

LETTERS

The role of high-flow nasal cannula therapy in patients with respiratory failure

In a meta-analysis published in *CMAJ*, Ou and colleagues reported that, compared with use of conventional oxygen therapy, use of high-flow nasal cannula oxygen therapy could reduce the intubation rate in patients with acute hypoxemic respiratory failure.¹ Although this study was well-designed, we identified several issues.

First, a search bias possibly existed, as 6 more trials were identified in our recent literature search (conducted September 2018).²⁻⁷ However, in our meta-analysis that included these additional trials (unpublished data, 2018),²⁻¹¹ the conclusion remained consistent with that of Ou and colleagues.

Second, in our meta-analysis, the range of intubation rates was very large within these trials (from 0% in the study by Rittayamai and colleagues,⁷ to 42% in the study by Frat and colleagues⁸), indicating potential heterogeneity among these studies. Several well-designed studies⁸ and the trial by Hernández and colleagues⁹ also showed inconsistent findings.

Furthermore, we noticed that the severity of respiratory failure ($\text{PaO}_2:\text{FiO}_2$) at baseline differed among trials. Thus, we performed a subgroup meta-analysis to investigate whether the conclusion stayed consistent depending on $\text{PaO}_2:\text{FiO}_2$ levels. We divided the included trials into 3 subgroups according to the $\text{PaO}_2:\text{FiO}_2$ at enrolment

(≥ 200 , < 200 and unreported). In the subgroup with high $\text{PaO}_2:\text{FiO}_2$,^{3,6,9,10} use of high-flow nasal cannula oxygen therapy had a significant reduction in the intubation rate compared with use of conventional oxygen therapy. However, in the subgroup with low $\text{PaO}_2:\text{FiO}_2$,^{5,8} this benefit of high-flow nasal cannula oxygen therapy was nonsignificant.

Despite increased evidence supporting the use of high-flow nasal cannula oxygen therapy in acute respiratory failure, its inappropriate application may cause necessary intubation to be delayed, which is associated with poor outcomes.¹² Thus, we suggest further studies are still needed to evaluate the benefit of high-flow nasal cannula oxygen therapy in patients with severe respiratory failure.

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