Impact of renal dysfunction on weaning from prolonged mechanical ventilation

ABSTRACT

Patients who require PMV and RRT have a very poor prognosis. The small number of patients with renal insufficiency not requiring RRT had a more favorable hospital outcome and mortality, but long-term survival remained poor.

INTRODUCTION

Introduction In the critical care unit, there is a strong correlation between the number of failing organ systems and mortality. Patients with both renal and respiratory failure, requiring concurrent mechanical ventilation and renal replacement therapy (RRT), have prolonged length of hospital stay, high cost of care, and a poor outcome. This relationship has not been studied in the post-intensive care unit (ICU) setting. Barlow Respiratory Hospital (BRH) functions as a regional weaning center (RWC), accepting and attempting to wean patients from prolonged mechanical ventilation (PMV). Patients are transferred to BRH from the ICU's of surrounding hospitals after 4-6 weeks of ventilator dependency. These patients typically have chronic respiratory impairment exacerbated by a serious acute illness, such as infection, cardiac event, or surgical catastrophe. We previously reported a significant difference between the admission blood urea nitrogen (BUN) and serum creatinine of patients who weaned and those who remained ventilator-dependent or died. In this study, we gathered outcome data on the cohort of ventilator-dependent patients with severe renal dysfunction on admission to our RWC in order to further elucidate the impact of renal dysfunction on weaning from PMV.

CONCLUSION

Patients with PMV and concurrent severe renal dysfunction on transfer to the RWC have an extremely poor prognosis for weaning outcome and both short- and long-term survival. The duration of mechanical ventilation in the ICU prior to transfer to the RWC was significantly longer where renal dysfunction also developed. Time to wean tended to be longer in the few patients with renal dysfunction who did wean. The small number of PMV patients with renal insufficiency not requiring RRT had a better weaning success rate and mortality than those receiving RRT, but long-term survival was still poor.