Adverse events of postoperative thoracic epidural analgesia: A retrospective analysis of 7273 cases in a tertiary care teaching hospital

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BACKGROUND
Thoracic epidural analgesia is a well established technique for postoperative pain relief after major abdominal and thoracic surgery. Safety remains a major concern because of serious adverse events including epidural haematoma, abscess and permanent neurological deficit.

OBJECTIVE
The aim of this study was to evaluate the incidence and the long-term outcome of serious adverse events associated with thoracic epidural analgesia.

DESIGN
Retrospective cohort study.

SETTING
The study was conducted at a single institution, a tertiary care teaching hospital. Data were collected over a 10-year period from 2003 until 2012.

PATIENTS
Data from 7430 patients were prospectively entered into a standardised acute pain service database. A total of 7273 study participants met the inclusion criteria and were included in the final analyses. The inclusion criteria involved surgical patients receiving a postoperative thoracic epidural analgesia catheter treatment for pain control. Exclusion criteria were defined as obstetric, non-surgical, non-epidural analgesia patients and epidural analgesia catheters that had not been placed by an anaesthesiologist.

MAIN OUTCOME MEASURES
The database was queried for serious adverse events which were defined as spinal or epidural haemorrhage; spinal or epidural abscess; permanent neurological deficits; cardiac arrest; death and incomplete removal of the epidural analgesia catheter. Patients' charts were comprehensively reviewed in case of a major adverse event. Patients with an unclear outcome received a mailed questionnaire or were contacted by telephone to determine long-term
sequelae.

RESULTS
Seven serious adverse events were identified: epidural abscess \([n = 1; \text{incidence } 1 : 7273 (0.014\%, 95\% \text{ confidence interval, CI, } 0 \text{ to } 0.08\%)]\), persistent neurological damage \([n = 1; \text{incidence } 1 : 7273 (0.014\%, 95\% \text{ CI, } 0 \text{ to } 0.08\%)]\), cardiac arrest \([n = 1; \text{incidence } 1 : 7273 (0.014\%, 95\% \text{ CI, } 0 \text{ to } 0.08\%)]\) and catheter breakage leaving a catheter fragment in situ \([n = 4; \text{incidence } 1 : 1818 (0.055\%, 95\% \text{ CI, } 0.01 \text{ to } 0.14\%)]\). Apart from the one patient with persistent neurologic deficit, the patients with serious adverse events associated with thoracic epidural analgesia in our cohort suffered no long-term consequences.

CONCLUSION
In our single-centre study of thoracic epidural analgesia, serious adverse events occurred in 0.1\% cases \((1 : 1000)\), whereas long-term outcome was compromised in 0.014\% \((1.4 : 10 \, 000)\) which is similar to the serious adverse event rates and outcomes reported in the current literature.