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Title: Noninvasive ventilation as an end-of-life measure in patients with chronic obstructive pulmonary disease

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Body: Background: Noninvasive ventilation (NIV) has been deemed as a useful measure for reducing the probability of invasive mechanical ventilation in patients with acute exacerbation of chronic obstructive pulmonary disorders (COPD). However, The role of NIV as a palliative measure in dying patients with COPD remains unclear. Aim: To investigate the usefulness of NIV an an end-of-life measure in patients with COPD. Patients and Methods: We retrospectively reviewed the medical records of COPD patients who died of respiratory failure and had been receiving NIV at the end of life in a university-affiliated medical center. Results: In 683 COPD patients who died, only 47 (7%) was under NIV support as a palliative measure before death. Most patients (70%) died in general ward, and while the minority of patients had a preexisting "do-not-intubate" (DNI) will, 76% placed a DNI documentation after initiation of NIV. There was no significant increase of respiratory rate or worsening of other vital signs 24 hours after starting NIV, suggesting the usefulness of NIV to prevent progression of distress. The consciousness significantly deteriorated (p=0.001) after the starting of NIV, which prevented the use of opioids or sedative agents. The mean length of NIV was 8.7 +/- 7.3 days and most of the patients (79%) were maintaining the NIV until they died, suggesting the tolerability. Conclusions: Our study results suggest that NIV might be useful for dying COPD patients, who might experience a comfortable dying process. For relieving distress caused by respiratory failure, NIV may be a useful alternative measure to alleviate the dyspnea or discomfort. Further prospective study might be required.