

EPIDURAL STEROID INJECTION: A NOVEL TREATMENT OF ABDOMINAL WALL POSTHERPETIC PSEUDOHERNIA

Stefani Wren, BA, and Houman Danesh, MD

Background: The vesicular eruptions presented in a given herpes zoster case are considered a classic hallmark symptom amongst medical professionals and their patients. However, a case of herpes zoster could present with atypical symptoms seldomly acknowledged, such as motor complications. One remarkable motor complication is that of a pseudohermia, which could present as either a painful or painless bulge in the lower abdominal region. We herein report a case of herpes zoster virus presenting with abdominal muscle paralysis and pseudohermia, which uniquely resolved within 6 days following a single epidural treatment.

Case Report: The patient is a 66-year-old White man who presented to the pain management clinic with transverse abdominis muscle paralysis, and an apparent mass of unknown origin following a recent outbreak of herpes zoster virus 10 days prior. He was treated with acyclovir when first diagnosed with herpes zoster virus, which helped with the cutaneous eruptions. The patient's unknown mass failed to recede following antiviral treatment. This mass was visually apparent and palpable. The mass was soft and irregular in shape. It moved upon palpation and would get more prominent with standing and the Valsalva maneuver. The mass was generally painless, except when performing the Valsalva maneuver. Our patient had a computed tomography scan that ruled out the possibility of the mass being a herniation. After ruling out other differential diagnoses, it was determined our patient's mass was that of a pseudohermia, a rare but documented complication of herpes zoster virus. Our patient was given an epidural steroid injection that consisted of dexamethasone, bupivacaine 0.25%, and saline for the pain from the cutaneous scarring. Our patient had 50% resolution of his transverse abdominis muscles later that same day. Within a week, our patient had complete resolution of his abdominal muscles and the mass was gone.

Conclusion: The use of an interlaminar epidural injection consisting of dexamethasone, bupivacaine 0.25%, and saline has not been reported as a possible treatment for pseudohermia. It is necessary for physicians to be aware of the complication known as pseudohermia secondary to herpes zoster virus, as well as the possibility of its treatment with this epidural injection.

Key words: Epidural injection, herpes zoster virus, pseudohermia, shingles

BACKGROUND

The vesicular eruptions presented in a given herpes zoster case are considered a classic hallmark symptom amongst medical professionals and their patients. The timeline in a progressive herpes zoster case is notable

for a series of chronologic symptomatic events: it commonly begins with burning/itching within a confined dermatome region and ends with dried-up, painful blisters normally distributed across that same region. However, a case of herpes zoster could present with

From: Mt Sinai Health System

Corresponding Author: Houman Danesh, MD, E-mail: houman.danesh@mountsinai.org

Disclaimer: There was no external funding in the preparation of this manuscript.

Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.

Accepted: 2020-11-04, Published: 2021-05-31

atypical symptoms seldomly acknowledged, such as motor complications. These symptoms are considered atypical because they have been found to occur only in a small percentage of cases with herpes zoster, with research showing occurrence varying between 3% to 6% (1-6). It has been postulated from earlier reports that the involvement of visceral nerves in a herpes zoster outbreak could lead to the motor complications that are rarely seen (4-6). One remarkable motor complication is that of a pseudohernia (1,4,7), which could present as either a painful or painless bulge in the lower abdominal region during or post herpetic onset. The pain that presents during a herpes zoster outbreak can persist for months and even years after the cutaneous eruptions have receded. This ongoing pain is known as postherpetic neuralgia (8). Postherpetic neuralgia is an example of chronic nonmalignant pain, which can be treated with the use of intrathecal and subarachnoid injections, as well as epidurals (9). The intrathecal injection is placed into the intrathecal space, which is located between the arachnoid mater and pia mater within the spinal cord and contains the cerebrospinal fluid (8). Intrathecal injections bring analgesics directly into the cerebrospinal fluid, providing a fast onset of effect, but a shorter long-term effect (9,10). Epidural injections pierce the ligamentum flava and release analgesics on the superficial surface of the dura mater (9). The nature of an epidural injection forces it to have a longer onset of effect, due to the diffusing limitation of the analgesics through the dura mater (10). Intrathecal injections have been favorably used for pain syndromes that have a more dispersed pattern of pain, whereas epidural usage is favored as a treatment for pain in a more confined or localized region (10). We herein report a case of herpes zoster presenting with abdominal muscle paralysis and pseudohernia, which uniquely resolved within 6 days following a single epidural treatment.

CASE

A 66-year-old White man presented to the pain management office with what first appeared to be a herniation. This patient came for an evaluation of a left-sided visual and palpable mass (Fig. 1).

The mass was soft and irregular in shape. It moved upon palpation and would get more prominent with standing and the Valsalva maneuver. The mass was generally painless, except when performing the Valsalva maneuver. The patient had an outbreak of

herpes zoster virus on the posterior and anterior L2-L3 distribution 10 days before presenting to the pain management clinic; he was treated with acyclovir. Our patient had no family history of and no prior history of herpes zoster virus. Along with the painful cutaneous scarring, vesicular eruptions (Figs. 2-4), and the unknown mass, the patient was also experiencing abdominal pain.

The acyclovir did help alleviate the cutaneous eruption; however, the abdominal pain persisted, muscle weakness was present, and some scarring was visible in the areas affected by the herpes zoster rash. The patient's unknown mass failed to recede following antiviral treatment.

Previously conducted abdominal computed tomography of the mass revealed no pathological processes and no herniations.

Similarly, in Yoo et al (2), 3 separate patients with herpes zoster virus had presented to the emergency room with an abdominal bulge. After various tests and scans it was concluded that each bulge was found to be a rare but documented symptom of motor complications secondary to herpes zoster virus. This motor complication was further diagnosed as a pseudohernia associated with herpes zoster. All 3 of the patients' pseudohernias resolved on their own with no treatment after several months (2).

Upon physical examination, our patient exhibited an abdominal bulge with a recent history of shingles 10 days prior. Our patient had a similar presentation to the patient in McAllister et al (11). The patient discussed in McAllister et al (11) had a soft tissue mass in the thoracic intercostal and abdominal musculature region which had motor paralysis secondary to the varicella zoster virus. The authors theorized that the mass was a portion of thoracic intercostal and abdominal musculature that had been paralyzed, resulting in a mass appearing as a bulge. At a 6-month physical examination checkup, it was found that this patient had almost complete resolution of the previous thoracic motor paralysis (10).

Similar to the procedure done in McAllister et. al, our patient was given an interlaminar epidural steroid injection in the area of the cutaneous eruptions, which was at the T11/T12 level. He was given one injection of dexamethasone, bupivacaine 0.25%, and saline. This combination of medications is typically used in neuropathic pain management with proven success in treating chronic pain (12). In fact, Lee et al (12) found that preoperative infiltration of both dexamethasone



Fig. 1. Anterior view of suspected pseudohernia on patient's left flank area.



Fig. 3. Anterior view of suspected pseudohernia on patient's left flank area.



Fig. 2. Posterior view of post-herpetic vesicular scarring at T11/T12 level.



Fig. 4. Lateral view depicting evidence of post-herpetic vesicular scarring and suspected pseudohernia at T11/T12 level.

and bupivacaine together showed a significantly better analgesic effect than did infiltration of bupivacaine or dexamethasone alone.

Later that day, our patient had 50% resolution of his transverse abdominis muscle paralysis. Six days after the

epidural injection, the patient had complete resolution of his transverse abdominis muscle and elimination of the mass. The apparent mass was a direct effect of the muscle paralysis he had experienced, consistent with findings from patients who had also experienced a pseudohernia secondary to herpes zoster virus (1-7,11,12).

DISCUSSION

Herpes zoster virus occurs after a reactivation of a dormant virus known as the varicella-zoster virus, com-

monly known as chicken pox, presenting in childhood. Herpes zoster involves the dorsal root ganglia sensory nerve fibers, which are the source of the pain that is commonly associated with herpes zoster. Along with painful bouts, herpes zoster is characterized by vesicular eruptions that span across the limited dermatome area. These eruptions begin as fluid-filled blisters that later turn into dried-out, painful scabs, as remnants of the blisters. Herpes zoster virus, also known as shingles, is a common virus affecting an estimated one in 3 persons (13). The incidence of shingles is known to be higher in the elderly (> 55 years old), in the immunocompromised, and in those originally infected prior to one year of age (14).

The painful skin rashes and blisters associated with herpes zoster is a universally recognized symptom because of its commonality amongst the patients who are diagnosed. Although rare, there have been cases of patients presenting with motor complications also associated with herpes zoster virus (1-7,11,13,14). Of these, abdominal muscle paralysis and unknown abdominal bulging have been reported. This bulging of the abdomen has been diagnosed as a pseudohernia. Typically, a pseudohernia is defined as an abdominal wall bulge that could initially be mistaken for a hernia (1-7,11,13,14). However, the pseudohernia lacks the disruption of the abdominal wall that would otherwise categorize it as a hernia, it must be approached and managed differently (1,7). Pseudohernia due to herpes zoster virus has been found to be a rare specific motor complication of herpes zoster virus and has been reported to only occur in approximately 0.17% of cases (1,2,14,15). Pseudohernia due to herpes zoster virus has also been referred to as abdominal wall postherpetic pseudohernia, herpes zoster-induced abdominal paresis, and segmental zoster abdominal paresis (2,15,16).

Of the differential diagnoses of lower abdominal wall masses, the most common abdominal wall mass would be initially assumed a hernia (11,17). In women, a possible differential diagnosis could be abdominal wall endometriosis, which is defined as a cluster of endometrial tissue lying superficial to the peritoneum, presenting with a painful mass in the pelvic region (17). Other differential diagnoses include trauma, soft tissue masses (lipoma or cyst), benign/malignant neoplasms, and abdominal muscle hematoma, which usually result from damage to the superior/inferior epigastric arteries or direct tear of rectus muscle (11,17). Further imaging would be required to diagnose and/or rule out any of

the aforementioned, as all have been noted on imaging scans. Our patient had undergone imaging, which revealed no abnormalities, and had reported no recent trauma/surgeries, thus eliminating the above differentials as possible diagnoses. Given his recent outbreak of herpes zoster virus in the dermatome area of the bulging, a postherpetic pseudohernia secondary to herpes zoster virus was the more likely diagnosis.

Much of the research on pseudohernia secondary to herpes zoster virus has found that the bulge seemingly recedes on its own within months and without any treatment or intervention (1-7,13-17). Regarding muscle paralysis, according to previous studies, 55% to 85% of patients with zoster paresis showed improvement within months and without any treatment, as well (12). McAllister et al (11) did show resolution of muscle paralysis following a series of thoracic steroid injections; however it took about 6 months, which is within the documented timeframe of resolution without medical intervention (1-7,11,14-17).

Presence of the herpes zoster virus and its cutaneous and neurologic symptoms have been recorded throughout history as being associated with other illnesses dating back to the 18th century, and officially isolated as an independent virus in 1953 (18). However, according to the American Dermatology Association, a pseudohernia was first documented as being attributed to the herpes zoster virus in 2001, in a report of the case of a 78-year-old woman with abdominal-wall muscle paralysis following cutaneous herpes zoster in the T12-L1 dermatomes (3). Thus, the complication of pseudohernia associated with herpes zoster is a relatively modern finding that has been minimally researched in comparison to the other widely discussed symptoms present in a herpes zoster virus patient. Given the multitude of differential diagnoses of this herpes zoster bulge in conjunction with the inadequate amount of research published, physicians have reported difficulty in diagnosing this complication (1-7,11,12,14, 21). Furthermore, this information could prompt an individual to theorize the possibility of pseudohernia in herpes zoster patients being more common than previously reported (22). As such, although reported as rare, it is still imperative that more research be conducted to examine potential treatments for the development of a post-herpetic pseudohernia.

Despite research showing pseudohernias being first detected in and mostly associated with herpes zoster virus, it has been reported that pseudohernias have been

present with other radiculopathies such as diabetes, Lyme disease, polio, and syringomyelia (19).

While 79.3% cases of pseudohernias secondary to herpes zoster virus have been reported to have resolved spontaneously within an average time of 5 months (4,20), a literature search specifically focusing on possible treatments and curative solutions for pseudohernias given a shorter time frame has not yielded any results. When our patient came for evaluation of the bulge, he had already been experiencing this complication for 10 days. Remarkably, after administration of the epidural injection, our patient had 50% resolution of his abdominal muscles within the same day, while showing full resolution of his abdominal muscles with complete elimination of the bulge within 6 days, totaling only 16 days of being symptomatic with the pseudohernia. McAllister et al (11) described their patient as having zoster sine herpette. This particular case of shingles presented in their article occurs without cutaneous eruption, in contrast to the presentation of cutaneous eruption seen in our patient. McAllister et al (11) described their patient as having zoster sine herpette. This particular case of shingles discussed in their article occurs without cutaneous eruption, which is in contrast to the presentation of cutaneous eruption seen in our patient. McAllister et al also noted that their patient had a pseudohernia for 2 months before presenting to their chronic pain clinic and took

6 months for it to resolve. It is important to consider the timeframe of symptoms present in McAllister et al (11) as opposed to that of our patient.

CONCLUSION

It is necessary for physicians to be aware of the complication known as pseudohernia due to herpes zoster virus, and the potential treatment of this bulge with an epidural steroid injection consisting of dexamethasone, bupivacaine 0.25%, and saline. Recognizing this symptom will allow physicians to adequately inform their herpes zoster virus patients who are presenting with this rare symptom on what to expect regarding its regression. Because of the complexity in diagnosing motor complications in herpes zoster virus such as pseudohernia, it can be assumed that the commonality of this symptom is higher than what has previously been reported. Physicians should also consider the diagnosis of a pseudohernia given a patient who presents with an unknown abdominal bulge. The majority of research that has reported pseudohernias has shown that the bulge will regress on its own within 3 to 8 months without treatment. However, with the swift results of the epidural treatment on the pseudohernia in our patient, it is not unreasonable to hypothesize that this could be a potential option to treat this uncomfortable complication. More research is needed on the effects of this treatment.

REFERENCES

1. Chiu H, Lin S. A painful bulge in the left flank. *JAMA* 2013; 310:639-640. doi:10.1001/jama.2013.116866.
2. Yoo J, Koo T, Park E, Jo M, Kim MS, Jue MS. Abdominal pseudohernia caused by herpes zoster: 3 case reports and a review of the literature. *JAAD Case Rep* 2019; 5:729-732. doi:10.1016/j.jcdr.2019.06.019.
3. Heymann WR. Shingles and the battle of the bulge. American Academy of Dermatology Association Web site. www.aad.org/dw/dw-insights-and-inquiries/2019-archive/september/shingles-and-the-battle-of-the-bulge. Date Published 09/11/2019. Date Accessed 07/21/2020.
4. Ohno S, Togawa Y, Chiku T, Sano W. Postherpetic pseudohernia: Delayed onset of paresis of abdominal muscles due to herpes zoster causing an ipsilateral abdominal bulge. *BMJ Case Rep* 2016; 2016:bcr2016215377. doi:10.1136/bcr-2016-215377.
5. Oliveira PD, dos Santos Filho PV, de Menezes Ettinger JE, Oliveira IC. Abdominal-wall postherpetic pseudohernia. *Hernia* 2006; 10:364-366. doi:10.1007/s10029-006-0102-6.
6. Yagi Y, Matono T, Nakamura K, Imura H. Postherpetic abdominal pseudohernia: A diagnostic pitfall. *J Gen Fam Med* 2017; 19:36-37. doi:10.1002/jgf2.147.
7. Butensky AM, Gruss LP, Gleit ZL. Flank pseudohernia following posterior rib fracture: A case report. *J Med Case Reports* 2016; 10:273. doi.org/10.1186/s13256-016-1054-9.
8. Fabiano AJ, Doyle C, Plunkett RJ. Intrathecal medications in post-herpetic neuralgia. *Pain Med* 2012; 13:1088-1090. doi.org/10.1111/j.1526-4637.2012.01401.x.
9. Farquhar-Smith P, Chapman S. Neuraxial (epidural and intrathecal) opioids for intractable pain. *Br J Pain* 2012; 6:25-35. doi.org/10.1177/2049463712439256.
10. Burton AW, Rajagopal A, Shah HN, et al. Epidural and intrathecal analgesia is effective in treating refractory cancer pain. *Pain Med* 2004; 5:239-247. doi.org/10.1111/j.1526-4637.2004.04037.x.
11. McAllister RK, Borum SE, Mitchell DT, Bittenbinder TM. Thoracic motor paralysis secondary to zoster sine herpette. *Anesthesiology* 2002; 97:1009-1011.
12. Lee JB, Choi SS, Ahn EH, et al. Effect of perioperative perineural injection of dexamethasone and bupivacaine on a rat spared nerve injury model. *Korean J Pain* 2010; 23:166-171. doi:10.3344/kjp.2010.23.3.166.

13. Centers for Disease Control and Prevention. CDC Online Newsroom - Press Release - CDC Recommends Shingles Vaccine. www.cdc.gov/media/pressrel/2008/r080515.htm. Date Accessed 06/24/2020.
14. Trannoy E, Berger R, Hollander G, et al. Vaccination of immunocompetent elderly subjects with a live attenuated Oka strain of varicella zoster virus: A randomized, controlled, dose-response trial. *Vaccine* 2000; 18:1700-1706.
15. Giuliani A, Galati G, Parisi L, et al. Postherpetic paresis mimicking an abdominal herniation. *Acta Derm Venereol* 2006; 86:73-74. doi:10.1080/00015550510042886.
16. Kesler A, Gallili-Mosberg R, Gadoth N. Acquired neurogenic abdominal wall weakness simulating abdominal hernia. *Isr Med Assoc J* 2002; 4:262-264.
17. Virmani V, Sethi V, Fasih N, Ryan J, Kielar A. The abdominal wall lumps and bumps: Cross-sectional imaging spectrum. *Can Assoc Radiol J* 2014; 65:9-18. doi.org/10.1016/j.carj.2012.02.001.
18. Shingles and Shingles (Zoster) Vaccine. Date Published 02/23/2015. Date Accessed 06/24/2020. <https://carrington.edu/blog/shingles-and-shingles-zoster-vaccine/>.
19. Miranda-Merchak, Garcia N, Vealljo R, Varela C. MRI findings of postherpetic abdominal wall pseudohermia: A case report. *Clin Imaging* 2018; 50:109-112.
20. Chernev I, Dado D. Segmental zoster abdominal paresis (zoster pseudohermia): A review of the literature. *PM R* 2013; 5:786-790. doi:10.1016/j.pmrj.2013.05.013.
21. Thomas JE, Howard FM Jr. Segmental zoster paresis—a disease profile. *Neurology* 1972; 22:459-466.
22. Gupta SK, Helal BH, Kiely P. The prognosis in zoster paralysis. *J Bone Joint Surg Br* 1969; 51:593-603.