



Simultaneous Management of ARDS and sABI



Acute respiratory distress syndrome (ARDS) occurs in approximately 40% of patients with severe acute brain injury (sABI), including acute ischaemic stroke, subarachnoid haemorrhage, intracerebral haemorrhage and traumatic brain injury. It is also a major determinant of morbidity and mortality.

With the increase in ARDS cases and reports of neurological complications in COVID-19, there is now a need to manage concomitant severe ARDS and sABI. However, standard treatment strategies for ARDS can potentially conflict with the management of elevated intracranial pressure (ICP) and reduced cerebral perfusion pressure (CPP).

There are trials and guidelines to support treatment strategies for ARDS and sABI independently. However, guidelines and recommendations on concomitant management of both these conditions are quite limited. Many ARDS studies exclude patients with sABI and do not consider the physiologic implications of ARDS management in sABI patients. Often, treatment strategies for managing severe ARDS may be in conflict with the management of sABI.

There are several aspects to consider. For example, low tidal volume mechanical ventilation improves mortality in ARDS, but can also cause hypercarbia and hypoxaemia. That is why it is important to balance the benefits of low tidal volume mechanical ventilation with risks of hypercarbia and hypoxaemia. Similarly, high positive end-expiratory pressure (PEEP) may improve oxygenation but can also reduce cerebral perfusion by raising ICP. Deep sedation and neuromuscular blockade are used to improve ventilator synchrony and reduce oxygen consumption in ARDS, but at the same time, they limit the ability to perform a neurological examination.

The point is that interactions between sABI and ARDS can be quite complex. Already, because of COVID-19, the prevalence of ARDS is on the rise, and there is evidence of neurological dysfunction associated with COVID-19. Therefore, clinicians may have to treat these coexistent pathologies more frequently. The goal is to manage these patients with adequate oxygenation and perfusion while avoiding secondary end-organ injury. A greater understanding of which treatments are safe or which need modification is thus critical to optimise care in this particular patient group.

It is important to be aware of the risks involved during the simultaneous management of ARDS and sABI and to understand the pathophysiology and key treatment concepts for the co-management of these two conditions. Increased utilisation of invasive and non-invasive monitoring devices that measure brain and lung physiology can help titrate treatment strategies to individualised targets. In any case, more research studies are needed to help future guidance to ensure improved patient outcomes.

Source: [CHEST](#)

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