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Dexmedetomidine administration during brain tumour resection for prevention of postoperative delirium: a randomised trial

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Abstract

Background: Delirium is common, especially after neurosurgery. Dexmedetomidine might reduce delirium by improving postoperative analgesia and sleep quality. We tested the primary hypothesis that dexmedetomidine administration during intracerebral tumour resection reduces the incidence of postoperative delirium.

Methods: This randomised, double-blind, placebo-controlled trial was conducted in two tertiary-care hospitals in Beijing. We randomised 260 qualifying patients to either dexmedetomidine (n=130) or placebo (n=130). Subjects assigned to dexmedetomidine were given a loading dose of 0.6 $\mu\text{g kg}^{-1}$ followed by continuous infusion at 0.4 $\mu\text{g kg}^{-1} \text{h}^{-1}$ until dural closure; subjects in the placebo group were given comparable volumes of normal saline. The primary outcome was the incidence of delirium, which was assessed with the Confusion Assessment Method twice daily during the initial 5 postoperative days.

Results: The average (standard deviation) age of participating patients was 45 (12) yr, duration of surgery was 4.2 (1.5) h, and patients assigned to dexmedetomidine were given an average of 126 (45) μg of dexmedetomidine. There was less delirium during the initial 5 postoperative days in patients assigned to dexmedetomidine (22%, 28 of 130 patients) than in those given placebo (46%, 60 of 130 patients) with a risk ratio of 0.51 (95% confidence interval: 0.36-0.74, $P < 0.001$). Postoperative pain scores with movement, and recovery and sleep quality were improved by dexmedetomidine ($P < 0.001$). The incidence of safety outcomes was similar in each group.

Conclusions: Prophylactic intraoperative dexmedetomidine infusion reduced by half the incidence of delirium during the initial 5 postoperative days in patients recovering from elective brain tumour resection.

Clinical trial registration: [NCT04674241](https://www.clinicaltrials.gov/ct2/show/study/NCT04674241).

Keywords: brain tumour resection; confusion assessment method; delirium; dexmedetomidine; randomised trial.

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