INADVERTENT DURAL PUNCTURE IN INTERVENTIONAL PAIN MANAGEMENT

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PRESENTATION OF CASE

A 36-year-old female patient presented with low backache radiating to right lower limb since one month was posted for epidural steroid injection. On examination she was moderately built, she had no history of any chronic illness. Her laboratory investigations and ECG were unremarkable; she was taken as American Society of Anesthesiologists Grade I.

After left forearm venoclysis, patient was loaded with Ringer lactate of 5 mL/kg body weight. Her vital parameters were blood pressure (130/80 mmHg), heart rate (80/min) and peripheral oxygen saturation (99%). Patient was placed in right lateral position; lumbar region was sterilised with antiseptic solution and infiltration was done with 2% lidocaine (2 mL). Epidural puncture was performed in L₃ - L₄ with 18-g Tuohy needle using loss of resistance to air technique. Since no CSF reflux was observed at loss of resistance, hanging drop test was done. 10 mL 1% lignocaine along with 2 mL methylprednisolone 80 mg was injected into the epidural space after repeatedly checking for subarachnoid puncture.

There was no complaint during administration of epidural injection and patient was turned to the supine position. Five minutes later, patient complained of numbness in both legs along with a fall in heart rate (48 bpm) and blood pressure (90/50 mmHg) and 10 minutes later there was sensory loss upto T₆ and motor block till T₈ levels, thus alerting us that the drug has accidentally passed into the subarachnoid space. Resuscitative measures were taken to treat the complication. Infusion of Ringer's lactate was increased and 0.6 mg atropine and 12 mg mephentermine were administered. Patient showed improvement in heart rate and blood pressure.

Recovery from motor and sensory block occurred in approximately 60 minutes, and the patient was then shifted to post-operative ward for further observation; hydration was maintained till evening, after which patient was ambulated and able to walk normally. Patient was followed for three months. She did not have any neurological sequel.

DIFFERENTIAL DIAGNOSIS

Epidural steroid injections are a common treatment option for many forms of low back problems since 1952 and still an

integral part of the non-surgical management of sciatica and low back pain. We report a rare case of inadvertent injection of steroid into subarachnoid space. A female aged 36 yrs. with American Society of Anaesthetists Grade I was scheduled for epidural steroid injection. The patient was explained about the procedure and informed consent was obtained. The patient was taken up in the operation theatre, and baseline pulse and blood pressure were noted as 80/min and 130/80 mmHg respectively. Epidural steroid injection of 10 mL (Inj. Methylprednisolone in 1% lignocaine) was given after testing negative for aspiration. Three minutes after the injection, patient complained of numbness in both legs and sensory and motor loss was detected. She developed bradycardia and hypotension immediately, which was treated with vasopressors and intravenous fluids. She recovered after 1 hour.

DISCUSSION OF MANAGEMENT

Several pain centres use the association of steroids and local anaesthetics through epidural blocks to treat pain related to intervertebral disks, to avoid risk of complications with surgical procedures.¹ By definition, an interlaminar injection is an approach to the dorsal epidural space going through the space between the lamina of the vertebrae.

The epidural space surrounds the dural sac and is bounded by the posterior longitudinal ligament anteriorly, the ligamentum flavum and the periosteum of the laminae posteriorly, and the pedicles of the spinal column and the intervertebral foramina containing their neural elements laterally. The space communicates freely with the paravertebral space through the intervertebral foramina. The epidural space contains loose areolar connective tissue, semi-liquid fat, lymphatics, arteries, an extensive plexus of veins and the spinal nerve roots as they exit the dural sac and pass through the intervertebral foramina.²⁻⁴

S. Maria D'Angela Vanni also reported a case of accidental subarachnoid steroid injection without any sequelae.⁵ Preservatives in steroid medication leads to arachnoiditis, when the medication is accidentally injected into the spinal fluid. Fluoroscopic (x-ray) guidance is useful with spinal injections, as it confirms needle placement outside the spinal fluid and allows for safe injection.

A review of Medicare insurance claims carried out in 2001 indicated a procedure rate of 26.5 per 1000 nationwide among Medicare recipients 65 and older.⁶ Two cases of subarachnoid injections were reported with caudal epidural even with fluoroscopic guidance.⁷

The rate of serious complications resulting from these procedures is impossible to estimate due to lack of reporting. The ASA Closed Claims Project (US) indicated that epidural steroid injections accounted for 40% of all claims involving pain management cases that occurred between 1970 and 1999.⁹ Fourteen cases of spinal cord injury were reported, of which six resulted in paraplegia and one in quadriplegia.

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Given the potential for serious complications following epidural steroid injections, it is important that the procedure be avoided for patients who are unlikely to respond such as those with purely axial back pain, neural claudication and non-radicular sources of back and leg pain.⁸

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