

Dexmedetomidine and postoperative delirium: Decoding the evidence!

Madam,

Postoperative delirium (POD) is a complex multifactorial neurobehavioral syndrome that manifests following major surgery with an incidence ranging from 12–51% across diverse clinical settings with preponderance in the elderly.^[1] Considering the significant morbidity, mortality, and hospital resource utilization attributable to POD,^[1] effective perioperative pharmacological POD prevention constitutes an area of active research.

Dexmedetomidine is a highly selective α_2 -adrenergic receptor agonist, sedative, anxiolytic, sympatholytic, and analgesic with anesthetic, benzodiazepine- and opioid-sparing potential.^[1] A considerable degree of preclinical evidence regarding the neuroprotective role of dexmedetomidine emanated over the last decade.^[2] While a range of recent clinical studies evaluating the incidence of POD following dexmedetomidine revealed a reduction in neurocognitive adverse effects, others failed to demonstrate a similar positive impact.^[3]

Despite the growing interest in neuroprotective potential of dexmedetomidine, the effect of the drug on POD remained inconclusive for a sufficiently long time. Initial few meta-analysis

outlined a reduced incidence of delirium in ICU patients receiving dexmedetomidine without a clear-cut segregation of the surgical and nonsurgical patients.^[4] However, the 2018 meta-analysis comprising of 18 studies under evaluation elucidated a reduction in the POD incidence for all adult cardiac and non-cardiac adult surgical patient cohort receiving dexmedetomidine.^[3]

A number of caveats surface on a closer analysis of the meta-analysis. The studies included in the meta-analysis employed different drug dosages and durations with few studies administering the drug only in the postoperative period while others continuing the drug throughout the perioperative period. However, it was noteworthy that a strong evidence of POD reduction was demonstrated even with postoperative drug infusion. Nine studies focussed on POD incidence in patients aged <65 years and the other nine assessed POD in patients aged ≥ 65 years, with an evident POD reduction in both the age groups.^[3] Twelve studies employed confusion assessment method (CAM) for characterizing delirium with the others utilizing other assessment models. Moreover, POD was formally assigned as a primary objective in about half of the included studies. The heterogeneity as in index case is indigenous to a meta-analysis evaluating a clinical outcome with an intervention.

The literature surrounding the incidence of POD with dexmedetomidine is witnessing an evolution with respect to defining the optimal dosing schedule and duration, which

could maximise the attributable neurocognitive protection. A recent study by Lee *et al.* demonstrated that the timing and dose of dexmedetomidine are important determinants of an effective POD prevention. They concluded that a 1 µg/Kg bolus followed by 0.2–0.7 µg/Kg/h infusion of the drug from anesthetic induction to the completion of the surgery incurred a reduced POD incidence and duration and lower 24-hour IL-6 levels after surgery compared to the sole administration of the bolus dose.^[5]

To conclude, promising evidence is accumulating concerning the protective role of dexmedetomidine in minimizing the incidence of POD following major cardiac and noncardiac surgery. Considering an ever-increasing number of septuagenarians and octogenarians presenting for major surgical procedures, a nuanced perspective of the perioperative pharmacological neurocognitive protective modalities is undoubtedly the need of the hour.

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Conflicts of interest

There are no conflicts of interest.

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