Continuous positive airway pressure delivered by helmet for hypoxemic acute respiratory failure: a retrospective study

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Argomento: Insufficienza respiratoria acuta e ventilazione meccanica

Background

The use of noninvasive ventilation (NIV) in patients affected by Chronic Obstructive Pulmonary Disease (COPD) and cardiogenic pulmonary edema is well established. The use of NIV in patients with hypoxemic respiratory failure (HRF) is controversial.

The objective of this retrospective study is to evaluate the use of NIV in HRF in our centre and its efficacy in avoiding intubation and invasive mechanical ventilation.

Methods

We performed a retrospective study in the General ICU of the University Hospital San Gerardo, Monza. We considered for inclusion patients with HRF (PaO2/FiO2 < 300) treated with helmet CPAP or Face Mask noninvasive positive pressure ventilation (NPPV), from January 2015 to December 2018. Clinical data, blood gas analysis (ABG), and hours of NIV treatment during the first 48 hours were collected along with outcome at ICU discharge and ICU length of stay.

Results

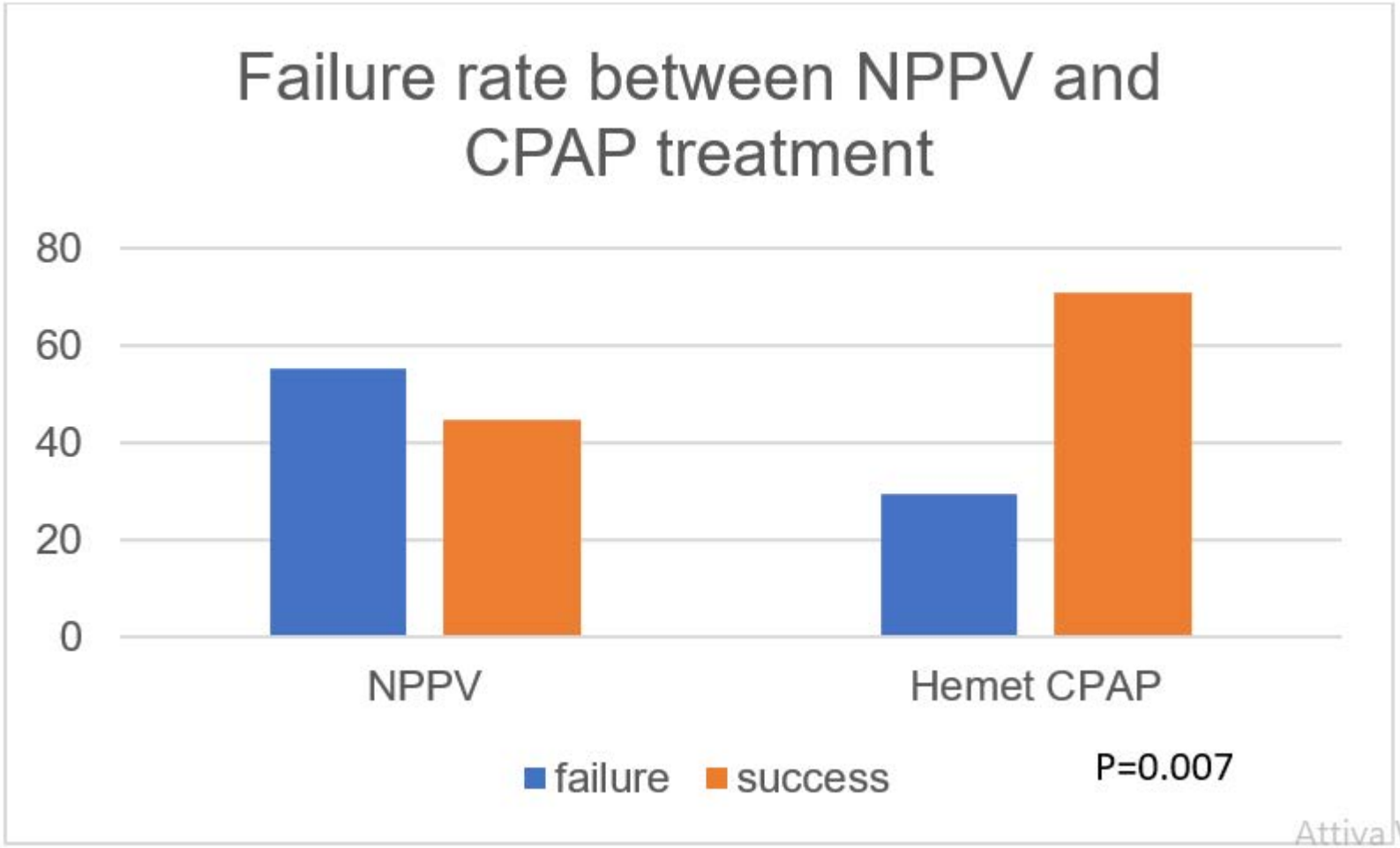
We screened a total of 176 and we included 110 patients in the analysis. We did not observe any difference in patients characteristic, comorbidities and degree of severity between the CPAP and NPPV groups.

Failure rate was significantly higher in the NPPV group (55.3%) compared to the helmet CPAP (29,2 %), p=0,007.

Considering gas exchange parameters, we observed median higher PaO2 values in the helmet CPAP group after 1 hour of tretment *151,6 [103,9; 232,1] vs 120,6 [74,9; 158,0] p=0.022.*

Conclusions

In our single centre study, helmet CPAP was more effective in reducing the rate of intubation of patients with HRF admitted to our ICU. NPPV seems to provide no additional benefit over a well performed helmet CPAP.


Failure rate between NPPV and CPAP treatment
80
60
40
20
0
NPPV
Hemet CPAP
failure
success
P=0.007