

Anesthesia Quality Institute Closed Claims Database Review 2011 through 2021 for Epidural Steroid Complications

To THE EDITOR:

Interventional pain management continues to expand in the United States with an increase in transforaminal lumbar epidurals (1). The Anesthesia Quality Institute (under the American Society of Anesthesiologists) has maintained a closed claims database to study anesthesia related injuries to improve patient safety. The database was started in 1985 and contained over 8,954 claims in 2011 (2). Claims for surgical anesthesia have decreased over the years and claims for acute pain, obstetric anesthesia, and chronic pain management have increased (2). Epidural steroid injections can provide relief for radicular symptoms and are the most common procedure performed in interventional pain clinics with injections rates quadrupling in the 1990s (3). An estimated 9 million epidural steroid injections are performed on an annual basis (4).

Closed claims database reviews have provided insight into the number of complications experienced by patients undergoing anesthesia in the United States. The most common complications in 2011 were death (26%), nerve injury (22%), and permanent brain damage (9%) (2). As epidural steroid injections have increased in volume the incidence of complications would have expected to show an increase. In order to determine the rate of serious adverse events following epidural steroid injections we queried the AQI Closed Claims Database from 2011 through 2021. Due to COVID-19, reviewers had not had access to any malpractice insurance companies in over 2 years with the last year of data collection being 2019 (reflecting claims closed in 2018). Too few claims for events from 2014 or later had been settled, collected and entered in the database as of this writing. Given those issues, data was available for 2011, 2012 and 2013.

Out of 21 claims for epidural steroid injections neurologic injury accounted for 53% of the claims followed by infection (33%) and cardiac arrest (14%) from 2011 through 2013. Adverse sentinel events numbered 21 out of which 29% were for permanent nerve dam-

age with a 5% mortality reported. Neurologic loss related to epidural steroid injections numbered 10, with 50% being spinal cord trauma, 20% epidural hematoma and 30% infection/abscess. The breakdown according to epidural steroid level of injection was 50% cervical, 30% thoracic and 20% lumbar, once more showing that more complications are noted for cervical epidural steroid injections. Breakdown into use of particulate vs nonparticulate steroid and transforaminal vs nontransforaminal approaches was not provided in this dataset. Compared to an annual estimate of 9 million epidural steroid injections, 21 claims were noted over the 3-year period. Averaged out, this would approximate 7 complications a year with an incidence estimated at 0.000078% or 1 in 780,000. Serious neurologic injury occurred at an incidence of 0.000033% or 1 in 330,000.

From our review of the AQI closed claims database from 2011 through 2013 for epidural steroid complications, we are seeing a slight decline in the incidence of events over that reported in the past. Recent guidelines on restriction of deep sedation, use of nonparticulate steroid, avoidance of injection in concordance with anticoagulation, and use of image guidance in performance of epidural steroid injections may have contributed to a reduction in the number of closed claims noted over the 3-year period (5). Further analysis of trends will be necessary to assist with identifying trends as AQI closed claims database collection continues post COVID-19. Neurologic complications are rare, but it is imperative not to become complacent and follow published guidelines in the performance of epidural steroid injections (6). When neurologic complications occur, even though rare, they are of significant consequence.

Naeem Haider, MD

Department of Anesthesiology, Division Chief Interventional Pain, University of Vermont Health Network, South Burlington, VT

E-mail: naeem.haider@uvmhealth.org

REFERENCES

1. Manchikanti L, Sanapati MR, Soin A, et al. An updated analysis of utilization of epidural procedures in managing chronic pain in the medicare population from 2000 to 2018. *Pain Physician* 2020; 23:111-126.
2. Metzner J, Posner KL, Lam MS, Domino KB. Closed claims' analysis. *Best Pract Res Clin Anaesthesiol* 2011; 25:263-276.
3. Wilkinson IM, Cohen SP. Epidural steroid injections. *Curr Pain Headache Rep* 2012; 16:50-59.
4. Cohen SP, Greuber E, Vought K, Lissin D. Safety of epidural steroid injections for lumbosacral radicular pain: Unmet medical need. *Clin J Pain* 2021; 37:707-717.
5. Rathmell JP, Benzon HT, Dreyfuss P, et al. Safeguards to prevent neurologic complications after epidural steroid injections: Consensus opinions from a multidisciplinary working group and national organizations. *Anesthesiology* 2015; 122:974-984.
6. Gilligan C, Rathmell J. Not a single spinal cord injury due to direct needle trauma in over 1.3 million epidural steroid injections. *Reg Anesth Pain Med* 2022; 47:140.