ICU
MANAGEMENT & PRACTICE

Nebulised Heparin for Patients with ARDS

Mechanical ventilation in the ICU for 48 hours or longer is known to be associated with ARDS, which could be present either when ventilatory support is initiated or develop afterwards, typically during the first five days. ARDS affects approximately 23% of mechanically ventilated, critically ill patients and has a mortality of nearly 46%. Patients on prolonged mechanical ventilation and ARDS are at risk of impaired physical function that could linger on for years. Dexamethasone has been shown to improve survival, but to date, no pharmacological interventions, including corticosteroids, ketoconazole, dipyridamole, and aspirin, have been shown to prevent ARDS. One of the pathogenic mechanisms of lung injury in ventilated patients is inflammatory-induced pulmonary fibrin deposition, which could lead to thrombosis of the microvasculature and hyaline membrane formation in the air sacs.

A study was conducted to determine if nebulised heparin would limit lung injury and accelerate recovery of physical function in patients who either have ARDS or are at risk of ARDS. The Can Heparin Administration Reduce Lung Injury (CHARLI) study was conducted across nine hospitals in Australia. 252 adult intensive care patients on invasive ventilation with impaired oxygenation and the expectation of mechanical ventilation beyond the next calendar day were included in the study. 51% of the patients were assigned to the heparin group and 49% to the placebo group.

The primary outcome was the Short Form 36 Healthy Survey Physical function Score of survivors at day 60. Secondary outcomes included the development of ARDS to day five among at-risk patients, deterioration of the Murray Lung Injury Score (MLIS) to day 5, mortality at day 60, residence of survivors at day 60 and any serious adverse effects.

Findings from the study show that patients in the heparin group had similar SF-36 Physical Function scores at day 60 compared to the placebo group. The heparin group had fewer cases of ARDS and less deterioration of the MLIS to day 5. 60-day mortality was similar in both groups, but the heparin group had more day 60 survivors at home compared to the placebo group. A similar number of adverse events occurred in both groups. Adverse events included a transient increase in airway pressure during nebulisation, major non-pulmonary bleeding, haemoptysis, tracheotomy site bleeding and hypoxaemia.

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These results show that in patients with or at risk of ARDS, nebulised heparin did not improve the performance of daily physical activities. However, it was well-tolerated, and the outcomes suggest the possibility of less progression of lung injury and earlier return home.

Source: The Lancet

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