CASE REPORT

Abnormal Uterine Bleeding after Epidural Corticosteroid Injection: A Case Report

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Abstract

Aim: To draw attention to the uncommon consequences that can arise after standard procedures like epidural steroid injections.

Background: Epidural steroid injections have become a standard treatment modality for the management of chronic lumbar radiculopathy. They have shown good efficacy in relieving low back and radicular pain, but adverse reactions have also been reported. Abnormal vaginal bleeding is one such adverse reaction which needs to be treated on priority.

Case description: A 42-year-old female patient came with chronic lower back pain and left lower limb radicular pain with MRI showing left paracentral disk protrusion at L4–5, with narrowing of neural foramen and L4 nerve root indentation. She was treated with left L4–5 transforaminal epidural steroid injection under fluoroscopic guidance. She had good pain relief after the procedure, but after one week, the patient experienced unusually heavy and painful menstrual bleeding which was not her regular menstrual cycle bleeding. The bleeding continued for 7 days and stopped without any treatment. After 10 days severe bleeding started again. She was given oral hormonal pills by the gynecologist, and bleeding was controlled in 3–4 days. In the next menstrual cycle, she had abnormal heavy bleeding and the gynecologist put her on medications for a month. After this episode, her menstrual cycle was totally normal and there were no complaints of bleeding or radicular pain on subsequent monthly follow-ups for next 4 months.

Conclusion: We postulate that the introduction of exogenous corticosteroids directly into the neuraxial space can initiate a negative feedback loop on the hypothalamic–pituitary–ovarian axis. This may lead to decreased levels of circulating hormones, resulting in episodes of abnormal uterine bleeding in female patients.

Clinical significance: Reporting such cases will make pain physicians more aware of uncommon consequences after standard procedures and start informing women that abnormal vaginal bleeding is a potential risk following procedures with corticosteroids.

Keywords: Bleeding, Epidural steroid, Hypothalamus, Menorrhagia, Transforaminal.

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Background

Prolapsed intervertebral disc (PID) with back pain and radicular pain is becoming a prevalent chronic pain problem. Using epidural corticosteroid injections has become progressively more common to treat this condition. The use of corticosteroids in epidural injections started in the early 1950s. Effects of corticosteroids on the endocrine systems have begun to be studied during the past 20 years.[1]

It has been postulated that steroids delivered to the epidural space could diffuse into the plasma and eventually cause modulation of the hypothalamic–pituitary axis.[2]

Effects of neuraxial delivery of triamcinolone on dogs was studied in the early 1980s, by Gorski et al. The study group received epidural steroids and demonstrated a decreased ability to mount an endocrine response to an induced hypoglycemic stress. The control group was able to mount a normal response to the same induced stress.[3]

The role of hypothalamic–pituitary–adrenal axis was studied when the side effects of neuraxial steroid delivery on the endocrine system were discussed. There is limited or no documentation in the current medical literature that reports an effect of epidural corticosteroid injections (ESIs) on the female hormonal system.

Case Description

A 42-year-old female patient came with chronic low back pain and left lower limb radicular pain. She was having these symptoms for the last 2 years with increase in severity over the last 2 months. There was a history of lifting weights and pain started after that. She had a severe left-sided lower limb pain on standing and walking and there was no pain at rest. Her daily routine activities were restricted. Other conservative treatment like oral analgesics and physiotherapy were ineffective.

A lumbar magnetic resonance imaging (MRI) revealed left paracentral disc protrusions at L4–5, which narrowed the neural foramen and left L4 nerve root indentation.

A transforaminal epidural steroid injection was planned to control pain and improve lifestyle.

The patient was in the prone position with the IV line secured and parts painted and draped. The needle entry point was marked with the help of intermittent fluoroscopy in the left oblique view at the L4–5 level. Local anesthesia was given using a 24 G needle with 1% lignocaine at the marked entry point. A 22 G spinal needle

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was introduced through the entry point to reach the foramen under fluoroscopic guidance with both oblique and lateral views. The correct placement of the needle tip was confirmed with the visualization of radio-opaque dye spread in the epidural space. Forty milligrams of triamcinolone and 1 mL of 1% lignocaine was given separately (total volume 3 mL). The patient tolerated the procedure well and had no post-procedure complaints. Then the patient was put on antibiotics and analgesics with gabapentin.

On the follow-up after 5 days, the patient reported significant reduction in her pain levels. She was put on gabapentin for 15 days and advised regular activities with modification of lifestyle.

On the 10th day, the patient came with complaints of severe menstrual bleeding for the past 3 days. This was not her regular menstrual cycle bleeding which continued for 7 days and stopped without any treatment.

After 10 more days, she again reported severe bleeding but radicular pain was totally controlled by that time. She was referred to a gynecologist for further treatment. She was given oral hormonal pills by the gynecologist and the bleeding was controlled in 3–4 days.

In the next menstrual cycle she had an abnormal heavy bleeding but was less severe than the previous one. But the bleeding continued for 7 days which was 2 days more than her normal menstrual cycle. She was put on hormonal medications for a month by the gynecologist.

After this episode, the menstrual cycle was totally normal and there were no complaints of bleeding or radicular pain on subsequent monthly follow-ups for the next 4 months.

Discussion

Excessive menstrual bleeding is most commonly caused by anovulation after normal proliferation of the endometrium. Anovulation can result from a variety of causes like normal estrogen spike but no increase in progesterone levels.[4]

Disruption of any step in the female hormone cascade is another cause of menorrhagia and menstrual abnormalities. A decrease in luteinizing hormone and follicular stimulating hormone levels will ultimately lead to hypogonadism. It has been shown clinically that menorrhagia often presents during the early stages of this process and persists until the consequences of complete hypogonadism present. We hypothesize that this is the scenario that must have led to menstrual abnormalities in our patient.

A relationship between neuraxial corticosteroid delivery and the hypothalamic–pituitary–adrenal axis has been confirmed.[5] The effect of epidural corticosteroids on the female hormonal system is not documented, but menstrual disturbances have been postulated to be a possible side effect of neuraxial steroid administration.[1]

Neuraxial corticosteroid delivery has been shown to initiate a negative feedback loop that depresses adrenal production of endogenous corticosteroids. Studies of the adrenal arm of this axis have documented that this depression can last for as long as 3 weeks after epidural injection.[6] The corticosteroid injection might initiate a similar response in the hypothalamic–ovarian axis. Because anovulation leading to menorrhagia results from the lack of a progesterone spike, it is reasonable to speculate that excess corticosteroid can initiate a negative feedback loop, leading to this lack of hormone release.

In one study of 181 lumbar epidural injections, a 2.2% incidence of adrenal suppression leading to physical manifestations of Cushing's syndrome was noted.[1] This has established the relationship between neuraxial corticosteroid delivery and suppression of the hypothalamic–pituitary–adrenal axis.

There is a possibility that her menstrual disturbances were a complication of her other uterine or hormonal issues which may have surfaced now. But only two episodes of menorrhagia and normal menstrual cycles thereafter prove the association of these symptoms to epidural steroid injection.

With the increasing prevalence of epidural injection and the age of the involved patients decreasing, it is important for physicians who perform epidural steroid injections to recognize abnormal uterine bleeding as a potential complication of interventional pain management. This should be included in the discussion of risks and benefits before any interventional procedure in spine with steroid injection.

Conclusion

We postulate that the introduction of exogenous corticosteroids directly into the neuraxial space can initiate a negative feedback loop on the hypothalamic–pituitary–ovarian axis. This may lead to decreased levels of circulating hormones, resulting in episodes of abnormal uterine bleeding in female patients.

Clinical Significance

Reporting such cases will make pain physicians more aware of uncommon consequences after standard procedures and start informing women that abnormal vaginal bleeding is a potential risk following procedures with corticosteroids.

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