Deaths related to pulmonary embolism and cardiovascular events before and during the 2020 COVID-19 pandemic: An epidemiological analysis of data from an Italian high-risk area

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Abstract

Background
Pulmonary embolism is a known complication of coronavirus disease 2019 (COVID-19). Epidemiological population data focusing on pulmonary embolism-related mortality is limited.

Methods
Veneto is a region in Northern Italy counting 4,879,133 inhabitants in 2020. All ICD-10 codes from death certificates (1st January 2018 to 31st December 2020) were examined. Comparisons were made between 2020 (COVID-19 outbreak) and the average of the two-year period 2018-2019. All-cause, COVID-19-related and the following cardiovascular deaths have been studied: pulmonary embolism, hypertensive disease, ischemic heart disease, atrial fibrillation/flutter, and cerebrovascular diseases.

Results
In 2020, a total of 56,412 deaths were recorded, corresponding to a 16% (n = 7806) increase compared to the period 2018-2019. The relative percentage increase during the so-called first and second waves was 19% and 44%, respectively. Of 7806 excess deaths, COVID-19 codes were reported in 90% of death certificates. The percentage increase in pulmonary embolism-related deaths was 27% (95%CI 19-35%), 1018 deaths during the year 2020, compared to 804 mean annual deaths in the period 2018-2019. This was more evident among men, who experience an absolute increase of 147 deaths (+45%), than in women (+67 deaths; +14%). The increase was primarily driven by deaths recorded during the second wave (+91% in October-December). An excess of deaths, particularly among men and during the second wave, was also observed for other cardiovascular diseases, notably hypertensive disease, atrial fibrillation, cerebrovascular disease, and ischemic heart disease.

Conclusions
We observed a considerable increase of all-cause mortality during the year 2020. This was mainly driven by COVID-19 and its complications. The relative increase in the number of pulmonary embolism-related deaths was more prominent during the second wave, suggesting a possible underdiagnosis during the first wave.

FULL TEXT
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