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Successful use of dexmedetomidine as an adjunct to multimodal analgesic regimen in a postoperative ventilated patient following transoral odontoidectomy

Sir,

Various groups of drugs are used to provide postoperative analgesia, opioids taking the center stage. Balancing analgesia, anxiolysis, sedation and readiness for neurological monitoring is challenging in a postoperative neurosurgical patient. Recent demonstration of opioid sparing effect of certain drugs have opened new dimensions for postoperative pain management, especially in neurosurgical patients.[1-3] Here, we report the use of one such drug, dexmedetomidine, in the postoperative management of a patient who underwent transoral odontoidectomy and required mechanical ventilation.

A 28-year-old male with progressive weakness and pain in both the left upper and lower limb with gait disturbance was diagnosed with dystopic Os odontoideum after diagnostic imaging.[4] The apical odontoid ligament was found to be compressing over the corticomedullary junction with resultant myelomalacia. Dynamic X-ray of craniovertebral junction showed fixed

atlanto-axial dislocation. Trans-oral odontoidectomy and elective overnight invasive mechanical ventilation was planned considering the risks of perioperative complications.[4,5] Oral pregabalin 75 mg and baclofen 20 mg twice daily, started 6 months back by his primary physician for symptomatic relief, was continued until the morning of surgical intervention. Surgery was done with intravenous (IV) induction, inhalation based general anesthesia with endotracheal intubation and mechanical ventilation. Intraoperative time was 2 h 45 min, and intraoperative analgesia was provided with 150 μg fentanyl IV. One hour before closure of incision, dexmedetomidine was started at 0.5 μg/kg/h IV. At the end of surgery, surgical site was infiltrated with bupivacaine; a nasogastric tube was placed in stomach through nasal route and residual neuromuscular blockade reversed. Five minutes after stopping of inhalational agent, he opened his eyes to command. His tidal volume was more than 500 ml, respiratory rate 14-16/min and end-tidal carbon-di-oxide 35-38 mmHg (Drager Fabius® Plus, Germany) in spontaneous mode. He tolerated his endotracheal tube and Richmond Agitation-Sedation Scale (RASS) was −2.[1] He was subsequently shifted to the neurosurgical intensive care unit. Further analgesia was provided with infusion of 75 mg diclofenac twice daily with provision for IV opioid *pro re nata*. Dexmedetomidine at 0.5-0.7 μg/kg/h was continued until extubation of trachea and provided sedation level of RASS −1 to −2.[1] He was easily arousable and co-operative during neurological evaluations. Dexmedetomidine was stopped 22 h after completion of surgery. Within 15 min his RASS rose to a score of 0, and trachea was extubated smoothly.[1] His enteral nutrition was started on the same day, which he tolerated well, with resumption of oral pregabalin and baclofen. His pain as judged by numerical ratting scale (0-10) was less than 3 throughout without any need for opioid.[1]

Although opioids are good analgesics, it is associated with nausea, vomiting, sedation, respiratory depression and adverse impact on neurological evaluation, which are very much detrimental to this patient.[1] Fentanyl being lipophilic with shorter duration of action was used in the intraoperative period to decrease the possibility of excessive postoperative sedation.[1] The added sedative effect of pregabalin and baclofen further complicates the situation.[2,6] In this patient, combination of analgesic property of bupivacaine, pregabalin, dexmedetomidine and diclofenac probably ensured optimal postoperative analgesia.[1,2] Opioid sparing effect, decreased chance of respiratory depression, nausea and vomiting, emergence agitation and shivering, anxiolysis with preserved attentive behavior and cognition provided by dexmedetomidine have ensured a comfortable patient suitable for frequent neurological evaluation until tracheal extubation.[1,3] Although use of dexmedetomidine is associated with bradycardia and hypotension, and the perceived increased risk of it due to concurrent use of baclofen, the perioperative course was uneventful.[1,3,6] The avoidance of loading dose of dexmedetomidine may have contributed to it.[1] In conclusion, we believe that dexmedetomidine, by its opioid sparing effect and preserved attentive behavior, is a useful adjunct to multimodal analgesic regimen in postoperative patients requiring sedoanalgesia for mechanical ventilation. However, this needs further investigation.

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