

[2003 Fall A11] Spread of the contrast during caudal injection in elderly patients with spinal stenosis

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Introduction: Caudal epidural injection is a widely used approach for delivery of steroids into the epidural space for symptomatic treatment of spinal stenosis (1). The controversy surrounds the volume of injectate that can insure spread of the solution to the targeted structure with relation to the patient's age (2,3,4). This study was designed to evaluate epidural spread of the dye into the lumbo-sacral epidural space in elderly patients with symptomatic spinal stenosis during caudal injection.

Materials and Methods: The study is based on analysis of X-ray films and medical records of 26 consecutive patients who received caudal epidural steroid injection for treatment of symptomatic spinal stenosis. The patients were 65 and older at the time of the injection. Patients who previously had lumbar spine surgery did not meet the criteria and were not enrolled. In five patients the position of the tip of the needle was below the S3 body and their X-ray films were excluded from the final analysis. Twenty one patients met the following criteria: they were 65 and older, they received caudal epidural injection for the treatment of symptomatic spinal stenosis, and it was technically possible to position the tip of 22-gauge spinal needle in the sacral epidural space midline at the S3 level.

Caudal injection was performed with the patient in prone position. A 22-gauge 3 1/2-inch Quincke spinal needle was advanced in the sacral canal under fluoroscopy guidance; its tip was positioned midline at the S3 level (Figure A). Three ml of water-soluble non-ionic contrast was injected for the confirmation of correct needle placement. X-ray films were examined for the spread of the dye in lateral, antero-posterior, and cephalic directions.

Results: There were 7 males and 14 females average age of 76 years old and had an average BMI of 26. The dye reaches the level S1 vertebral body in 100%, and level L5-S1 intervertebral disc in 84% of the injections (Figure B). Three ml of the dye spread bilaterally in 74% (Figure C). In 16% of the patients the contrast spread into the predominantly anterior epidural space.

Conclusion: Three ml of the injectate introduced through the needle positioned at the S3 level has an 85% chance to reach the level of L5-S1 intervertebral disc in elderly patients with symptomatic spinal stenosis. To insure delivery of the injectate into epidural space caudal injection has to be performed under fluoroscopic guidance. The position of the tip of the needle midline at S3 level helps to minimize leakage of the solution through lower sacral openings.

References:

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View Image 1

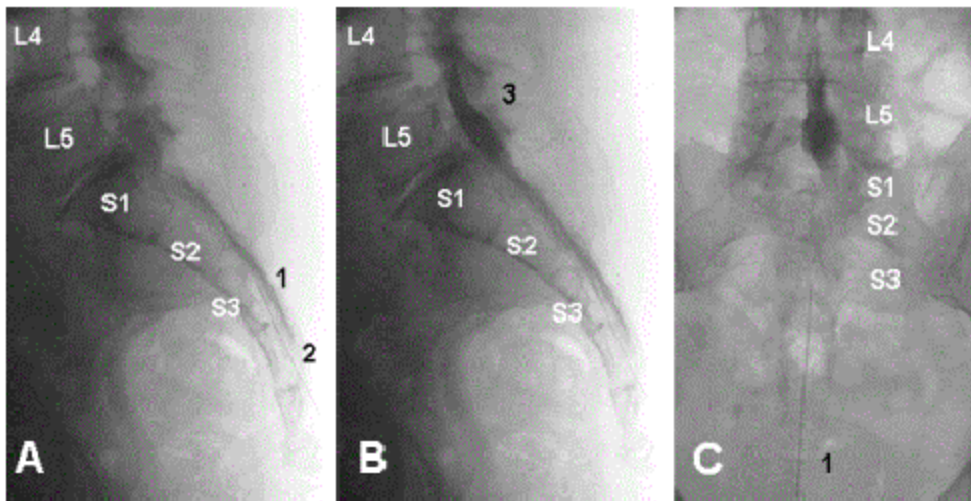


Figure. A – lateral view; 1 – tip of the needle; 2 – sacral opening. B – lateral view after injection of 3 ml of the contrast; 3 – contrast in lumbar epidural space. C – antero-posterior view.

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