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Commentary

Predictors and Occurrence of Sub Syndromal Delirium after Heart Surgery

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DESCRIPTION

Delirium is a frequent and serious complication following cardiac surgery, often associated with increased morbidity, prolonged hospital stays and poorer long-term outcomes. While full-blown delirium has been extensively studied, sub syndromal delirium-characterized by the presence of some but not all diagnostic criteria for delirium-remains under-recognized, despite its potential impact on patient recovery and healthcare utilization. Sub syndromal delirium may not meet the threshold for clinical diagnosis, yet it can impair cognitive function, delay rehabilitation and increase the risk of progression to full delirium. Understanding the incidence and identifying risk factors for this condition is essential to improving perioperative care and minimizing postoperative complications in cardiac surgery patients.

Studies indicate that the incidence of sub syndromal delirium after cardiac surgery varies widely, with reports ranging from 10 to 30 percent depending on the assessment tools used and the population studied. The variability reflects differences in diagnostic criteria, timing of evaluation and patient characteristics. Unlike overt delirium, which is often characterized by acute confusion, disorientation and fluctuating attention, sub syndromal delirium may manifest as subtle changes in cognition, mild inattention, altered sleep-wake cycles, or transient disorientation. Because these symptoms are less dramatic, they are frequently overlooked by healthcare providers, yet they can significantly affect postoperative recovery and patient quality of life.

Patient related risk factors for sub syndromal delirium

Several patient-related factors have been associated with an increased risk of sub syndromal delirium following cardiac surgery. Advanced age is consistently recognized as one of the strongest predictors, likely due to age-related changes in brain structure and function that reduce cognitive reserve. Preexisting cognitive impairment, such as mild cognitive decline or early dementia, also increases vulnerability, as these patients are less able to compensate for the physiological stress of surgery. Comorbidities, including hypertension, diabetes and chronic kidney disease, have been linked to higher rates of postoperative cognitive disturbances, potentially due to compromised cerebral perfusion and increased systemic inflammation. Additionally, a history of psychiatric illness, sensory impairment, or prior episodes of delirium may further predispose patients to sub syndromal delirium.

Surgery-related and perioperative factors play a critical role in the development of sub syndromal delirium. Prolonged cardiopulmonary bypass, longer duration of aortic cross-clamping and complex surgical procedures can contribute to cerebral hypoperfusion and neuroinflammation, increasing the risk of postoperative cognitive changes. Anesthesia management, particularly the use of certain sedatives or opioids, can exacerbate confusion and impair cognitive function in vulnerable patients. Postoperative complications such as infections, electrolyte imbalances, hypotension and hypoxia further heighten the likelihood of delirium. In the intensive care unit, environmental factors such as sleep disruption, sensory overload, or lack of orientation cues may trigger or amplify subtle cognitive disturbances.

Recognizing and addressing sub syndromal delirium is essential because early intervention can prevent progression to full delirium and improve overall outcomes. Routine screening using validated tools, such as the Confusion Assessment Method for the Intensive Care Unit (ICU) or other cognitive assessment scales, can help identify patients displaying early or mild symptoms. Preventive strategies may include optimizing perioperative hemodynamics, minimizing exposure to high-risk medications, ensuring adequate pain control, promoting sleep hygiene and encouraging early mobilization. Multidisciplinary approaches involving surgeons, anesthesiologists, nurses and rehabilitation specialists are particularly effective in mitigating risk factors and supporting cognitive recovery.

CONCLUSION

In conclusion, sub syndromal delirium is a common yet often underdiagnosed complication after cardiac surgery, with significant implications for patient outcomes and healthcare resources. Its incidence varies depending on assessment methods

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and patient populations, but it is clear that both patient-related factors-such as age, preexisting cognitive impairment and comorbidities-and perioperative factors-including surgical complexity, anesthesia and postoperative complications-contribute to risk. Early recognition, proactive screening and targeted preventive interventions are major for minimizing the impact of sub syndromal delirium and promoting optimal recovery. By addressing this condition systematically, healthcare providers can improve postoperative cognitive outcomes, enhance patient safety and reduce the burden of postoperative complications in cardiac surgery populations.