



## Case Presentation

# Generalized Pruritus as an Unusual Side Effect After Epidural Injection With Dexamethasone

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## Abstract

A 51-year-old man with lumbar radiculopathy underwent a right L5 transforaminal epidural steroid injection with dexamethasone. One minute after the injection, the patient experienced severe pruritus and burning, which began in the groin and then spread throughout his body. The symptoms resolved completely after 1 minute, and the patient was discharged without any complications. Although there are a small number of publications reporting perineal pruritus after intravenous administration of dexamethasone, to our knowledge there is no report of a generalized reaction to an epidural dexamethasone injection such as the one described here.

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## Introduction

Transforaminal epidural steroid injection (TFESI) is a well-established and widely used intervention to treat radicular pain [1-6]. Even though TFESI is known to be a safe technique when performed following the currently available guidelines [7-9], case reports of side effects during or after TFESI have been published. These side effects include dural puncture [10,11], diskitis after inadvertent intradiskal needle insertion [12,13], as well as major vascular complications, causing spinal cord [14-26] and cerebral [16,27-29] infarctions. The possible reasons for the occurrence of these complications are technical factors leading to unrecognized intravascular injections [12,18,19,30] and the use of particulate steroids such as betamethasone sodium phosphate, methylprednisolone, and triamcinolone acetonide [12,29-32].

Dexamethasone, on the other hand, is a non-particulate steroid, and therefore it is currently considered the drug of choice in TFESI [29,32-34]. As it has been widely used and studied since the 1950s the side effects of dexamethasone are well known, when administered intravenously or orally, to vary from headache and nausea, to allergic reactions and, in rare cases, anaphylaxis [35,36]. To our knowledge, there is no study published regarding side effects of dexamethasone administered in epidural steroid injections.

## Case Presentation

A 51-year-old man of white ethnicity with a history of left L5 laminectomy presented with a 1-year-long lateral right thigh and calf pain with 3 weeks of severe progression accompanied by right foot weakness. The pain was exacerbated by standing and mitigated by lying down. On examination, significant right hip abduction and ankle dorsiflexion weakness were noted. After magnetic resonance imaging positive for right L5 nerve impingement due to a right central and posterolateral disk herniation with associated right foraminal narrowing at L5 to S1, the patient underwent a right L5 TFESI. The procedure was performed without the use of contrast dye, because the patient had a history of shortness of breath and respiratory distress after receiving intravenous (IV) pyelogram.

The injection was performed under fluoroscopic guidance without sedation, with the patient in the prone position. The area was cleansed using chlora preparation, and a sterile drape was placed in the proper manner. Vital signs were monitored throughout the procedure. An oblique view was obtained to visualize the right L5 foramen. The patient's skin was anesthetized using 0.5 mL of lidocaine 1% using a subcutaneous needle. A 22-gauge, 3.5-inch needle was introduced under fluoroscopic guidance into the right L5 neural foramen. Its positioning was confirmed at the

6 o'clock position caudal to the L5 pedicle under oblique and anterior–posterior viewing. The patient felt a sharp pain down the lateral aspect of his right thigh and calf when the needle reached the final position. After negative aspiration, 1 mL of lidocaine 1% was injected for testing the possibility of an intravascular needle placement. No metallic taste or neural signs in the contralateral lower extremity were reported after 1 minute by the patient, suggestive of negative vascular or intradural injection. During the lidocaine test, the patient again noted pain down his right leg.

Preservative-free dexamethasone, 2 mL (10 mg/mL), was then injected slowly over a 1-minute duration. One minute after the dexamethasone injection, the patient experienced severe pruritus and a burning sensation in the groin. Shortly thereafter, the sensation became widespread over his entire body. During this period a flushing reaction could be noted on the patient's face, shoulders, and chest. The reaction episode lasted for a little more than 1 minute. A slight increase in blood pressure (from 120/80 to 140/90 mm Hg) and heart rate (from 85 to 102 beats/min) were observed, but these were transient and resolved completely. After 1 hour of observation, the patient was discharged without complications.

On follow-up visit after 6 weeks, the patient did not report any other complications after the procedure. His pain improved, he started physical therapy and resumed his normal daily activities.

## Discussion

We present a patient who developed an adverse effect of an epidural injection of dexamethasone that, to our knowledge, was not previously described with this procedure. He experienced pruritus that started in the perineal and groin area and rapidly spread throughout his body. This reaction appeared within a minute after the transforaminal injection of dexamethasone in the epidural space at the L5 level and lasted for little more than 1 minute.

Pruritus after IV injection of dexamethasone is a known side effect that has been described since 1972 [35]. Headache, nausea, vomiting, hyperglycemia, and depression of plasma cortisol levels for 3 days were also described.

During the 1980s, there were further reports on perineal irritation. Symptoms of severe pruritus, tingling, pricking, itching, squeezing, and burning sensation in the perineum or genital area, starting rapidly, and never lasting less than 30 seconds or more than 6 minutes were described among oncology [37-39] and odontology [40] patients. All of them received IV dexamethasone in a dose that ranged from 8 to 100 mg. Similar reactions had been reported since 1962 with IV infusion of other steroid drugs such as prednisolone and hydrocortisone [41].

In 1992, Klygis [42] provided an interesting contribution to the topic, reporting perineal irritation in patients after receiving an IV bolus of dexamethasone in an emergency care setting after traumatic brain injury. Interestingly, the side effect was also observed in semi-conscious patients, ruling out the possibility of a suggestible response.

In the 2000s, the discussion arose in the anesthesiology field [43-45]. From 3% to 65% of patients receiving IV dexamethasone developed pruritus described in the vulva, vagina, anus, scrotum, and penis, which started after 20 to 40 seconds and lasted for 20 to 40 seconds. Some of those reports also suggested a higher incidence of this side effect in women [39,44]. A slower IV infusion speed is advocated by several authors to prevent the occurrence of perineal pruritus [35,38,43,46]. Perineal pruritus after IV dexamethasone was also documented in Japanese [47] and Pakistani [48] populations, which are ethnicities different from that of the patient (white Italian-American) of the present case report.

Perineal pruritus after IV administration of dexamethasone appears to be a rather common side effect and is possibly underreported. Individuals of different ethnicities may experience it, with some evidence that females are more susceptible to it. Its occurrence is noted during or immediately after dexamethasone injection, and lasts from seconds to minutes. The infusion speed and dilution of dexamethasone seem to be elements in the occurrence of pruritus. Patients subjected to a slower infusion speed and higher dilution are less prone to develop the adverse effect [49]. In the case of epidural injections, a lower speed can be implemented, although a higher dilution is inadvisable, as it may jeopardize the effectiveness of the procedure.

The mechanism that leads to perineal pruritus after IV dexamethasone is still not completely elucidated. Some authors hypothesize that the phosphate ester of the steroid may act as, or stimulate, a neurotransmitter causing such a reaction [39,43,49]. In the particular case of epidural injection of dexamethasone, the proximity of the neural axis may represent a facilitator to the neurotransmitter mediated process that leads to perineal irritation. It is possible that this proximity to the spinal cord might be responsible for the more intense allergic reaction observed with the procedure as compared to that associated with IV infusion. Given that it is an allergic reaction, the administration of antihistaminic medication before epidural procedures for patients with a prior history of allergic reactions could be a valid method to avoid such discomfort.

In the literature reviewed for this article, we did not find a single report of perineal pruritus after epidural injections with dexamethasone. Furthermore, there were also no reports of a generalized pruritic reaction after dexamethasone being injected through any route.

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