PHYSIOLOGICAL EFFECTS OF HIGH FLOW OXYGEN THERAPY versus STANDARD OXYGEN THERAPY IN TRACHEOSTOMIZED PATIENTS

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Argomento: Insufficienza respiratoria acuta e ventilazione meccanica

INTRODUCTION

High flow nasal cannula (HFNC) has been shown to decrease the reintubation rate in critically ill patients after planned extubation. As compared to conventional oxygen therapy, HFNC decreases work of breathing and respiratory rate and improves oxygenation. Recently, a novel interface made it possible to deliver high flow oxygen therapy through the tracheostomy cannula.

OBJECTIVES

To evaluate if high flow oxygen therapy delivered through tracheotomy cannula has the same physiological effects of HFNC in tracheostomized patients at risk of reconnection after disconnection from the ventilator.

METHODS

After a planned disconnection from mechanical ventilation, 8 tracheostomized patients underwent a cross-over study alternating high flow and standard oxygen therapy (HF TRACH and LF TRACH), respectively, according to an ON-OFF design: 1) HF TRACH; 2) LF TRACH; 3) HF TRACH. Heated and humidified HF TRACH oxygen therapy was delivered at flow rates between 50 and 70 L/min (F&P, Auckland, New Zealand).The diaphragmatic electrical activity (Eadi) signal was continuously recorded (Maquet, Solna Sweden) to obtain the mean Eadi peak ($Eadi_{PEAK}$).Work of breathing, respiratory rate and gas exchange parameters were assessed at the end of each study step.

RESULTS

The mean $Eadi_{PEAK}$ didn’t change throughout the study (8.68 ± 4.51 vs 9.29 ± 5.22 vs 9.35 ± 4.18 µVolt). Work of breathing, respiratory rate, oxygenation and $PaCO_2$ remained stable throughout the three steps.

CONCLUSIONS

Our data show that, differently than HFNC oxygen therapy, the application of high flows to the tracheostomy cannula does not improve oxygenation and work of breathing. Our finding that, as compared to LF TRACH, HF TRACH does not decrease the $Eadi_{PEAK}$ suggests that it has no impact on

the neural ventilatory drive.

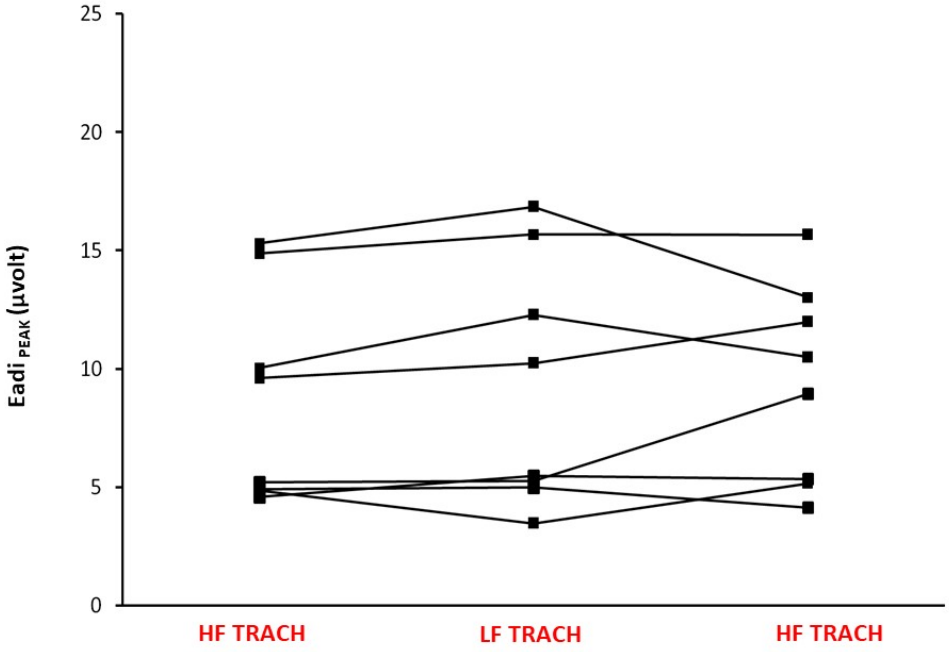

Fig. 1: $Eadi_{PEAK}$ trend in the 8 patients enroled in the study