

## Obesity is Associated with Severe Forms of COVID-19

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**TO THE EDITOR:** We read with great interest the Brief Cutting Edge Report from Simonnet et al. (1), which reported a high prevalence of obesity in severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) requiring invasive mechanical ventilation (IMV). In the context of the unprecedented health crisis caused by the coronavirus disease 2019 (COVID-19) outbreak, these results are of a great importance and may have major implications in public health strategy, especially in Western countries affected by a high prevalence of obesity.

The findings (1) reporting a higher IMV in severe obesity (BMI $\geq$ 35) versus lean patients (BMI $<$ 25) from Lille University Center in France may not be generalizable to other centers in France or in other countries, depending on the criteria implemented for the indication of IMV in other centers (2). Although we agree that IMV can be considered as a reliable outcome for the severity of SARS-CoV-2, there is currently no guideline for the indication of IMV in the context of SARS-CoV-2. Therefore, the strategies implemented in each center may vary depending on clinical

practice. In addition, the prevalence of obesity varies across geographic location. Thus, the prevalence of severe obesity (BMI $\geq$ 35) in intensive care units (ICU) may depend on the local prevalence of obesity.

We report herein experience from Lyon University Hospital, France, from 291 consecutive patients admitted to ICU for SARS-CoV-2 between February 27 and April 8, 2020. The study was approved by the local research ethics commission (Institutional Review Board number 20-44), and the requirement for written informed consent was waived by the ethics commission. In this population, the prevalence of obesity (BMI $\geq$ 35) was lower (11.3%;  $n=33$ ) than in Lille (28.2%), as was the requirement for IMV (58.4%;  $n=170$ ) compared with Lille (68.6%), as shown in Figure 1A. These differences may be due to a lower prevalence of obesity in the Lyon area (Rhône) of 12.3% in 2016 (3) and a higher use of high-flow oxygen therapy through a nasal cannula such as Optiflow in Lyon University Hospital ICU (56.0% in our population). Indeed, this technique may offer an alternative to other noninvasive techniques that were probably not preferred in the context of SARS-CoV-2 because of higher risk of aerosolization (4). Hence, these limitations need to be considered for the interpretation of the findings from the Lille center.

Finally, 46 out of 124 patients (37%) in the Lille ICU population were still hospitalized in ICU when the analyses were performed. This leads to the question of whether severe obesity (BMI $\geq$ 35) is associated with an early

IMV requirement in ICU, as one-third of the cohort may still require IMV. However, our data tend to confirm the observation from Lille University Center of a higher requirement for IMV in severe obesity (BMI $\geq$ 35) compared with lean patients (81.8% vs. 41.9%;  $P=0.001$ ; Figure 1B). We congratulate our colleagues from Lille for their seminal study, and we are looking forward to further analyses once the primary outcome for all patients is available to confirm these preliminary data. **O**

**Disclosure:** The authors declared no conflict of interest.

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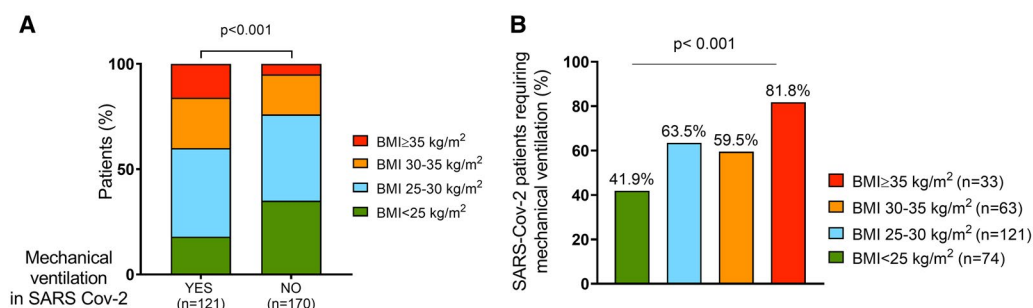
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**Figure 1** Data from 291 consecutive patients admitted to the intensive care unit in Lyon University Hospital, France, for SARS-CoV-2 from February 27 to April 8, 2020. (A) Distribution of BMI categories in patients who required mechanical ventilation ( $n=121$ ) and those who did not ( $n=170$ ) ( $t$  test). (B) Proportions of patients requiring mechanical ventilation during their stay in intensive care, according to BMI categories ( $\chi^2$  test). Unpublished data.