
Cognitive Impairment, Brain Insult After Mechanical Ventilation



Mechanical ventilation is an essential treatment strategy in the ICU. It is a life-support tool that is often needed in critically ill patients. However, mechanical ventilation is known to cause injury to distal organs such as the lungs, diaphragm and brain.

A systematic review was conducted to identify publications that assessed the link between mechanical ventilation and either cognitive impairment or brain insult, independent of underlying medical conditions. The secondary objectives of the review were to identify any gaps in the literature that could be used to inform future research direction.

Nine preclinical publications and 26 clinical publications were identified and reviewed. Papers were scored excellent, good, fair, and poor. The most common population studied in these papers was ICU patients, followed by cardiovascular surgical patients and trauma patients.

Preclinical search by the researchers suggested that mechanical ventilation is associated with neuroinflammation, cognitive impairment and brain insult. In subjects that were ventilated for a longer period of time, there was greater evidence of brain injury markers and lower cognitive scores compared to those who were ventilated less or were never ventilated.

Clinical literature also suggests an association between mechanical ventilation and delirium. Delirium in mechanically ventilated patients may be associated with long-term cognitive impairment.

Of the 35 papers analysed in this review, 12 found that the duration of mechanical ventilation was an independent variable associated with a greater risk of patients developing delirium during hospitalisation. Nine papers found that delirium during hospitalisation was an independent variable associated with a longer duration of mechanical ventilation. Five clinical papers found delirium as a predictor of greater chances of chronic cognitive impairment.

Overall, this review demonstrated an association between mechanical ventilation and acute cognitive impairment. Increased duration of mechanical ventilation could be associated with a greater risk of delirium during hospitalisation. Delirium in these patients may be associated with long-term cognitive impairment.

This systematic review found gaps in the literature that could guide future studies so that the relationship between mechanical ventilation, brain insult and cognitive impairment could be further understood.

Source: [Critical Care](#)

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