

APPENDIX

ARDS

Diagnosis: Bilateral lung infiltrates on chest X-ray, no history of chronic lung disease, or clinical suspicion of left heart failure (*i.e.*, pulmonary artery occlusion pressure <18 mmHg, when available), and a PaO₂ to inspired O₂ fraction (FiO₂) ratio being less than 200 with the following initial ventilatory settings: pressure-controlled ventilation (PCV, Servo 900C or Servo 300, Stemens-Elcoma, Sweden), tidal volume of 10 ml/kg, respiratory rate of 15, inspiratory to expiratory time ratio of 1/2, FiO₂ of 1.0 and PEEP of 5 cm H₂O.^{15,19}

Management: All patients are paralyzed with vecuronium (0.1 mg·kg⁻¹·h⁻¹) and sedated with midazolam (0.3 mg/kg/h). Radial artery was catheterized for monitoring arterial pressure (Viggo-Spectramed, USA), and blood sampling for blood gas analyses (ABL-500, Radiometer, Copenhagen, Denmark). PEEP titration was applied at 3 cm H₂O increments until reaching 15 cm H₂O.^{15,16} Our major aim was to keep PaO₂ between 60 and 100 mmHg. Accordingly, FiO₂ was manipulated to maintain PaO₂ greater than 60 mmHg. Peak pressure was not permitted to increase more than 40 cm H₂O. Blood gas analyses and gas exchange parameters were recorded at each PEEP level after a stabilization period of 20-30 minutes. The PEEP value which maintained the best oxygenation with the least hemodynamic effect was accepted.

Weaning: As clinical improvement permitted, the following parameters were gradually decreased in the following order: FiO₂, peak airway pressure, and then PEEP. Patients were accepted into the weaning program when they were clinically and hemodynamically stable with FiO₂ < 0.5 , PEEP of ≤ 5 cm H₂O, an arterial oxygen saturation of $> 90\%$, and a maximal inspiratory pressure < -25 cm H₂O.³⁵ Pressure support ventilation (PSV) and CPAP were used in the early phase of weaning. Subsequently, we used procedures including high-flow oxygen through an open circuit (T-piece, high flow) and low-flow of oxygen model (easy-breath, humidifier). Mechanical ventilation was thus avoided in the late weaning phases.

General Care

Airway Management: Percutaneous dilatational tracheostomy was performed for patients who required prolonged mechanical ventilation.

Position: Patients were maintained in semi-recumbent ($\geq 30^\circ$) position unless a diagnosis of ARDS had been made. In those patients, prone positioning was used routinely. We used prone position, because a previous study from our unit demonstrated that this position improved respiratory parameters without provoking adverse hemodynamic consequences.³⁶

Enteral nutrition: Early enteral nutrition was encouraged. Maximum nutritional intake was set at 2500 kcal/day to avoid excessive CO₂ production.

Hemodynamic management: In general, MAP was maintained above 60 mmHg. For this purpose, the order of management was as follows: 1) crystalloids, and then colloids, were given at a rate sufficient to keep pulmonary-artery occlusion pressure in between 9 and 18 mmHg; and, 2) hemoglobin was maintained above 10 g/dL (unless clinically contraindicated).

Prevention of Hospital Infections

- Patients were separated from each other by rigid barriers.
- The drugs and care materials of patients were kept separately and in ergonomic bed-side closets.
- Each bed unit had its own hand-washing section. Staff members wore disposable gloves for every patient contact. Hands were nonetheless washed after each contact.
- Procedures including catheterization, culture sampling, and percutaneous tracheostomy were performed with full aseptic precautions.