

Pediatric Delirium: Incidence and Risk Factors

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Abstract

Delirium, a syndrome of acute brain failure caused by medical illness, is becoming increasingly recognized in children. Although research in this field remains limited, early studies indicate that it is common, likely has negative long-term sequelae, and is treatable with both non-pharmacologic and pharmacologic approaches. The present study reviews the incidence and risk factors associated with delirium among critically ill children admitted in intensive care unit.

Keywords: Delirium; Incidence; Prevalence; Risk Factors; Intensive Care unit.

Introduction

Critically ill patients admitted to an ICU are always "at risk" for acute brain dysfunction, which may manifest itself as reduced consciousness, coma, or delirium. The pathophysiology of acute brain dysfunction can be conceptualized as a complex interplay between disease-related factors (e.g., inflammation, severity of illness), predisposing risk factors (e.g., age, cognitive impairment) and environmental factors (e.g., restraint, noise, sleep deprivation, medication such as benzodiazepines).¹ Both adult ICU and PICU survivors may suffer from the postintensive care syndrome in the year after ICU discharge, with mental health problems such as anxiety, depression, and delusional memories.²

According to the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), characteristics of delirium include rapid onset; fluctuating course; and disturbances of attention, memory, thought, perception, and behavior that "do not occur within the context of a severely reduced

level of arousal such as coma."^{3,4} While delirium in hospitalized adults, and particularly older adults, is well documented, affecting between 42% and 80% of this population,⁵ its occurrence among hospitalized children is less clear.

The objective of the study is to review incidence and various risk of delirium occurring in patients admitted in PICU.

Incidence and Risk Factors

- Gabrielle S et al conducted a study to assess prevalence and risk factors for delirium in critically ill children. The study reported that prevalence rate was 21% and risk factors were presence of developmental delay, need for mechanical ventilation and children aged between 2-5 years.⁶
- Flores A conducted a study to assess the incidence and risk factors associated with delirium in pediatric intensive care unit (PICU). The incidence reported was 7.7% with duration of 2 days. The risk factors identified in critically

ill children were age less than 2 years, female children, children on mechanical ventilation, use of antiemetics and anticholinergics agents; and changes in serum sodium and potassium level.⁷

- Castano A conducted a study to assess the incidence of delirium in critically ill children between 6 months –5 years and 11 months of age. The study results stated that there was 25.8% of delirium was present among children in PICU. Out of these, 62.5% cases were hypoactive and 37.5 % cases were hyperactive. The predisposing factors were male child; use of benzodiazepines, narcotics and analgesics.⁸
- Kim H conducted a study to assess the factors associated with pediatric delirium in PICU. The study results stated that incidence rate among children in PICU were 42.1%. The risk factors were associated with age group (2-5 years of age), admission type (emergency), use of physical restraints, RASS score (Richmond Agitation Sedation Scale) (score > 0), need for oxygen, use of mechanical ventilator, feeding and presence of familiar objects.⁹
- Giles L conducted a study to assess the prevalence and risk factors associated with delirium in PICU. The study reports that incidence rate was 18% with 49.4% in children aged between 2-5 years of age, 147.1% were males and 43.5% were developmentally delayed. The risk factors were young age, male child, presence of developmental delay, use of mechanical ventilator; and use of benzodiazepines and opioids.¹⁰
- Traube C conducted a study to determine prevalence of delirium in critically ill children and explore associated risk factors. The prevalence rate was 25% among children in PICU. The factors associated with delirium were reason for ICU admission (highest in children admitted with inflammatory and infectious disease), length of PICU stay (6 days or more stay), age less than 2 years, need for mechanical ventilation, use of benzodiazepines and narcotics, use of physical restraints; and use of vasopressors and antiepileptics.¹¹
- Dervan L conducted a study to determine risk factors associated with delirium in PICU. The results stated that risk factors associated with delirium in PICU patients were length of stay in PICU (more than or equal to 48 hours), children aged less than 2 years of age, baseline cognitive dysfunction, duration of mechanical ventilation and use of benzodiazepines.¹²

Conclusion

Pediatric Delirium is a complex manifestation of acute brain dysfunction in the critically ill child and is related to a number of predisposing factors. The risk factors associated with delirium are younger age, severity of illness, cognitive dysfunction and use of benzodiazepines and narcotics. The uses of pharmacological interventions can prevent delirium but on the contrary several studies have reported delirium with use of benzodiazepines and narcotics. Non-pharmacologic interventions on the other hand can help prevent delirium or reduce the severity and duration. These interventions are music listening, massage, promoting sleep (e.g., use of earplugs), maintaining a regular day-night cycle, voiding overstimulation by light and sounds, mobilization, and family engagement.

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