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Background: Although a high prevalence of pulmonary embolism (PE) has been reported as a complication during severe COVID-19 infections in critical ill patients, nationwide data of hospitalized patients with COVID-19 with PE is still limited. Thus, we sought to analyze seasonal trends and predictors of in-hospital case-fatality in patients with COVID-19 and PE in Germany.

Methods: We used the German nationwide inpatient sample to analyze all data on hospitalizations for COVID-19 patients with and without PE in Germany during the year 2020 and to compare changes of PE prevalence to 2019.

Results: We analyzed data of 176,137 hospitalizations because of COVID-19 in 2020. Among those, PE was recorded in 1.9% (n=3,362) of discharge or death certificates. Almost one third of patients with COVID-19 and PE died during the in-hospital course (28.7%). The case-fatality rate increased with patients' age peaking in the 9th life-decade. Regardless of COVID-19,

196,203 inpatients were diagnosed with PE in Germany between 2019 and 2020. The number of PE hospitalizations were widely equally distributed between both years (98,485 vs. 97,718), while the case-fatality rate of all patients with PE was slightly lower in 2019 compared to 2020 (12.7% vs. 13.1%, $P < 0.001$). In contrast, considerable differences in prevalence and case-fatality were demonstrated in 2020 regarding PE patients with and without COVID-19 infection (28.7% vs. 13.1%, $P < 0.001$) (Figure 1). A COVID-19-infection was associated with a 2.8-fold increased risk of case-fatality in patients with PE (OR 2.81, 95% CI 1.66–2.12, $P < 0.001$).

Conclusions: In Germany, the prevalence of PE events complicating hospitalizations was similar in 2019 and 2020. However, the fatality rate among patients with COVID-19-associated PE was substantially higher than that in those without either COVID-19 or PE, indicating an additive prognostic effect of these two conditions.

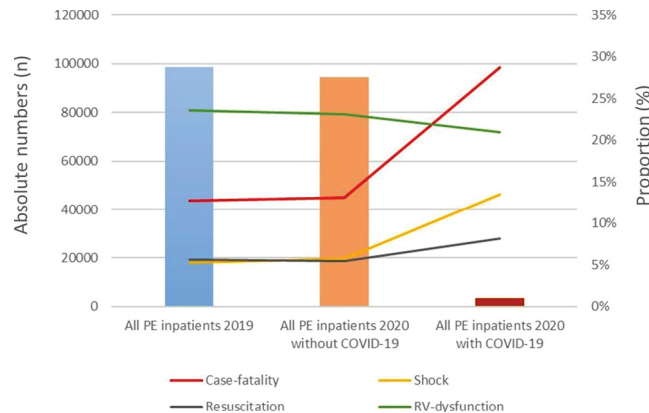


Figure 1