

Excess Death in Fragility Fracture Patients During the First Wave May Be Due to Altered Care Pathways

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Purpose: Despite the COVID-19 pandemic being a threat to health-care systems worldwide, care for certain emergency medical conditions, such as those presenting with fragility fractures, continues. In this vulnerable population, changes to established care pathways and safe discharge thresholds, to allow increased hospital bed capacity during the pandemic peak, may influence the excess death rate. The aim of this study is to identify the excess death rate in this vulnerable group and the factors that may be associated with it.

Methods: Using specific ICD-10 codes to screen all admissions to a 1700-bed hospital group, patients presenting with fragility fractures during the COVID-19 pandemic were identified. The pandemic period was defined as the 3-month period between March 1 and June 1, 2020. A control group was identified, using the same methodology for the 3-month period between March 1 and June 1, 2019. Using Cox proportional hazards, analysis of survival between groups was carried out; further, a detailed subanalysis, aiming to identify factors that may have influenced excess deaths, was carried out on patients presenting with hip fractures.

Results: 832 patients with fragility fractures were admitted during the pandemic period, of which 104 were also diagnosed with COVID-19, compared to 1014 patients presenting with fragility fractures in the control group. Mortality among fragility fracture patients without COVID-19 was significantly higher among pandemic period admissions (14.7%) than in the pre-pandemic cohort (10.2%) after adjusting for age and sex (hazards ratio [HR] = 1.86; 95% confidence interval [CI] 1.41-2.45; $P < 0.0001$). Length of stay was shorter during the pandemic period (effect size adjusting for age and sex = -4.2 days; 95% CI -5.8, -3.1; $P < 0.0001$). A subanalysis of hip fracture patients revealed a mortality of 8.4% among 190 admissions in the pre-pandemic set, and of 15.48% among 168 pandemic admissions with no COVID diagnosis, resulting in an HR = 2.08; 95% CI 1.11-3.90; $P = 0.021$. After further adjustment for clinical frailty scores, this became HR = 2.15; 95% CI 1.15-4.04; $P = 0.0162$. Length of stay was also significantly shorter among pandemic non-COVID cases (10.7 days) than among those admitted in the pre-pandemic matched period (15.26 days $P < 0.00001$).

Conclusion: There is a significant increase in excess deaths, not explained by confirmed COVID-19 infections. This increase is associated with a significant decrease in length of stay, both for the fragility fracture group as a whole and for the hip fracture subgroup. This evidence of altered care pathways and safe discharge thresholds across the two time periods may suggest a reason for the increase in excess deaths.