

Usefulness of high-flow vs NIPPV among pts at high risk of post-extubation respiratory failure

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Background/Aims: Post-extubation respiratory failure (PERF) is a common complication in electively extubated patients, and high-flow nasal cannula (HFNC) and non-invasive positive pressure ventilation (NIPPV) may reduce reintubation among patients at high risk of PERF. As HFNC has the advantages of comfort, availability, and physiological mechanisms, we assessed whether HFNC could reduce the rate of reintubation in high risk patients of PERF.

Methods: Between March 1, 2017 and June, 2021, 1021 patients aged 18 years or older requiring invasive mechanical ventilatory support were admitted to the medical ICU in Inha University Hospital. The patients ready for extubation after successfully completing a spontaneous breathing trial were included if they were at high risk of postextubation respiratory failure. They were received HFNC or NIPPV by helmet or oronasal mask after extubation. We collected their medical record retrospectively

Results: 72 patients were at high risk of PERF and received HFNC or NIPPV. 38 patients were treated with HFNC, and the remaining 34 patients were treated with NIPPV. There are no significant differences between baseline characteristics of patients except sex, heart failure and chronic obstructive pulmonary disease (COPD). Rates of reintubation were similar in the two groups; 31.5% in the HFNC group and 32.3% in the NIPPV group. There were differences in duration of received HFNC or NIPPV pH, PaCO₂, heart rate before and after application, and there were no differences in hospital mortality or hospital length of stay.

Conclusions: The effectiveness of HFNC was not inferior than NIPPV among patients at high risk of PERF.

	NIV (N=34)	HFNC (N=38)
Baseline characteristics		
Age (years)	72.47	75.31
Men	14 (41.2%)	26 (68.4%)
BMI	23.63	21.99
Cormobidities, n (%)		
Diabetes	12 (35.3%)	20 (52.8%)
Hypertension	18 (52.9%)	26 (68.4%)
CAOD	3 (8.8%)	6 (15.8%)
Heart failure	8 (23.5%)	2 (5.3%)
Chronic kidney disease	5 (14.7%)	9 (23.7%)
Cerebrovascular accident	4 (11.8%)	10 (26.3%)
COPD	8 (23.5%)	2 (5.3%)
Cancer	4 (11.8%)	8 (21.1%)
Results		
Reintubation	11 (32.3%)	12 (31.5%)
Mortality, n (%)	10 (29.4%)	12 (31.6%)
Hospital length of stay	56.7	34.1
Duration of NIV (days)	12.55	3.37
T stomy, n (%)	5 (14.7%)	4 (10.5%)
Before NIV apply		
pH	7.39	7.45
PCO ₂ (mmHg)	54.85	41.21
HR (beats/minute)	91.67	75.45
RR (/minute)	21.76	19
After 2 hours NIV apply		
pH	7.41	7.45
PaCO ₂ (mmHg)	53.1	39.5
HR (beats/minute)	91.6	80.5
RR (/minute)	23.6	22.8