International Journal of Anesthesiology Sciences
Online ISSN: 2664-9276, Print ISSN: 2664-9268
Received: 13-10-2020; Accepted: 28-10-2020; Published: 17-11-2020
www.anesthesiologyjournals.com
Volume 2; Issue 1; 2020; Page No. 29-32

Erector spinae plane (ESP) block for pain management caused by acute herpes zoster during pregnancy: A case report

Diana P Pérez Moreno[1*], Mauricio Forero Mantilla[2], Viviana P Castillo Rosado[3], Carlos E Restrepo Garces[4]
[1, 3] Palliative care and Pain Clinic Department, Hospital Universitario Nacional De Colombia, Bogotá City, Colombia
[2] Department of Anesthesia, McMaster University, Hamilton, Ontario, Canada
[4] Department of Anesthesia and Pain Relief Unit, Clinical Las Americas, Medellín, Colombia

DOI: https://doi.org/10.33545/26649268.2020.v2.i1a.14

Abstract
Clinical Case: The case of a 27-year-old patient is presented, with 19 weeks of gestation, with a clinical picture of 3 days of severe and neuropathic pain secondary to thoracic herpes zoster and given the restriction in the use of analgesics and neuromodulators in pregnancy, was only treated with acetaminophen, without clinical improvement. Therefore, an ESP block was performed at the left T3 level and a catheter was implanted for continuous infusion of bupivacaine 0.25% for 15 days. Pain scales VAS, DN4, satisfaction, SPADI scale mobility, medication consumption, before and after the procedure were measured. The patient reported complete resolution of pain, had no need for opioid use, and there were no adverse effects or complications related to the procedure.
Conclusion: ESP block is a safe and effective strategy for the management of acute herpes zoster neuropathic pain during pregnancy.

Keywords: herpes zoster, erector spinae plane block, ultrasound, acute herpetic pain, single shot injection, continuous analgesia, post-herpetic neuralgia

Introduction

Each year one million new cases of herpes zoster are diagnosed in the United States with a rate of 3 to 4 cases per 1000 people and one in 3 patients develops postherpetic neuralgia based on age and Immuno Competence [1], however, there are no data in pregnant women [2]. Herpes zoster is caused by the reactivation of the latent varicella-zoster virus, with a prodrome of symptoms such as fever, malaise and headache, followed by a vesicular rash, associated with burning pain and itching with a distribution of the affected dermatome by a period of 2 to 4 weeks approximately between 7% to 27% of affected people will develop postherpetic neuralgia [3], therefore, adequate pain management during the acute phase of the disease is of vital importance to avoid this complication [4].

The management of acute herpes pain is difficult and usually requires multimodal analgesia, but the therapeutic challenge in this population is due to the teratogenicity of most of the indicated anti-inflammatories and neuromodulators, therefore, this is an ideal clinical scenario for the application of interventional analgesia [5], specifically ESP block. This is an interfacial plane block targeting the dorsal and ventral branches of the spinal nerves and the dorsal root ganglion, with clear sonoanatomy, well tolerated by patients, with the option of single block or continuous analgesia technique with placement of a catheter unilaterally or bilaterally depending on the analgesic requirement [6-8].

Below we present the case of a pregnant patient with acute neuropathic pain due to herpes zoster in whom a successful ESP block was performed, with total resolution of pain, without the need for opioid consumption and without the presence of adverse effects or complications related to the procedure.

Clinical case

27-year-old patient, 19 weeks pregnant, who was referred to the pain clinic due to severe acute pain of 1 week of evolution of pain, somatic and neuropathic in the left hemithorax and upper limb, with compromise of the dermatomes C8, T1, T2, T3, T4 and T5 (Figure 1) associated with the appearance of vesicular lesions. The severity of pain was evaluated with the visual analog scale (VAS) whose value was 10/10 and the "Douleur Neuropathique 4" (DN4) scale of 7 points. She had been receiving management only with acetaminophen 500 mg every 6 hours, without clinical improvement. It was decided to perform an ESP lock.

A 100 mm echogenic needle (Stimuplex® Ultra 360® Braun, Melsungen, Germany) was used and a 20 G epidural catheter was placed through an 80 mm tube of a Tuohy 18-G needle, guided by ultrasound (Hitachi Aloka high frequency linear ultrasound probe: 5-15Mhz). With standard monitoring, the patient was positioned in the prone position, under aseptic technique, the plates were counted from cephalic to caudal, then laterally slid from the spinous processes to visualize the transverse process (PT), as images of hyperechoic lines of 0.5 -1 cm long with a hypoechoic bony shadow below. On the T3 transverse process, with the transducer in paraspinal position, the erector spinae, trapezius muscle, rhomboid major and latissimus dorsi muscles were identified (visualized as multiple hyperechoic lines representing fascia and muscle fibers with hypoechoic areas between them) (Figure 2). Echogenic needle was inserted until contacting the PT, hydro dissection with saline solution was performed, obtaining an extended linear distribution of the analgesic mixture over the PT and under the fascia of the erector spinae muscle. After a negative

vascular aspiration test, 20 ml of a mixture of 0.5% lidocaine and 0.25 bupivacaine is administered. In this same site an epidural catheter was implanted and an infusion of bupivacaine 0.25% at 7cc/hour was started, which was maintained for 15 days. (Figure 3) The effect of the blockade was evaluated by evaluating the response to touch, cold and pain (punctures)

Of the dermatomes covered by ESP, which extended up and down to C7 and T6 respectively in the right hemithorax both in the anterior wall and rear of the same (Figure 4). The patient had complete resolution of pain immediately and the effect was maintained until week 8 after the procedure, without requiring the use of other analgesic medications.

Table 1: Patient follow-up result.

Case 1	Sensitive and analgesic block area	Tracking Intensity of pain EVA	Tracking Neuropathic pain DN4	Likert satisfaction scale	Mobility Shoulder Pain and Disability Index (SPADI)	Drug consumption
Entry	shingles area of involvement and pain C8 -T5	10	10	0	100	Acetaminophen 500 mg every 6 hours
Immediate post procedure	Analgesic and sensitive block area c7-t6	2	2	5	10	None
15 days post procedure - Catheter removal.	Analgesic and sensitive block area c7-t6	1	0	5	0	None
8 weeks post procedure	No pain	0	0	5	0	None

Fig 1: Unilateral herpetic eruption of the patient - compromised thoracic dermatomal segments.

Fig 2: Ultrasound image of the catheter guided inside the Touhy needle, transverse process of the T3 vertebra (TP), spinal muscles (M) during the execution of the ESP block.

Fig 3: Catheter placed in the erector spinae plane for continuous unilateral analgesia.

Fig 4: Sensitive evaluation of analgesic coverage. Broken line or dotted area under anesthesia; continuous line area with analgesia.

Discussion

Patients with herpes zoster usually experience severe pain that does not respond adequately to pharmacological management, requiring an increase or combination of drugs producing side effects and, in pregnant patients, there is a risk of teratogenicity, which limits its acceptability and usefulness. Therefore, analgesic intervention should be considered as a necessary strategy to control pain and improve the quality of life of these patients.

According to Saguil, A *et al.,* 2017 [8] and Colloca L *et al.,* 2017 [9], an optimal strategy for adequate pain control during the acute phase of herpes zoster should be based on the classification of its intensity and the treatment should be stepped and multimodal. In mild pain use acetaminophen, in moderate pain weak opioids (tramadol), anti-inflammatory analgesics (ibuprofen), gabapentinoids (gabapentin, pregabalin), antidepressants (amitriptyline) and topical analgesics (capsaicin, lidocaine) and in severe pain opioids (morphine).

However, for the pregnant patient there is no specific recommendation for the management of this type of pain. Some cases have been described in the literature, Schafer *R et al.,* 2019 [10] reported the case of a 32-year-old patient with 35 weeks of gestation who developed herpes zoster and mild pain, which was managed with physical means (cold and wet compresses, topical calamine lotions, oral diphenhydramine, topical lidocaine) and oral acetaminophen with which pain control was achieved. Similarly, Román G *et al.,* 2004 [11] described a series of cases of 17 patients with herpes zoster and acute neuropathic pain, the intercostal region being the most affected area (59%), of mild intensity and with a good response when handling with acetaminophen. On the other hand, Belle Tamir, B *et al., 2015* [12] reported the case of a 27-year-old patient, at week 21 of gestation, with severe pain (VAS 10/10) in dermatome T5 due to herpes zoster, without improvement with oral acetaminophen and in those who perform an intercostal nerve block, with pain relief until delivery. Román G *et al* [11] described a series of cases with 17 patients who developed erythematous vesicular lesions with pain and burning in the affected region, the intercostal region with 58.8% was the most frequently affected followed by the scapular region, pain was mild and only required oral pharmacological management with acetaminophen.

As previously described, among the analgesic options that we can use during pregnancy, acetaminophen continues to be the first-line drug due to its favorable safety profile. NSAIDs are effective and can be used in the second trimester, but the patient should be informed of the risk of miscarriage and the effects on fertility; anticonvulsants such as valproic acid are not recommended due to the risk of teratogenicity; on the other hand, weak atypical opioids seem to be safe, but with the exception of using the lowest effective dose and the shortest possible time. If strong opioids are used, the risk of dependence should be informed and bear in mind that neuropathic pain usually does not respond well to this type of medication. Antidepressants and gabapentinoids lack studies to make a recommendation for safe use in this population [13, 14].

Given the difficulties for effective pain control in this group of patients [15, 16] and taking into account that the area most affected by herpes zoster is the thoracic, ESP blockade is considered a safe and effective strategy [17]. This technique was first described by Forero *et al., 2016* [18] for the management of neuropathic chest pain. The analgesic effect observed suggests that it can block the thoracic spinal nerves at the level of the dorsal and ventral nerve branches of the spinal column. 1 [19] and after the application of the local anesthetic, it was observed that its effect extends towards the paravertebral region and the intercostal spaces up to three cephalic dermatomes and five caudal dermatomes from the injection site [20]. Studies have shown that this blockade provides immediate relief from the acute and severe pain caused by herpes zoster, as in our case, with a lasting effect over time and helps to reduce the incidence of developing post-herpetic neuralgia [21]. This is also favored by the fact that the herpes zoster rash has a dermatomic distribution and does not cross the midline, therefore, the possibility of a unilateral block makes ESP an effective and safe tool in the management of this type of pain [22], especially during the first trimester of pregnancy given the potential risk of teratogenicity of some analgesics and neuromodulators, as well as that it could prevent the risk of post-herpetic neuralgia, although studies are required to objectively evaluate this effect.

Conclusions

Our experience has shown that ESP block is effective and safe for the management of acute neuropathic pain and prevention of post-herpetic neuralgia, during the first trimester of pregnancy, which is a therapeutic challenge given the risk of teratogenicity of some analgesics and commonly used neuromodulars.

Financing

The authors received no sponsorship to carry out this article.

Conflict of interests

The authors declare that they have no conflict of interest.

References

1. Pupco A, Bozzo P, Koren G. Herpes zoster during pregnancy. Can FAM Physician. 2011; 57(10):1133.
2. Sadati MS, Ahrari I. Severe Herpes Zoster Neuralgia in a Pregnant Woman Treated with Acetaminophen. Acta Med Iran. 2014; 52(3):238-9.
3. Cañada Merino JL. Herpes Zóster y Neuralgia Post Herpética: Ventajas de la vacunación. Rev ESP Quim. 2009; (1):19-21.
4. Mustafa MB, Arduino PG, Porter SR. Varicella zoster virus : review of its management. J Oral Pathol Med. 2009; 38:673-88.
5. Gardella C, Brown ZA. Managing varicella zoster infection in pregnancy. Cleve Clin J Med. 2007; 74(4):290-6.
6. Wutzler ASP. Herpes simplex and varicella-zoster virus infections during pregnancy: Part 2 : Varicella-zoster virus infections. Med Microbiol Immunol. 2007; 196(1):95-102.
7. Wong JW, Chin JM, Schlueter RJ. Shingles in Pregnancy: An Elusive Case of Left Upper Quadrant Abdominal Pain. Hawaii J Med Public Heal. 2018; 77(8):179-82.
8. Saguil A, Kane S, Mercado M, Lauters R. Herpes zoster and postherpetic neuralgia: Prevention and Management. Am FAM Physician. 2017; 96(10):656-63.
9. Colloca L, Ludman T, Bouhassira D, Baron R,

Dickenson AH, Yarnitsky D *et al*. HHS Public Access - Neuropathic Pain. Nat Rev Dis Prim. 2017; 3:1-45. (doi:10.1038/nrdp.2017.2).
10. Schafer R, Davis M, Phillippi JC. Herpes Zoster in Pregnancy. J Midwifery Womens Heal. 2019; 64(2):230-5.
11. Casanova Román G, Reyna Figueroa J, Figueroa Damián R, Ortiz Ibarra J. Herpes zoster in immunocompetent pregnant women and their perinatal outcome. Ginecol Obstet Mex. 2004; 72(2):63-7.
12. Belle Tamir BRP. Burning Pain from Chest to Back · Allodynia and Hyperesthesia · Extreme Sensitivity at the Left T5 Dermatome · Dx? J Fam Pr. 2015; 64(6):1-2.
13. Black E, Khor KE, Kennedy D, Chutatape A, Sharma S, Vancaillie T *et al*. Medication Use and Pain Management in Pregnancy: A Critical Review. Pain Pract. 2019; 19(8):875-99.
14. Lončar Z, Meštrović AH, Bilić M, Taksić I, Mićković V. Quality of pain in herpes zoster patients. Coll Antropol. 2013; 37(2):527-30.
15. Shrim A, Koren G, Yudin MH, Farine D. anagement of Varicella Infection (Chickenpox) in Pregnancy. J Obstet Gynaecol Canada [Internet]. 2018; 40(8):e652-7. Available from: https://doi.org/10.1016/j.jogc.2018.05.034
16. Hayward K, Cline A, Stephens A, Street L. Management of herpes zoster (shingles) during pregnancy. J Obs Gynaecol. 2018; 38(7):887-94.
17. Dosenovic S, Kadic AJ, Boric K, Puljak L. Interventions for Neuropathic Pain: An Overview of Systematic Reviews. Anesth Analg. 2017; 125(2):643-52.
18. Forero M, Adhikary SD, Lopez H, Tsui C, Chin KJ, Hons M *et al*. The Erector Spinae Plane Block A Novel Analgesic Technique in Thoracic Neuropathic Pain. Reg Anesth Pain Med. 2016; 41(5):621-7.
19. Schwartzmann A, Peng P, Maciel MA, Alcarraz P, Gonzalez X, Forero M *et al*. A magnetic resonance imaging study of local anesthetic spread in patients receiving an erector spinae plane block. Can J Anesth [Internet], 2020, 7. Available from: https://doi.org/10.1007/s12630-020-01613-8
20. Barrios A, Camelo J, Gómez J, Forero M, Peng PWH, Visbal K *et al*. Evaluation of sensory mapping of erector spinae plane block. Pain Physician. 2020; 23(3):E289-95.
21. Aydın T, Balaban O, Ahiskalioglu A, Alici HA, Acar A. Ultrasound-guided Erector Spinae Plane Block for the Management of Herpes Zoster Pain: Observational Study. Cureus. 2019; 11(10):e5891.
22. Ahiskalioglu A, Alici HA, Ari MA. Ultrasound guided low thoracic erector spinae plane block for management of acute herpes zoster. J Clin Anesth. 2018; 45:60-1.