

Erector Spinae Plane Block (ESPB) To Manage Pain of Carcinoma Esophagus – A Case Report

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Abstract

Advanced malignancy of esophagus may cause pain due to infiltration or pressure on pain sensitive structures during metastasis. We reported a case where patient presented with severe pain in left thoraco-lumbar area due to enlarged mediastinal mass and adenopathy. When pharmacotherapy failed to provide sufficient pain relief, an ultrasound guided Erector Spinae Plane Block (ESPB) was given and infusion of ropivacaine and fentanyl was used. It provided effective and sustained pain relief without causing any side effect. ESPB can be used to provide pain relief in carcinoma esophagus patients when pharmacotherapy is ineffective or causing untoward, undesirable effects.

Keywords: Erector Spinae Plane Block (ESPB); Regional blockade; Chronic pain management; Carcinoma esophagus; Cancer pain management

Background

Pain in upper gastrointestinal tract malignancy is multifactorial. In early stage it may be due to ulceration in the mucosa and, as disease progresses pain become very severe due to local infiltration, pressure or tethering of nerves and blood vessels. Metastatic dissemination also causes pain due to similar pathogenesis [1]. To manage pain of malignancy WHO ladder is a useful guide [2]. When pain is mild to moderate oral analgesics, non-steroidal anti-inflammatory drugs and mild oral opiates are used depending upon the severity and patient acceptance. However, when pain is very severe, systemic opiates and interventional approaches are used to manage the pain [3]. Coeliac plexus block, thoracic epidural block and para-vertebral blocks have been used successfully to manage severe pain in upper GI malignancy [4,5]. However, all these interventions are invasive and requires high level of precision and also associated at times with serious complications [6]. Erector Spinae Plane Block (ESPB) is relatively new and simple truncal block which can be given under ultrasound or fluoroscopic guidance [7]. Initially it was used to manage neuropathic pain of ribs secondary to metastatic deposits [8] and later it has been used for many acute or chronic pain conditions [9]. The exact mechanism of pain control by ESPB is not very clear however, cadaveric studies have shown that injected drug under erector spinae muscle not only blocks the posterior ramus of spinal nerves, it also enters in to para-vertebral space and probably blocks sympathetic fibers [10]. We had a case of advanced carcinoma esophagus admitted with severe pain on left side of chest. When early management of pain with oral and systemic analgesic provided inadequate pain relief, ESPB was given. ESPB was very effective to control his pain. We reported this case and discussed the possibilities for future use of ESPB in cancer pain management.

Case Report

A 75 years male was referred to our pain clinic with complaints of severe pain left thoraco-lumbar area. He was a known case of advanced, non-operable esophageal malignancy (metastasis to lungs and mediastinum) on Ryle's tube feeding. He was on Tablet Diclofenac SR 12 hrly, Tab. Paracetamol+Tramadol 1 tab 8 hourly (hrly.), Tab. Pregabalin 75 mg 12 hrly, Tab. Amitriptyline 25 mg at bed time, all medicines were given through Ryle's tube. He was advised morphine tablets however, due to excessive dizziness and constipation patient discontinued the drug. His pain was poorly localised, continuous but increased with lying down. On NRS it was 8-9/10 (0-no pain and 10 worst imaginable pain). Sleep was disturbed and he had moderate level of depression (assessed by psychiatrist). After admission, for first two days he also received injection Tramadol 50 mg Intravenous 8 hrly but he was unhappy with the current medicine also because, on lying down pain was increasing and on sitting he was having dizziness and nausea. Due to inadequate pain control ESPB was planned. After informed consent patient was taken to operation room. Patient was in sitting position, monitors (ECG, Pulse oximeter and non-invasive blood pressure) were

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Received Date: 31 May 2020

Accepted Date: 19 Jun 2020

Published Date: 25 Jun 2020

Citation: Jadon A, Sinha N, Singh B, Agrawal A, Ahmad A. Erector Spinae Plane Block (ESPB) To Manage Pain of Carcinoma Esophagus – A Case Report. *J Anesthesia Forecast.* 2020; 3(1): 1008.

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Figure 1: A) Sonoanatomy during erector spinae plane block on left side. Tuohy needle is in contact with the Transverse Process (TP), Catheter is coming out, LA-Local Anaesthetic spread. Tr-Trapezius, Rh-Rhomboid major, Es-Erector Spinae muscles, B) Patient position during block, Tuohy needle with catheter in place at 7th thoracic level (T7), and local anesthetic is being injected and C) Catheter is subcutaneously tunneled before dressing.

connected and back was cleaned and draped with sterile sheets. Using sterile technique, under high frequency ultrasound probe (6-13 MHz, SonoSite M-turbo, FUJIFILM SonoSite, Gurugram, India Pvt. Ltd.) Transverse Process (TP) of T7 (thoracic vertebral level-7) on left side was identified and after 3 ml 1% lidocaine skin infiltration 18G Tuohy needle was directed on to the TP. After contacting TP, 2-3 ml saline was injected through Tuohy needle. Once linear spread was seen beneath the Erector Spinae muscle (ESP) 18G catheter was inserted and fixed (tunneled subcutaneously) (Figure 1:A,B and C). Catheter was covered with sterile dressing. Afterwards, a volumetric pump (DOSIFUSER[®], Capacity 250 ml with variable flow rates 2-14 ml/hour) filled with 0.12% ropivacaine and 0.8 µg/ml fentanyl (300 mg Ropivacaine and fentanyl 200 µg in 250 ml solution) was started @ 6/hr. For initial 6 hrs he had only minimal relief (NRS 7-8/10). After 12 hrs, NRS was 5/10 and after 24 hrs, it was 2/10. He did not require any intravenous rescue subsequently and oral analgesics were also reduced to 50%. He remained pain free (NRS 2/10) for 7 days. As he wanted to be discharged with oral drugs therefore catheter was removed and he was discharged. To verify the drug spread a CT was done with injection of contrast 10 ml (Omnipaque-350) through catheter which showed T4-L2 (thoracic-4 to lumbar-2) vertebral level spread. Para-vertebral spread was noticed at T9 & T10 level (Figure 2: A and B).

Discussion

Role of Ultrasound-guided ESPB for postoperative analgesia is well established. Studies, including a meta-analysis of randomised control trials have suggested that ESPB is a safe and effective option for postoperative pain relief in multiple types of surgeries [9,11]. The

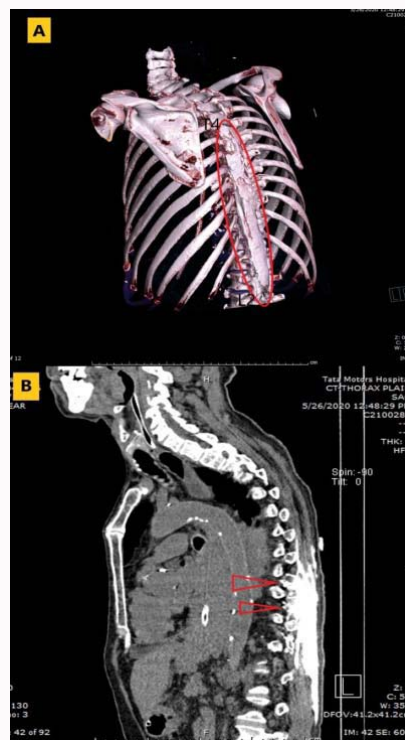


Figure 2: A) Reconstructed CT image showing spread of contrast between 4th thoracic (T4) to 2nd lumbar (L2) level on left side and B) Contrast encroaching in to para-vertebral area at T9-T10 levels (arrow heads).

role of ESPB is expanding also for Chronic Pain Management [12,13]. Recently, ESPB at cervical level has been used successfully to manage pain from fungating malignant growth of face [14]. Our patients also had significant pain relief with ESPB. Although, analgesic mechanism of ESPB is still debatable & studies have differences of opinions. It was suggested that ESPB works mainly through posterior ramus of sensory nerves however, other studies have shown that it also works on ventral ramus and sympathetic fibers through para-vertebral spread [10,15]. Results of cadaveric and contrast studies are also variable however; para-vertebral spread have been documented by many studies which support the reason for efficacy of ESPB in chronic and cancer pain relief. Why there is variability in the results of various studies is not fully known. However, as we know that ESPB is facial plane block and the drug spread is dependent on the resistance in the path of injectate. Due to variability in the tissue resistance (individual to individual and, live body to cadaver) one can easily reason out the variability. Thoracic epidural and para-vertebral blocks are established effective techniques to control cancer pain however, associated with serious complication. ESPB on other hand simple and safe alternative and becoming popular over the time even for difficult cancer related painful clinical situations [16,17]. In our previous experience, we always injected the full dose (20-25 ml 0.25% bupivacaine) and after observing the result, inserted the catheters. In present time (due to COVID-19 crisis) we wanted to avoid the duplication of procedure therefore, catheter was inserted at first go. Usually, 30 minutes are enough to see the clinical effect however, in our patient onset of pain relief was slower than expected. Possible reason may be low volume which we gave and infusion rate was also moderate. However, by 24 hrs, excellent pain relief was achieved which sustained till he was in the hospital. Telephonic communication after 1 week was done where he is continuing comfortable status with his previous medical regimen.

Chest pain in esophageal malignancy has been reported earlier where patient's symptoms were similar to our patient; increase in pain while lying down and decrease in pain in sitting however, cause of pain was pericardial effusion [18]. In our case, the plausible cause of pain was pressure symptoms and tethering of pain sensitive tissue by enlarged mediastinal mass and massive adenopathy. As ESPB is now being used for postoperative pain management after esophagus surgery and found to be effective and safe [5,6,11,12]. Its' potential for cancer pain management is still undermined. However, comparative studies among epidural, para-vertebral and ESPB are required to make consensus statement, this case report suggest that ESPB is effective and safe option in cancer pain management in similar situation.

Conclusion

Erector spinae plane block is safe and effective regional anesthesia technique to provide pain relief in patients suffering with chronic cancer pain in esophagus secondary to metastasis.

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