Obesity Is Associated With Intensive Care Use and Duration of ICU Stay but Not Mortality Among 3246 Patients Hospitalized With COVID-19

Yu Mi Kang. *Yale New Haven Health; Bridgeport Hospital*

Yu Mi Kang, MD, PhD[1], Joseph Brancale, AB[2], Diana Athonvarangkul, MD PhD[3], Jameel Alausa, N/A[4], Labeebah Subair, N/A[4], Kasia Joanna Lipska, MD[2], Ania M. Jastreboff, MD, PhD[2].

[1]Yale New Haven Health; Bridgeport Hospital, Bridgeport, CT, USA, [2]Yale School of Medicine, Yale New Haven Hospital, New Haven, CT, USA, [3]Yale New Haven Hospital, New Haven, CT, USA, [4]Yale University, New Haven, CT, USA.

Abstract: Obesity is associated with increased severity of viral illnesses, but its impact on outcomes in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is yet to be elucidated. We sought to determine the association of obesity and other clinical factors with outcomes among patients hospitalized for severe coronavirus disease (COVID-19). This study included patients hospitalized between March 1, 2020 and September 17, 2020 in a 5-hospital health care system in Northeast United States, who had a positive RT-PCR assay of nasopharyngeal swabs for SARS-CoV-2 performed during hospitalization. Body mass index (BMI) was calculated using admission weight and height, and the WHO classification was used to define obesity. Both bivariate and multivariate logistic regression analyses were performed to determine the association of obesity and other clinical parameters with mortality (defined as in-hospital death or transition to hospice care) and intensive care use (defined by transfer to intensive care unit [ICU]). Multivariate model was adjusted for demographics and 8 pertinent comorbidities. Among 3246 patients hospitalized with COVID-19, median age was 65 years (interquartile range, 51-78), 49.9% were female, 30.5% overweight, and 43.2% had obesity (20.8%, 12.1%, and 10.4% with class I, II, and III obesity, respectively). A total of 542 (16.7%) patients died or received hospice care, and 811 (25.0%) required ICU care. In unadjusted analyses, patients with obesity had lower mortality compared with normal weight adults (13.0% vs. 23.1%) but a higher risk of ICU care (26.5% vs. 22.5%) and longer duration of ICU stays (9.5±10.6 vs. 6.6±8.5 [days]; all p-values <0.05). Obesity was associated with a higher incidence of hypoxic respiratory failure requiring invasive (17.8% vs. 9.3%) and noninvasive (22.7% vs. 14.0%) ventilatory support. In multivariate analysis, older age, male sex, and diabetes were significantly associated with both mortality and ICU care. In contrast, obesity was not associated with a significantly higher mortality (adjusted odds ratio [OR] 1.14; 95% CI, 0.91-1.43) but was associated with a higher risk of ICU care (OR 1.27; 95% CI 1.07-1.51 for all obesity and OR 2.07; 95% CI 1.51-2.82 for class III obesity compared with normal weight). The association of underweight with mortality (OR 1.56; 95% CI 0.93 - 2.60) and ICU care (OR 1.20; 95% CI, 0.71-1.99) was not statistically significant. This retrospective study of hospitalized patients suggests that obesity is associated with intensive care use and longer duration of ICU stay but not with mortality due to COVID-19. These findings underscore the vulnerability of individuals with obesity during the current pandemic.

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