



Access this article online

Quick Response Code:



Website:

www.turkjemergmed.org

DOI:

10.4103/2452-2473.320806

Case Report

Erector spinae plane block for pain control in patients with pancreatitis in the emergency department

Bharath Gopinath, Roshan Mathew, Sanjeev Bhoi*, Rakesh Nayaka, Gaurav Muvalia

Department of Emergency Medicine, All India Institute of Medical Sciences, New Delhi, India

*Corresponding author

Abstract:

Nerve blocks are frequently used in emergency department for pain management in patients with fractures. Their utility in medical conditions with severe intractable pain is largely unknown. We report a series of seven patients with pancreatitis who presented with severe abdominal pain (defense and veteran pain rating scale > 7) and had no relief on regular analgesia. They were subjected to erector spinae plane block (ESPB), and reduction in pain score at different time intervals, side effects, and additional analgesic dose requirements were noted. The objective of this case series is to explore the utility of ESPB in patients with pancreatitis.

Keywords:

Emergency department, erector spinae plane block, pancreatitis

Introduction

Pancreatitis is the most common gastrointestinal complaint requiring admission from the emergency department (ED).^[1] The most frequent complaint of pancreatitis is severe abdominal pain radiating to the back. Pain control with adequate hydration is the mainstay of treatment.

In the form of nerve blocks, regional anesthesia is increasingly used for pain relief in ED for trauma patients with fractures.^[2] The use of nerve blocks in medical conditions for pain relief has limited experience with few case reports in the literature.^[3,4]

We explored the utility of erector spinae plane block (ESPB) in a series of seven patients of pancreatitis presenting with acute pain.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

Case Report

This prospective case series was conducted in the ED of a tertiary care hospital. Ethical approval was taken before initiation of the study (IEC-1010/03.10.2020). Patients with acute abdominal pain, who were diagnosed with pancreatitis based on imaging and amylase levels, with a pain score of >7 on the defense and veteran pain rating scale (DVPRS),^[5] even after the first line of analgesics were screened for recruitment. Patients with any end-organ dysfunction (acute kidney injury/acute lung injury/altered mental status) and hemodynamic instability were excluded.

Case 1 was a 50-year-old female having severe abdominal pain (DPVS 10/10); the ultrasound revealed a bulky pancreas with an amylase of 1240 IU. She was initially given fentanyl and diclofenac intravenously for her pain, and subsequently, ESPB was given due to intractable pain. She had relief

How to cite this article: Gopinath B, Mathew R, Bhoi S, Nayaka R, Muvalia G. Erector spinae plane block for pain control in patients with pancreatitis in the emergency department. *Turk J Emerg Med* 2021;21:129-32.

Submitted: 12-02-2021
Revised 1: 11.04.2021
Revised 2: 15.04.2021
Accepted: 16-04-2021
Published: 07-07-2021

ORCID:

BG: 0000-0001-8514-5230
RM: 0000-0001-7047-0399
SB: 0000-0002-5392-1976
RN: 0000-0002-1462-2009
GM: 0000-0002-6423-3327

Address for correspondence:

Dr. Sanjeev Bhoi,
Department of Emergency
Medicine, All India Institute
of Medical Sciences,
New Delhi - 110 029, India.
E-mail: sanjeevbhoi@gmail.com

within the next 30 min and was pain free for the next 11 h.

Case 2 was a 36-year-old female diagnosed with gallstone pancreatitis, had a DPVS of 8/10 even after fentanyl infusion of 50 µg/h for 6 h. After ESPB, she had complete pain relief within 30 min, and it lasted for 12 h before additional doses of analgesia were given.

Case 3 was a 38-year-old male who was a case of chronic pancreatitis taking oral tramadol on and off for his pain at home. During the current emergency visit, he had a pain score of 9/10 on DPVS and was given multiple doses of fentanyl, hyoscine, and paracetamol without much success. An ESPB was performed, which reduced the pain score to 4 within an hour, though the patient required additional analgesia at 4 h, mainly owing to his chronic use of pain killers.

Case 4 was a 44-year-old male who presented with acute abdominal pain after a binge of alcohol 2 days back. The amylase was 700 IU, and ultrasound showed features of acute pancreatitis. He had been given a cumulative 200 µg of fentanyl and 100 mg of tramadol over 24 h before ESPB was performed. The preprocedure DPVS was 8/10. The patient had 50% reduction in his pain score for the next 6 h, which he could tolerate before the next dose of analgesia was given at 8 h.

Case 5 was a 30-year-old male with chronic pancreatitis who presented to ED with a pain score of 9/10. He had no relief after multiple doses of fentanyl, tramadol, and diclofenac, following which ESPB was performed. The pain scores were reduced to 2/10 at 6 h, and the next dose of analgesia was given at 9 h.

Case 6 was a 15-year-old male with recurrent acute pancreatitis who had a pain score of 10/10 on arrival. Even after fentanyl infusion for over 6 h, the patient complained of severe pain, for which repeated bolus of the opioid was given with no effect. ESPB was given, and the patient was completely pain free at 60 min though he needed a repeat dose of analgesia at 4 h.

Case 7 was a 63-year-old male with a history of chronic pancreatitis who came to ED with acute abdominal pain. His initial pain score was 10/10, for which i.v. fentanyl tramadol and paracetamol were given. Within 2 h, the patient complained of pain of intensity of 8/10, and ESPB was given. The patient had a significant reduction of pain at 30 min which lasted for 10 h before an additional dose of analgesia was given.

Erector spinae plane block procedure in emergency department

The ED pain team (one faculty, resident, and nurse each per shift) was trained in point of care ultrasound, needle

tracking, and routinely performed EPSB in trauma patients with rib fractures. The nursing officer monitored the patient for side effects and assessed the pain.

After obtaining written informed consent, the patient was shifted to a high dependency unit for continuous vital monitoring. Crash cart and intralipid emulsion were available at the bedside in cases of any local anesthetic systemic toxicity (LAST). The principles of body ergonomics were ensured by keeping the performer, ultrasound probe, and screen in a straight line. The block was administered in the sitting, lateral decubitus, or prone positions depending on the patient's most comfortable position. Under aseptic precautions, T7 vertebral level was identified by counting from C7, the most prominent vertebrae. A high-frequency linear probe (7–13 MHz) was placed in a parasagittal plane 3 cm lateral to T7 vertebral level to visualize the transverse process. After identifying the exact location of T7, erector spinae muscle, and needle entry site, we administered local anesthesia with 1 ml of 1% lidocaine using a 30G needle (the smallest available in our ED) to reduce the pain of nerve block needle insertion. Under ultrasound guidance, the needle was inserted in the craniocaudal approach using an in-plane technique. The needle was advanced between the transverse process and erector spinae fascia. The plane was confirmed by a hydrodissection of 10 ml normal saline. Drugs injected were lidocaine, bupivacaine, and dexamethasone in varying combinations. The dose of each drug injected is 1% lidocaine 5 mg/kg, 0.5% bupivacaine 2 mg/kg, and dexamethasone 8 mg in two divided doses bilaterally. A total of 30 mL was injected into the plane on each side by diluting the drugs with normal saline.

We considered the block successful if the patient had >50% reduction in pain score from the presentation or a DVPRS of ≤4 at 1 h. In the case of a failed block, it was decided to put the patient on a higher dose of opioids. We monitored the patient for side effects such as LAST, pneumothorax and assessed pain score hourly. The patients were monitored until their disposition from ED.

The median DVPRS after the routine dose of analgesia and before the procedure was 8 interquartile range (IQR) 7. Postprocedure at 30 min, the median DVPRS was 3 (IQR 2.5), and at 60 min, it was reduced to 2 (IQR: 4). In those on fentanyl infusion, we could stop the infusion within an hour. The median time of the next analgesia requirement was 9 h (IQR: 4.5). Patients receiving dexamethasone had a longer duration of analgesia. Table 1 summarizes the patient characteristics and ESPB details. We could stop opioid drugs in five patients and reduce the opioid dose in the other two at the next

Table 1: Patient characteristics and the effect of erector spinae plane block

Age (years)/sex	Diagnosis	Analgesia received before nerve block	Drugs used	Patient position	DVPRS (preprocedure)	DVPRS (30 min)	DVPRS (60 min)	DVPRS (6 h)	Time of additional analgesia (hours)
50/female	Acute pancreatitis	Fentanyl, diclofenac	Lidocaine, bupivacaine, dexamethasone	Sitting	10	0	0	0	11
36/female	Acute pancreatitis	Fentanyl 50 µg/h infusion for 6 h	Lidocaine, bupivacaine	Sitting	8	0	0	2	12
38/male	Acute on chronic pancreatitis	Fentanyl, hyoscine, paracetamol	Lidocaine, bupivacaine	Prone	9	5	4	-	4
44/male	Acute pancreatitis	Fentanyl 200 µg, tramadol 100 mg over 24 h	Lidocaine, bupivacaine	Prone	8	4	4	4	8
30/male	Chronic pancreatitis	Fentanyl, tramadol, diclofenac	Lidocaine, bupivacaine, dexamethasone	Sitting	9	4	4	2	9
15/male	Recurrent acute pancreatitis	Fentanyl 50 µg/h infusion	Lidocaine, bupivacaine	Prone	7	3	0	-	4
63/male	Chronic pancreatitis	Fentanyl, tramadol, paracetamol	Lidocaine, dexamethasone	Sitting	8	3	2	2	10

DVPRS=Defense and Veteran Pain Rating Scale

analgesia requirement. None of the patients had block failure or developed any side effects or complications due to the procedure.

Discussion

We found ESPB to have promising results in reducing abdominal pain in patients with pancreatitis who did not respond to routine analgesics. We could reduce opioid usage in two patients and change to nonopioid analgesia in five patients.

ESPB is recently gaining popularity in acute pain management in the ED. Most of the indications of ESPB in ED are limited to case reports – rib fractures, lumbar fractures, postherpetic neuralgia, burns, back pain, renal colic, and pancreatitis.^[6] Only one case report of successful pain control of pancreatitis in ED is reported.^[4] We have performed ESPB on seven patients in ED with encouraging results.

In ESPB, a specific volume of drug is injected into the erector spinae fascial plane. The craniocaudal spread anesthetizes multiple nerves at different levels. The spread of the drug to dorsal and ventral rami provides somatic anesthesia, and spread to epidural and paravertebral spaces provides visceral anesthesia. The ESPB block drugs include lidocaine, bupivacaine, levobupivacaine, ropivacaine, and epinephrine in varying combinations. Dexamethasone has a faster onset and increased the duration of action when combined with local anesthetics in nerve blocks.^[7]

Pneumothorax and LAST are the possible complications. None of our patients had any complications due to the block.

We could reduce opioid usage in all our patients. Two patients required opioids but in lesser doses compared with preprocedure. The decrease in opioid analgesia after the nerve block might reduce the total dose of opioids administered, thereby diminishing the potential side effects of opioids.

In retrospect, we could have monitored the level of sensory blockade postprocedure. We did not define the drugs or doses of “routine analgesia,” which the patient received before the block. Further research is required on the right combination of drugs for adequate analgesia and prolonged duration of analgesia as this was a limited case series of seven patients. The opioid-sparing effect of ESPB needs to be explored by more extensive studies.

Conclusions

ESPB is novel regional analgesia that may treat uncontrolled abdominal pain in pancreatitis by emergency physicians in the ED.

Acknowledgment

We acknowledge the Department of Emergency medicine, AIIMS, for providing the necessary logistic support to complete this project.

Author contributions statement

BG, RM, and SB conceived the study. BG, RM, RN, and GM undertook recruitment of participating centers and patients and managed the data, including quality control. BG and RM provided statistical advice on study design and analyzed the data; SB chaired the data oversight committee. BG drafted the manuscript, and all authors contributed substantially to its revision. SB takes responsibility for the paper as a whole.

Financial support and sponsorship

None.

Conflicts of interest

None Declared.

Consent to participate

Written consent was taken by all patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

References

1. Peery AF, Dellon ES, Lund J, Crockett SD, McGowan CE, Bulsiewicz WJ, *et al.* Burden of gastrointestinal disease in the United States: 2012 update. *Gastroenterology* 2012;143:1179-87.e3.
2. Kumar G, Bhoi SK, Sinha TP, Paul S. Erector spinae plane block for multiple rib fracture done by an Emergency Physician: A case series. *Australasian Journal of Ultrasound in Medicine*. 2021;24(1):58-62. doi:<https://doi.org/10.1002/ajum.12225>.
3. Elkoundi A, Eloukkal Z, Bensghir M, Belyamani L, Lalaoui SJ. Erector spinae plane block for hyperalgesic acute pancreatitis. *Pain Med* 2019;20:1055-6.
4. Mantuani D, Josh Luftig PA, Herring A, Mian M, Nagdev A. Successful emergency pain control for acute pancreatitis with ultrasound guided erector spinae plane blocks. *Am J Emerg Med* 2020;38:1298.e5-1298.e7.
5. Buckenmaier CC 3rd, Galloway KT, Polomano RC, McDuffie M, Kwon N, Gallagher RM. Preliminary validation of the Defense and Veterans Pain Rating Scale (DVPRS) in a military population. *Pain Med* 2013;14:110-23.
6. Abdelhamid K, ElHawary H, Turner JP. The use of the erector spinae plane block to decrease pain and opioid consumption in the emergency department: A literature review. *J Emerg Med* 2020;58:603-9.
7. Huynh TM, Marret E, Bonnet F. Combination of dexamethasone and local anaesthetic solution in peripheral nerve blocks: A meta-analysis of randomised controlled trials. *Eur J Anaesthesiol* 2015;32:751-8.