



## Letter to the Editor

### Continuous ultrasound guided erector spinae plane block for the management of chronic pain



Neuropathic pain is a common chronic pain condition, which can develop due to a variety of etiologies such as surgery, trauma, herpes zoster, diabetes, and cancer [1]. It is usually difficult to manage, and patients often show an insufficient response to analgesic medications or experience intolerable adverse effects. Therefore, analgesic management is difficult, and the quality of life of the patient is adversely affected. Post-thoracotomy pain syndrome (PTPS) can be encountered in 25–47% of patients undergoing either a thoracotomy or a video-assisted thoracoscopic surgery (VATS). Initial management usually comprises NSAIDs, opioids and neuropathic agents [2].

A variety of interventional procedures have been described for treatment of thoracic refractory pain, including intercostal nerve blocks, thoracic epidural analgesia (TEA), thoracic paravertebral blocks (TPVB) and spinal cord stimulation. However, they can be technically challenging to perform and are associated with a significant failure rate (up to 15% in TEA) [3].

The erector spinae plane (ESP) block is a novel paraspinous plane block first described for thoracic analgesia when performed at the T5 level [4]. It has also been recently shown to be effective in providing extensive somatic and visceral abdominal analgesia when performed at the T7–9 level [5]. ESP block is a good alternative to other invasive techniques because the blockade can be easily performed and has a low complication rate. An effective analgesia can be provided and maintained by using continuous ESP block. To illustrate this potential, we aimed to share our successful experience on using continuous ESP block in a patient with chronic pain in left thoracic and left axillary regions due to the malign mesenchymal tumour and Ewing's sarcoma, which was unresponsive to the opioid mediation.

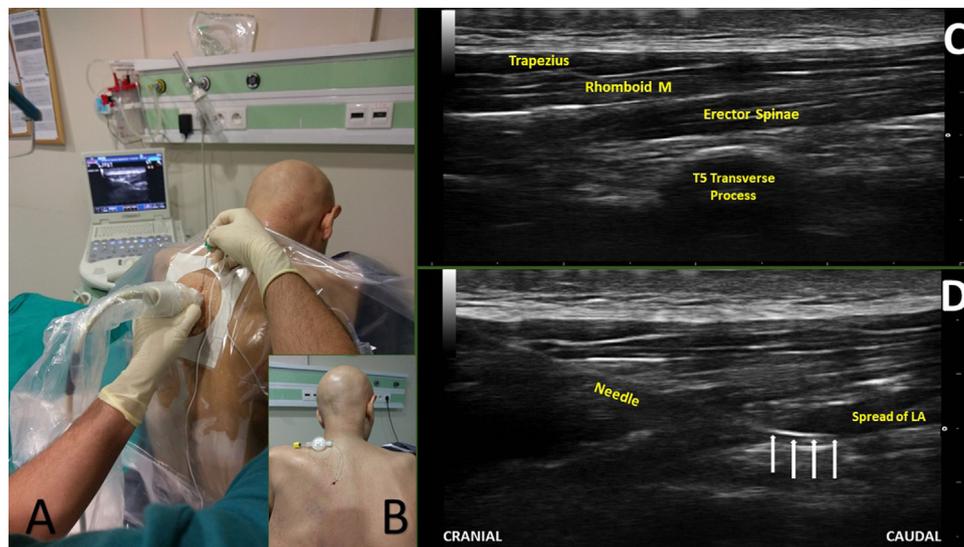
A written consent form was obtained from the patient for this case report. The MRI examination of the 29 years old (55 kg, 170 cm) patient revealed a 101 × 60 × 61 mm sized mass lesion located in the upper lobe of left lung, invading the anterior part of the 4th rib and spreading between the muscle layers. The patient had undergone a partial rib resection at the level of 4th rib and a wedge resection using left-sided VATS approach. The patient was admitted to our algology clinic six months after the operation due to his complaint of severe left thoracic pain, reflective in the areolar and axillary regions, and unresponsive to opioid treatment. The patient was on chemotherapy, and his platelet count was found as 55,000. An epidural catheter was not inserted due to the patient's low platelet count. It was decided to perform continuous ESP block under these circumstances. The procedure was performed in the seated position by using Esote MyLab 30<sup>®</sup> USG device and the linear probe at the frequency of 18 Hz. First, the transverse process was visualised 3 cm lateral to the midline at the level of T5 in longitudinal parasagittal orientation. Then, the muscles on the

transverse process were visualised in the following order: erector spinae, major rhomboid, and trapezius muscles. After touching the transverse process of T5 by needle using the in-plane technique on the cranial-caudal route, the needle was directed under the erector spinae muscle (Fig. 1). The syringe was aspirated to confirm that there was no blood or air coming up from the injection site. Then, 2 mL of saline solution was injected to confirm the erector spinae muscle plane, and 20 mL of 0.25% bupivacaine was injected. The site of the catheter was verified by saline and air, and the catheter was left in place. The VAS score of the patient was reduced to 2 in seconds following the block procedure. Twenty minutes after the procedure, by using the hot-cold test, the block was identified to be spread to the axillary region and to the anterior, posterior and lateral thoracic regions from T2 to T7. The VAS score of the patient was 9 before the procedure whereas it regressed to 1, 30 minutes following the procedure. Patient-controlled analgesia (PCA) was established by using block catheter (0.250% bupivacaine; 8 mL/h infusion, 5 mL/h bolus, 60 min lock-out interval). The infusion was maintained for 48 hours. Patient discharged 2 days later with ESP catheter and only bolus doses 15 mL 0.125% bupivacaine every 12 hour continued at home during 15 days. After that, the patient's pain was well controlled on a multimodal management with oral pregabalin and low dose opioid. He had described pain relief (80% from baseline) for 3 months, then pain returned to baseline and the procedure was repeated.

TEA and TPVB are recommended as the first choice for obtaining thoracic analgesia; however, we did not use these methods in our patient since they are invasive, and the coagulation parameters of the patient were not suitable for these procedures. An intercostal nerve block is the other recommended treatment method in situations in which the mentioned methods are contraindicated or impossible to use. Although an effective analgesia can be provided with the intercostal nerve block, it requires multiple injections and can be performed only as a single injection block since catheter use is not suitable for this method. Therefore, the duration of analgesia is limited in such patients. The other possible treatment method might be the ultrasound-guided serratus plane block [6]; however, the use of this method was not suitable since a diffuse invasion was observed between the muscle layers.

Ultrasound-guided ESP block is a recently defined method with which an effective and wide analgesia can be provided [7]. The transverse process is an appropriate sonographic landmark and safety point for needle advancement, accompanying the safety and easiness of the block. It is easy to visualise the anatomical leading points in ultrasound, and the spread of local anaesthetic agent under the erector spinae muscle can be observed easily.

Potential risks of this block have not yet been revealed because there is no randomised controlled trial with ESP block. Although the ESP block is defined a quite safety procedure, the adverse effects such as pneumothorax, haematoma and surrounding tissue damage may occur due to the block. On the other way, ESP block



**Fig. 1.** A. Ultrasound and patient set up for erector spinae plane (ESP) Block. B. Catheter application. C. Sonographic anatomy of ESP block. D. After local anaesthetics administration and white arrows are indicated catheter.

requires injection of local anaesthetic agents into the paraspinal tissues, which far away from the pleura and neuraxial structures; so its risks of tissue damage and complications are minimal.

Although the number of randomised clinical studies about ESP block is limited, promising results have been reported about the use of the ESP block in the management of multiple rib fractures, abdominal interventions [8], thoracotomy [4] and chronic pain [7]. ESP block catheter procedure can be used as an alternative in postoperative pain and chronic pain management since it is easy to use, a central block-like analgesia can be obtained with, and has no risk of serious complications such as pneumothorax.

#### Disclosure of interest

The authors declare that they have no competing interest.

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