American Journal of Case Reports

e-ISSN 1941-5923
© Am J Case Rep, 2018; 19: 397-399
DOI: 10.12659/AJCR.908536

Received: 2017.12.14
Accepted: 2018.01.27
Published: 2018.04.04

Persistent Hiccups After Cervical Epidural Steroid Injection

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Patient: Male, 60
Final Diagnosis: Persistent hiccups
Symptoms: Hiccups
Medication: —
Clinical Procedure: Cervical epidural steroid injection
Specialty: Anesthesiology

Objective: Unusual or unexpected effect of treatment

Background: Hiccup is a rare complication after a cervical epidural steroid injection used in the treatment of chronic pain. A few studies have reported on the physiological and pharmacological aspects of hiccups after epidural steroid injection and there have been some case reports published. Our presented case report provides insight into the side effect of hiccups that can occur in association with cervical epidural analgesia, and will help inform anesthesiologist about this unpleasant complication.

Case Report: We present a rare case of persistent hiccups after a cervical epidural steroid injection in a 60-year-old male patient with chronic pain due to disc protrusion in C3–C7.

Conclusions: Persistent hiccups after epidural injection is a serious complication. As the exact mechanism of hiccups is not yet known, regardless the level of epidural or the mixture of drugs used, and the incident of hiccups after epidural injection is not well-reported, we think that the etiology and the incident rate must be further evaluated.

MeSH Keywords: Anesthetics, Local • Hiccup • Injections, Epidural • Steroids

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/908536

Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]

Background

Hiccups are a common condition experienced by most people at some moment in their life and usually are short lived and need no treatment, but may become persistent and unpleasant in some patients [1].

Although corticosteroids are a drug group that is associated with hiccups, there is not sufficient proof that this medication can be considered a cause of hiccups [2]. The etiology and mechanism of hiccups are not clearly understood, and there have been more than 100 causes identified [3,4]. Hiccups is usually a self-limited disorder and usually stop within a few minutes to a few hours. In most cases, it is a benign condition and causes no harm to the patient. Hiccups can be classified according to their duration: persistent hiccups which last for more than 48 hours, and intractable hiccups which last for more than 2 months; and they are associated with sleep disturbances, fatigue, and kidney failure [5].

As epidural steroid injections are considered a safe procedure and commonly used to treat radicular and discogenic pain, and here we describe a complication of persistent hiccups after cervical epidural steroid injection and understand the underlying cause.

Case Report

A 60-year-old male patient, who was a smoker with unremarkable medical history, presented to the Anesthesia Department for assessment and treatment of chronic cervical pain that was not responding to analgesics and physiotherapy. On physical examination, he was found to have neck pain and right-sided upper extremity pain and numbness. An MRI scan revealed C3–C5 focal central discs protrusion, C5–C7 mild diffuse discs bulges with focal central discs protrusion. A cervical steroid epidural injection was performed at the C7–T1 level, using a 16-gauge epidural Tuohy needle and hanging drop technique; 10 mL solution of 80 mg methylprednisolone and 15 mg bupivacaine was administered. The procedure was done under local anesthesia with 3 mL of 2% Xylocaine without epinephrine, with the patient in a sitting position. After approximately 3 hours, the patient started to complain of hiccups, which were mild and not associated with any other symptom. The hiccups started to increase in frequency overtime. The patient was reassured and treated with 5 mg haloperidol and 10 mg metoclopramide, every 8 hours and 300 mg gabapentin every 8 hours, but there was no improvement of his clinical condition. Five days later, the hiccups started to decrease in frequency until they were resolved completely at day 13 after the epidural injection.

Discussion

Hiccups are a common condition that occurs in normal people and are of unknown causes. Hiccups can be defined as sudden involuntary repeated contraction of the diaphragm and intercostal muscles against closed glottis. The passage of air in the opening between the vocal cords over the closed epiglottis elicits the “hic” sound during inspirations [6].

The exact mechanism of how hiccups occur is still not completely understood but it is thought to include 3 main components: an afferent limb traveling within the phrenic and vagus nerves, a central processor, and an efferent limb traveling within the phrenic nerve to the diaphragm and accessory nerves to intercostal muscles. The central processor is least understood but is located somewhere between the cervical spine and brainstem. Processing is provided by several poorly defined neurotransmitters, including gamma-aminobutyric acid (GABA) and dopamine.

There are many causes for hiccups, but no direct causes have been identified. The most common cause is due to gastrointestinal etiology, such as gastroesophageal reflux disease. In some cases, it is associated with eating fast because the person may swallow air as he or she is eating, and as a result he or she will have hiccups. Also eating too much food (especially fatty foods) or drinking too much alcohol or carbonated drinks can make a person prone to having hiccups. Other causes of hiccups not associated with the gastrointestinal canal include stroke, cancer invading the phrenic nerve, brain tumors, and renal failure; in addition, trauma to the brain, meningitis, and encephalitis may also cause hiccups. Hiccups that result from damage to the vagus or phrenic nerve may last a long time. Hiccups also can be a side effect of medications that cause acid reflux [7].

The volume effect of solution being injected into an epidural space may have a role in the mechanism of hiccups by altering the balance of the cerebrospinal fluid volume; the hiccups may occur as the result of dural sac compression [8].

Local anesthetic agents used in epidural injections have never been proven to be a cause of hiccups, although 3 cases have been reported of hiccups that developed hiccups after an epidural injection. The first case was reported by Slipman et al. [4] in which a thoracic epidural steroid mixture of betamethasone and 1% lidocaine was injected to a patient on 2 separate occasions and the patient developed persistent hiccups 15 hours and 18 hours after the first and the second injection, respectively. Slipman et al. attributed the cause of hiccups to the steroid agent in the mixture. In the second case by McAllister et al. [9], a patient multiple received epidural injections with different combinations of drugs each time. In the

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first 3 injections, the patient received a mixture of 0.08% bupivacaine and 80 mg triamcinolone in the lumber region and developed hiccups 1 hour after the injection; the hiccups persisted for 5–7 days after the procedure (for all 3 injection/occurrences). The fourth injection was a mixture of triamcinolone and normal saline and the patient did not develop hiccups. The same mixture used in the fourth injection was then used after 2 months and the patient again did not develop hiccups. But 1 year later the patient was subjected to epidural injection below T10 using a mixture of 0.0625% bupivacaine and 10 micrograms fentanyl at a rate of 3.5 mL/hour; and about 5 hours later, the patient developed hiccups.

In our patient, the epidural block was done in the cervical region at the level of C7–T1, and the patient developed hiccups 3 hours after the epidural injection, which means hiccups developed because of the epidural injection. In the previous 2 reported cases, a thoracic and a lumber case, hiccups occurred in both cases as a side effect after epidural injection despite the mixture used. So, according to our case, in which hiccups occurred in a cervical epidural injection, we can say that there is no direct association between the level of epidural injection and the development of hiccups.

Conclusions

Persistent hiccups are a serious complication of an epidural injection, and we must inform our patients who are going to have an epidural injection about this potential side effect, and if hiccups develop, we should reassure the patient that it is a benign condition and will subside spontaneously without any treatment. As long as we do not know the exact mechanism of hiccups, and it is considered a rare complication of epidural injections, we can say that there is a relationship between the procedure itself and the development of persistent hiccups despite the level of epidural or the mixture used in the injection. We do not know if the type of mixture used in an epidural injection or the physiological changes caused by the procedure itself are the cause of hiccups. But it is clear that the level of the epidural block has nothing to do with the development of hiccups.

Acknowledgments

We would like to thank our resident Dr. Marah Shtaiat for her cooperation. Special thank also to the colleagues and the anesthesia technician staff at King Abdullah University hospital for their kind cooperation and timely help.

Conflict of interest

None.

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