

A Lung Protective Strategy with Low FiO₂ in Critically Ill Burn Patients

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Introduction

ARDS is a significant contributor to mortality in critically ill burn patients. There is a reemergence of the use of HFPV as rescue therapy for ARDS. HFPV permits the use of lower PIP, improves P/F ratios, lowers FiO₂ requirements, and decreases the incidence of pneumonia without hemodynamic compromise or barotrauma.

We propose that HPFV is a means to provide critically ill burn patients at high risk for ARDS effective oxygenation using low inspired oxygen concentrations.

Methods

Retrospective cohort chart review:

32 burn pts treated with a low FiO₂/HFPV protocol >10 days

Data measurements recorded daily from admission to 4 wks, extubation, or death

HFPV settings:

FiO₂ 0.25

RR 15 with 500 os/min

PIP 25

PEEP /CPAP ratio 2:8, adjusted to maintain O₂ sats > 92%.

Results

Male 23

Female 9

Age 45 (range 21-89)

TBSA% burn 30 (range 2-67)

APACHE II 9 (range 0-21; > 20% 15)

SI 68%

Mortality 28% secondary to sepsis and MSOF

P/F ratio 394 (range 191-699)

FiO₂ 0.28 (range 0.25- 1)

Max PIP 42

*No patient developed ARDS or a sustained P/F ratio < 200

*No patient had respiratory death, barotrauma, protocol failure or airway hemorrhage

Conclusions

HPFV is a safe means to provide effective oxygenation with low FiO₂. All patients in this chart review maintained a P/F ratio >200 with FiO₂ at 0.25. We believe HPFV may be an effective tool to prevent the development of ARDS secondary to oxygen toxicity, progression of SI and pneumonia, or barotraumas in this high risk cohort of patients.

Key benefit: HPFV is able to maintain alveolar recruitment allowing the use of low FiO₂. This low FiO₂/HPFV protocol has shown in our chart review to be a successful primary lung protective strategy in critically ill burn patients with and without SI.

References

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