**Table 1** Postoperative oral oxycodone use

| | Group 1 (n=40) | | Group 2 (n=11) | | Group 3 (n=30) | |
|---|---|---|---|---|---|---|
| Prescription | 2.5–5 mg two hourly | | 5–10 mg two hourly | | 5–15 mg two hourly | |
| Maximum possible dose (mg) in 24 h | 60 mg | | 120 mg | | 180 mg | |
| | Mean (mg/day) | Range (mg) | Mean (mg/day) | Range (mg) | Mean (mg/day) | Range (mg) |
| Day 1 | 11.8 (9.6 to 14)[a] | 0 to 25 | 23.0 (16.1 to 29.1)[a] | 2.5 to 40 | 21.9 (17.9 to 25.9)[a] | 0 to 40 |
| Day 2 | 8.1 (5.1 to 11.1)[a] | 0 to 30 | 22.3 (11.8 to 32.8)[a] | 0 to 50 | 19.7 (12.6 to 26.8)[a] | 0 to 70 |
| Day 3 | 3.4 (0 to 9.1)[a] | 0 to 25 | 11.8 (3.4 to 20.2)[a] | 0 to 40 | 8.7 (0 to 21.4)[a] | 0 to 70 |
| Overall | 7.71 (6.16 to 9.26)[a] | 0 to 30 | 19.0 (13.8 to 24.2)[a] | 0 to 50 | 16.8 (13.4 to 20.2)[a] | 0 to 165 |

[a] 95% confidence interval.

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## Dexmedetomidine nebulization: an answer to post-dural puncture headache?

Headache following spinal anaesthesia is very occasionally excruciating in nature and often difficult to treat. Various treatment options include well-maintained hydration, maintaining the supine posture, caffeine, other poorly evidenced pharmacological therapies and epidural blood patch. We report the apparently successful use of a novel method, namely the nebulization of dexmedetomidine in five patients suffering from post-dural puncture headache (PDPH).

Dexmedetomidine is a highly selective, centrally acting $\alpha_2$-adrenergic agonist with analgesic and anxiolytic effects. It has been used via the intranasal and inhalational routes for various purposes including premedication, sedation and postoperative analgesia.[1–4] The premedicant use of nebulised dexmedetomidine in paediatric patients having bone marrow biopsies and outpatient dental procedures is associated with more satisfactory sedation, shorter recovery time, and less postoperative agitation.[3,4] Kumar et al. have reported on its use as an additive to lidocaine for nebulization of the airway prior to awake fiberoptic bronchoscopy.[5]

Because of its desirable properties and various modes of administration, we have used dexmedetomidine nebulization in patients suffering from PDPH post caesarean section who were not responding to conservative treatment. All these patients received ultrasonic nebulization of dexmedetomidine (1 µg/kg diluted in 4 mL saline) twice daily for three days. There was considerable improvement in pain scores in all the patients, with complete relief by the third day. Adverse effects such as hypotension, bradycardia and sedation were not observed. The effect of intranasal dexmedetomidine in reducing pain postoperatively has been attributed to lower circulating levels of inflammatory mediators.[1] Perineural dexmedetomidine has increased the analgesic effect of local anesthetic due to blockade of the hyperpolarization-activated cation ($I_h$) current.[6] Hence, the action of dexmedetomidine could be both local and systemic.

The bioavailability of dexmedetomidine through the transnasal route is 65% and through the buccal mucosa 82%.[2] Nebulization of dexmedetomidine might be of

benefit compared with other routes of administration (transmucosal or transnasal) due to better compliance in those not responding to conventional treatment modalities of PDPH. We have used dexmedetomidine nebulization with good results and the exact site and mechanism of action needs to be studied.

## Declaration of interests

Nil.

A. Kumar
*Department of Trauma and Emergency, All India Institute of Medical Sciences, Patna, India*
*E-mail address:* drajeetkumar@aiimspatna.org

A. Kumar, C. Sinha
*Department of Anaesthesia, All India Institute of Medical Sciences, Patna, India*

M. Anant
*Department of Obstetrics and Gynaecology, All India Institute of Medical Sciences, Patna, India*

J.K. Singh
*Department of Anaesthesia, All India Institute of Medical Sciences, Patna, India*

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## Distractions during the critical phases of epidural placement

It has been well documented that interruptions at critical times of a procedure can affect performance. In the aviation industry a "sterile cockpit" rule was introduced as interruptions during critical phases accounted for 7% of aviation incidents.[1] This rule prohibits conversation unrelated to the task in hand at certain critical phases. This concept, and its application to anaesthesia, has been studied and examines disturbances occurring during induction, maintenance and emergence from anaesthesia.[1]

We conducted a pilot study to quantify the number and nature of disturbances occurring during the critical phases of epidural placement on the labour ward. A total of 92 epidural catheter placements over a three-week period were analysed. Data were collected by means of a questionnaire filled out by the training registrar following completion of the epidural. Data were recorded on a standardised form and included any disturbances that occurred during the critical phases of epidural placement. The "critical phase" was defined as the time from positioning the patient to administration of a test dose. Disturbances to epidural placement that were deemed necessary included emergency caesarean section, antepartum or postpartum haemorrhage; or an emergency that required the procedure to be abandoned. Excluding these "necessary disturbances" a total of 107 disturbances were recorded, with 63% of epidurals experiencing at least one disturbance. The most frequent disturbances were personnel entering or leaving the room (41/107, 38.3%), a phone call, bleep or page (26/107, 24.3%), a conversation not related to the task (20/107 18.7%) and noise from music or a radio (20/107, 18.7%). The trainees considered that disturbances impacted their placement of an epidural catheter in 37% of cases. They felt the task was made more difficult by the fact that during critical phases their attention was diverted from the task at hand by distractions. In addition, they felt it prolonged the time spent performing the epidural placement, although this was self-reported. Evidence for adverse outcomes caused by disturbances in a sample size of 92 would be difficult to definitively prove but two dural punctures were recorded (2/92, 2.2%) and both were recorded in cases where disturbances had occurred. The majority of disturbances were preventable and with simple interventions could have been reduced, with potential benefit to the patient.

The study served to highlight both the number of disturbances and their potential negative impact. The possibility of compromising patient care exists during multiple attempts at placement, causing distress for patients and potentially increasing complication rates. Numerous studies have shown an association between