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COVID-19: when to intubate?

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Introduction: Severe respiratory failure in Covid-19 often requires invasive mechanical ventilation.⁽¹⁾ However, many of these patients are initially managed with NIV and HFNC, postponing intubation.^(2,3)

Objectives: This study aims to identify whether there is a difference in the device used before intubation, as well as whether the time taken until invasive mechanical ventilation influences mortality. **Methods:** Retrospective cohort study with patients hospitalized between May 1, 2020 and May 1, 2021. Patients over 18 years old admitted to semi-intensive and intensive care units, with positive PCR, chest tomography and inflammatory markers were included. carried out within 72 hours of admission. Patients with COPD using home oxygen, intubation not related to Covid-19, heart failure, previous tracheostomy and hospitalization of less than 24 hours were excluded. The main outcome was to identify the factors that determined tracheal intubation and the evolution of these patients. **Results:** Of the 852 patients treated, 316 were excluded, leaving 550, of

which 346 required intubation. Intubated patients had higher BMI ($p=0.02$), SAPS-3 ($p<0.001$) and shorter time from symptom onset to hospitalization ($p<0.001$). Until the eighth day of hospitalization, these patients had higher levels of CRP ($p<0.001$), interleukin-6 ($p=0.003$) and d-dimer ($p<0.001$). Chest CT scans revealed a larger area of lung injury since admission. In the Cox model, SAPS-3 ($HR=1.028$, $95\%CI=1.002-1.055$, $p=0.038$) and time to intubation ($HR=1.118$, $95\%CI=1.021-1.224$, $p=0.016$) were independent risk factors for mortality. Patients intubated 15 days after the onset of symptoms had a higher risk of mortality ($OR=2.13$, $95\%CI=1.07-4.23$) (Figure 1). At intubation, the average respiratory rate was 27.5rpm, with 85% FiO₂ and ROX index of 4.37. The use of non-invasive ventilatory support was longer in the quartile with more than 15 days until intubation (median of 5 [3-7] days) and the use of a high-flow nasal catheter was associated with a longer time to decide on intubation ($p=0.002$). **Conclusion:** Late intubation was associated with higher mortality. Non-invasive ventilation support strategies can be used as long as there is no delay in using an invasive strategy when necessary.

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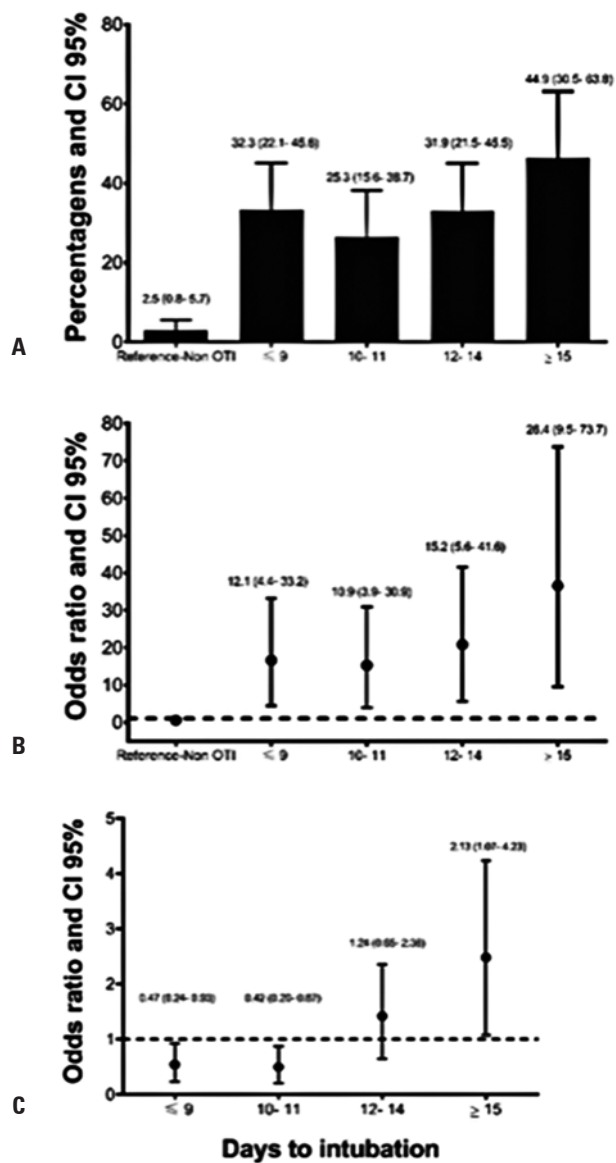


Figure 1. Mortality in relation to time to intubation from the onset of symptoms. The top figure is unadjusted and the bottom figure is adjusted for SAPS 3 and BMI