Study shows obesity may increase risk of long-term complications of COVID-19

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A Cleveland Clinic study shows that survivors of COVID-19 who have moderate or severe obesity may have a greater risk of experiencing long-term consequences of the disease, compared with patients who do not have obesity. The study was recently published online in the journal of *Diabetes, Obesity and Metabolism*.

Multiple studies have identified obesity as a risk factor for developing a severe form of COVID-19 that may require hospital admission, intensive care, and ventilator support in the early phase of the disease. Obesity, which is a complex disease caused by multiple factors, is associated with an increased risk for cardiovascular disease, blood clots and lung conditions. In addition, obesity weakens the immune system and creates a chronic inflammatory state. Those conditions can lead to poor outcomes after an infection with SARS-CoV-2, which is the virus that causes COVID-19.

"To our knowledge, this current study for the first time suggests that patients with moderate to severe obesity are at a greater risk of developing long-term complications of COVID-19 beyond the acute phase," said Ali Aminian, M.D., director of Cleveland Clinic's Bariatric & Metabolic Institute and principal investigator of the research.

In this observational study, researchers used a registry of patients who tested positive for SARS-CoV-2 infection within the Cleveland Clinic health system in a five-month period from March 2020 to July 2020, with follow-up until January 2021.

Researchers examined three indicators of possible long-term complications of COVID-19—hospital admission, mortality, and need for diagnostic medical tests—that occurred 30 days or later following the first positive viral test for SARS-CoV-2. The outcomes were compared among five groups of patients based on their body mass index (BMI): 18.5-24.9 (normal), 25-29.9 (overweight), 30-34.9 (mild obesity), 35-39.9 (moderate obesity), and 40 or greater (severe obesity). Obesity is a disease classified as having a BMI of 30 or greater.

A total of 2,839 patients who did not require ICU admission and survived the acute phase of COVID-19 were included in the final results of this study. The normal BMI group was considered as a reference.

The study found that a health condition called post-acute sequelae of SARS-CoV-2 infection (PASC) is an extremely common problem in COVID-19 survivors. Specifically, during a 10-month follow-up after the acute phase of COVID-19, 44% of the study participants had required hospital admission and 1% died. Furthermore, results show that compared with patients with normal BMI, the risk of hospital admission was 28% and 30% higher in patients with moderate and severe obesity, respectively. The need for diagnostic tests to assess different medical problems, compared with patients with normal BMI, was 25% and 39% higher in patients with moderate and severe obesity, respectively.

More specifically, the need for diagnostic tests to assess cardiac, pulmonary, vascular, renal, gastrointestinal, and mental health problems was significantly higher in patients with a BMI of 35 or greater, compared with normal BMI patients.

"The observations of this study can possibly be explained by the underlying mechanisms at work in patients who have obesity, such as hyper-inflammation, immune dysfunction, and comorbidities," said Bartolome Burguera, M.D, Ph.D., chair of Cleveland Clinic's Endocrinology & Metabolism Institute and co-investigator of the study. "Those conditions can lead to poor outcomes in the acute phase of COVID-19 in patients with obesity and could possibly lead to an increased risk of long-term complications of COVID-19 in this patient population."

Future studies are planned to confirm findings of this study that obesity is a major risk factor for the development of PASC and determine the long-term and rigorous follow-up that patients with obesity need after a SARS-CoV-2 infection.

More information: Ali Aminian et al, Association of Obesity with Post?Acute Sequelae of COVID ?19 (PASC), *Diabetes, Obesity and Metabolism* (2021). DOI: 10.1111/dom.14454

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