

FDA Drug Safety Communication: FDA requires label changes to warn of rare but serious neurologic problems after epidural corticosteroid injections for pain

Safety Announcement

[4-23-2014] The U.S. Food and Drug Administration (FDA) is warning that injection of corticosteroids into the epidural space of the spine may result in rare but serious adverse events, including loss of vision, stroke, paralysis, and death. The injections are given to treat neck and back pain, and radiating pain in the arms and legs. We are requiring the addition of a *Warning* to the drug labels of injectable corticosteroids to describe these risks. Patients should discuss the benefits and risks of epidural corticosteroid injections with their health care professionals, along with the benefits and risks associated with other possible treatments.

Injectable corticosteroids are commonly used to reduce swelling or inflammation. Injecting corticosteroids into the epidural space of the spine has been a widespread practice for many decades; however, the effectiveness and safety of the drugs for this use have not been established, and FDA has not approved corticosteroids for such use. We started investigating this safety issue when we became aware of medical professionals' concerns about epidural corticosteroid injections and the risk of serious neurologic adverse events.¹ This concern prompted us to review cases in the FDA Adverse Event Reporting System (FAERS) database and in the medical literature (see Data Summary).²⁻¹⁶

To raise awareness of the risks of epidural corticosteroid injections in the medical community, [FDA's Safe Use Initiative](#) convened a panel of experts, including pain management experts to help define the techniques for such injections which would reduce preventable harm. The expert panel's recommendations will be released when they are finalized.

As part of FDA's ongoing effort to investigate this issue, we plan to convene an Advisory Committee meeting of external experts in late 2014 to discuss the benefits and risks of epidural corticosteroid injections and to determine if further FDA actions are needed.

Injectable corticosteroids include methylprednisolone, hydrocortisone, triamcinolone, betamethasone, and dexamethasone. This safety issue is unrelated to the contamination of compounded corticosteroid injection products reported in 2012.

Facts about corticosteroids

- A class of drugs commonly used to reduce swelling or inflammation
- Injectable corticosteroids include methylprednisolone, hydrocortisone, triamcinolone, betamethasone, and dexamethasone

- Corticosteroids are not approved by FDA for injection into the epidural space of the spine.

Additional Information for Patients

- Rare but serious problems have occurred after injection of corticosteroids into the epidural space of the spine to treat neck and back pain, and radiating pain in the arms and legs. These serious problems include loss of vision, stroke, paralysis, and death.
- The effectiveness and safety of injection of corticosteroids into the epidural space of the spine have not been established, and FDA has not approved corticosteroids for this use.
- Discuss the benefits and risks of epidural corticosteroid injections with your health care professional, along with the benefits and risks associated with other possible treatments.
- Seek emergency medical attention immediately if you experience any unusual symptoms after receiving an epidural corticosteroid injection, such as loss of vision or vision changes; tingling in your arms or legs; sudden weakness or numbness of your face, arm, or leg on one or both sides of the body; dizziness; severe headache; or seizures.
- Report any side effects from epidural corticosteroid injections to the FDA MedWatch program, using the information in the "Contact FDA" box at the bottom of this page.

Additional Information for Health Care Professionals

- Rare but serious neurologic adverse events have been reported with epidural corticosteroid injections, including spinal cord infarction, paraplegia, quadriplegia, cortical blindness, stroke, and death.
- These serious neurologic events have been reported with and without the use of fluoroscopy.
- The effectiveness and safety of epidural administration of corticosteroids have not been established, and FDA has not approved corticosteroids for this use.
- Discuss with patients the benefits and risks of epidural corticosteroid injections and other possible treatments.
- Counsel patients to seek emergency medical attention immediately if they experience symptoms after receiving an epidural corticosteroid injection, such as loss of vision or vision changes; tingling in their arms or legs; sudden weakness or numbness in their face, arm, or leg on one or both sides of the body; dizziness; severe headache; or seizures.
- Report adverse effects following epidural corticosteroid injections to the FDA MedWatch program, using the information in the "Contact FDA" box at the bottom of this page.

Data Summary

FDA reviewed a sampling of cases from the FDA Adverse Event Reporting System (FAERS) database, as well as cases in the medical literature of serious neurologic adverse events associated with epidural corticosteroid injections.²⁻¹⁶ Serious adverse events included death, spinal cord infarction, paraplegia, quadriplegia, cortical blindness, stroke, seizures, nerve injury, and brain edema. Many cases were temporally associated with the corticosteroid injections, with adverse events occurring within minutes to 48 hours after the corticosteroid injections. In some cases, diagnoses of neurologic adverse events

were confirmed through magnetic resonance imaging or computed tomography scan. Many patients did not recover from these reported adverse events.

References

1. Rathmell JP. Toward improving the safety of transforaminal injection. *Anesth Analg* 2009;109:8-10.
2. Kennedy DJ, Dreyfuss P, Aprill CN, Bogduk N. Paraplegia following image-guided transforaminal lumbar spine epidural steroid injection: two case reports. *Pain Med* 2009;10:1389-94.
3. Windsor RE, Storm S, Sugar R, Nagula D. Cervical transforaminal injection: review of the literature, complications, and a suggested technique. *Pain Physician* 2003;6:457-65.
4. Beckman WA, Mendez RJ, Paine GF, Mazzilli MA. Cerebellar herniation after cervical transforaminal epidural injection. *Reg Anesth Pain Med* 2006;31:282-5.
5. Ludwig MA, Burns SP. Spinal cord infarction following cervical transforaminal epidural injection: a case report. *Spine* 2005;30:E266-8.
6. Somayaji HS, Saifuddin A, Casey AT, Briggs TW. Spinal cord infarction following therapeutic computed tomography-guided left L2 nerve root injection. *Spine* 2005;30:E106-8.
7. Tripathi M, Nath SS, Gupta RK. Paraplegia after intracord injection during attempted epidural steroid injection in an awake-patient. *Anesth Analg* 2005;101:1209-11.
8. Bose B. Quadriplegia following cervical epidural steroid injections: case report and review of the literature. *Spine J* 2005;5:558-63.
9. Tiso RL, Cutler T, Catania JA, Whalen K. Adverse central nervous system sequelae after selective transforaminal block: the role of corticosteroids. *Spine J* 2004;4:468-74.
10. Edlow BL, Wainger BJ, Frosch MP, Copen WA, Rathmell JP, Rost NS. Posterior circulation stroke after C1-C2 intraarticular facet steroid injection: evidence for diffuse microvascular injury. *Anesthesiology* 2010;112:1532-5.
11. Meyer HJ, Monticelli F, Kiesslich J. Fatal embolism of the anterior spinal artery after local cervical analgetic infiltration. *Forensic Sci Int* 2005;149:115-9.
12. Suresh S, Berman J, Connell DA. Cerebellar and brainstem infarction as a complication of CT-guided transforaminal cervical nerve root block. *Skeletal Radiol* 2007;36:449-52.
13. Deshpande DM, Krishnan C, Kerr DA. Transverse myelitis after lumbar steroid injection in a patient with Behcet's disease. *Spinal Cord* 2005;43:735-7.
14. Lyders EM1, Morris PP. A case of spinal cord infarction following lumbar transforaminal epidural steroid injection: MR imaging and angiographic findings. *AJNR Am J Neuroradiol* 2009;30:1691-3.
15. Popescu A, Lu A, Gardner K. An unusual mechanism for spinal cord infarction – case report. *Ann Neurol* 2007;62(Suppl 11):32 abstr.
16. Ziai WC1, Ardelt AA, Llinas RH. Brainstem stroke following uncomplicated cervical epidural steroid injection. *Arch Neurol* 2006;63:1643-6.
17. Cook TM, Counsell D, Wildsmith JA; Royal College of Anaesthetists Third National Audit Project. Major complications of central neuraxial block: report on the Third National Audit Project of the Royal College of Anaesthetists. *Br J Anaesth* 2009;102:179-90.