

Ultrasound Guided Erector Spinae Plane Block at High Thoracic Level for Management of Postherpetic Neuralgia

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Abstract

Herpes zoster is a viral infection of the skin caused by Varicella Zoster virus. The most relevant symptom for almost all patients is pain. Several studies have demonstrated the risk of developing postherpetic neuralgia (PHN) [1]. A variety of interventional procedures have been described for treatment of thoracic refractory pain, the erector spinae plane (ESP) block is a newly-described technique for treating thoracic neuropathic pain [3] and then used for many other pain conditions. We describe a successful treatment of a 70 years old patient, affected with many comorbidities, suffering from a couple of months of PHN in the territory of C8 and T1 dermatomes, with two consecutive ESP blocks. At 45 days from the second block, the patient reports no pain at all and he didn't take analgesics any longer. Performing the block a T1/T2 level was sufficient to achieve a complete remission of the symptoms.

The ESP block is a new therapy effective in thoracic and shoulder or arm analgesia [4,7]. It is very easy to be performed and has a really low rate of side effects [4-6,9].

It is mandatory to treat herpetic pain as soon as possible even with interventional technics and in case of chronic pain, we should always consider peripheral block as a valid therapy, especially in those patients refractory to classic drugs treatment.

Keywords: Erector Spinae Block; Post Herpetic Neuralgia; Neuropathic Pain; Interventional Pain Management

Introduction

Herpes zoster is a viral infection of the skin caused by Varicella Zoster virus. The most relevant symptom for almost all patients is pain, which is perceived before the development of rash and lasts even after its resolution. The pain lasting for the first 30 days is known as acute herpetic neuralgia. Several studies have demonstrated that, more the severity of acute pain, greater is the risk of developing post herpetic neuralgia (PHN) [1].

A variety of interventional procedures have been described for treatment of thoracic refractory pain, including intercostal nerve blocks, thoracic paravertebral blocks, epidural steroid injections, thoracic sympathetic blocks, pulsed radiofrequency ablation of the dorsal ganglion, and spinal cord stimulation, with a failure rate up to 15% even for the epidural thoracic analgesia [2]. The erector spinae plane (ESP) block is a newly-described technique for treating thoracic neuropathic pain [3] and then used for many other pain conditions.

We describe a successful treatment of a patient, affected by PHN, with two consecutive EPS after failure of classic systemic and local pharmacological treatments.

Written informed consent was obtained from the patient for this report and for all the procedures.

Case Report-I

A 70 years old patient, weighing 76g and 175 cm tall, affected with polymyalgia rheumatica, arterial hypertension, generalized anxiety disorder, previous major stroke with complete remission and renal artery thrombosis with normal renal function, who had an aortic valve substitution five year earlier, allergic to aspirin, presented to our ambulatory for neuralgia, presenting neuropathic pain at the right suprascapular region and the right arm, especially in the axillary region. At the time of presentation he was taking several medication for his comorbidities: bisoprolol, duloxetine, omeprazole, calcium carbonate and cholecalciferol, methotrexate, ticlopidine, atorvastatin, valsartan, lercanidipina and alprazolam.

From a couple of months before the visit he started suffering for the presence in the right suprascapular area of herpetic eruption associated with neuropathic symptoms in that area plus paraesthesia and dysaesthesia in the territory of C8 and T1 dermatomes, with paraesthesia mostly in the external side of the arm and in the last two finger. He also lamented constant itching in the axillary region. He had previous serum test confirming IgG and IgM anti-HZV.

He reported a continuous pain with a medium NRS of 7 and aching spikes of NRS 9 during stress' moments. Moreover he lamented functional limitation and difficulty in the fine movements of the hand in addition to discontinuous sleep.

At the first visit, it was still present a crusted eruption in the primary site of herpetic manifestation, without active vesicles, even though the patient had finished a complete cycle of antiviral therapy.

At that point the patient had been treated with various medication for his pain, previously treatments by general practitioner have been all ineffective, the patient reported no difference in pain with tapentadol, increased pain with local application of lidocaine patch and only partial response with oral acetaminophen.

Because of the clinical conditions (presence of rash) we decided to set a "classic therapy" with oxycodone/naloxone + Palmitoylethanolamide (PEA) and not to proceed with any interventional therapy at that time point. After 30 days the patients suspended oxycodone due to excess of gastrointestinal and central nervous side effects, referring only a partial benefit from PEA, so we proceeded to the first block with immediate disappearance of all symptoms and improvement of the motility. We suggested to the patient to maintain the therapy with oral PEA, using acetaminophen only at need.

The ESP block was performed at T1/T2 Level. All blocks were performed in the pain ambulatory of our hospital, by the primary author (E.C.) using the following technique: the patient was lying down laterally, with the affected side up, the spinous process of C7 were first identified by palpation of the neck than the spinous process of T8 by palpation of the lower angle of the scapula, marking each process on the skin between C7 and T8 after palpation (Figure 1). Then the area of pain was identified and marked on the skin to be sure of choose the right target (Figure 2). A scout ultrasound scan using a high-frequency (12-5 MHz) linear transducer was performed to confirm and mark the targeted level by counting ribs from above. The skin was sterilized with a 2% chlorhexidine and the transducer was placed in a longitudinal orientation to obtain a parasagittal view about 2 cm from the spinous process (Figure 3). Three hypoechoic muscle layers were identified: from subcutaneous tissue to the bone are the trapezius muscles, the rhomboid major and the erector spinae (Figure 4), if needed the probe could be tilted or pressed to visualize transverse process in a better way (Figure 5). A 5-cm 22-gauge hyperechoic needle was inserted in-plane to the ultrasound beam in a cephalad-to-caudad direction (Figure 6) to place the needle tip under the posterior fascia of the erector spinae. Correct tip position was confirmed by injection of 0.5 mL of 2% lidocaine and visualization of linear fluid spread deep to the erector spinae muscle; following which a total of 10 ml of 2% lidocaine was injected. The second time we added 4 mg of desametasone to the local anaesthetic solution, performing the block in the same way. Patient was monitored for 20 minutes after each procedure in the ambulatory before discharge. Every time he had an immediate pain relief in about 5 minutes after the injection, with a complete remission of all symptoms.



Figure 1: Spinous process marked on the patient skin after identification via palpation.



Figure 2: Identification of the area of pain. The XX area is an area where the patient referred strong pain and itching at the first visit. Point 1x represents the primary target, point 2x was supposed to be a secondary target, not necessary as the symptoms resolved with the first block.

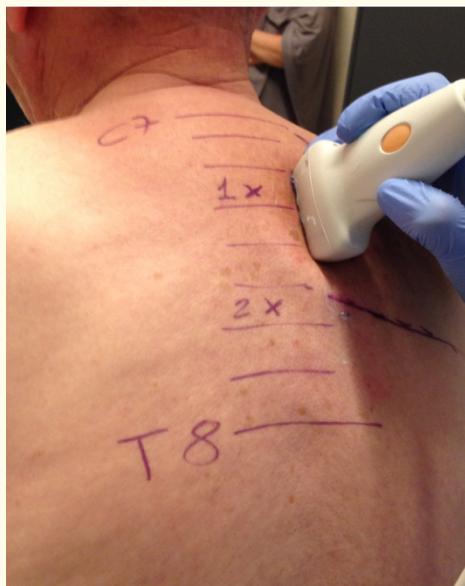


Figure 3: Transducer position for erector spinae block at T1/T2 level.

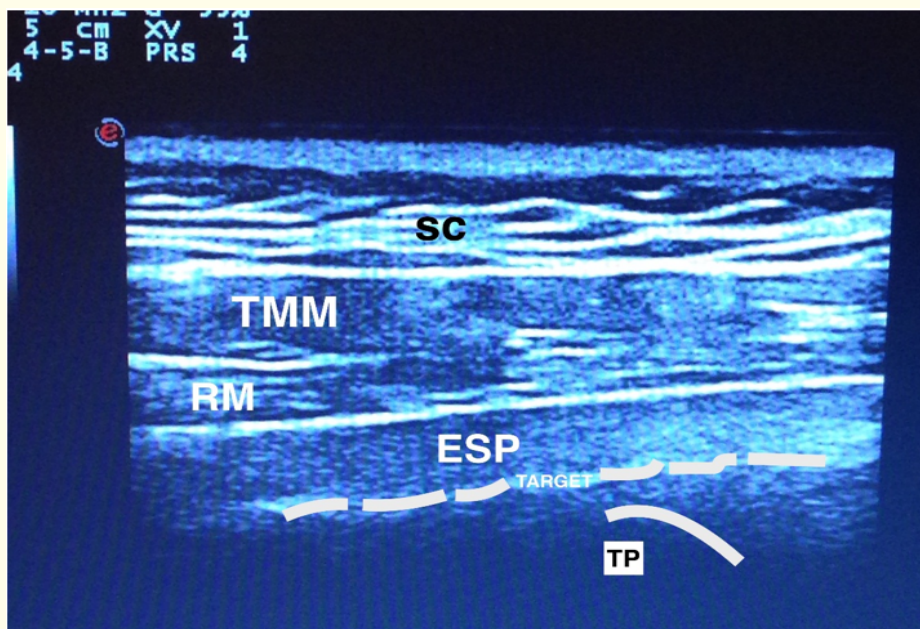


Figure 4: Subcutaneous tissue (sc), trapezius muscle (TMM), rhomboid muscle (RM), erector spinae muscle (ESP), Posterior ESP fascia (target); transverse process (TP).

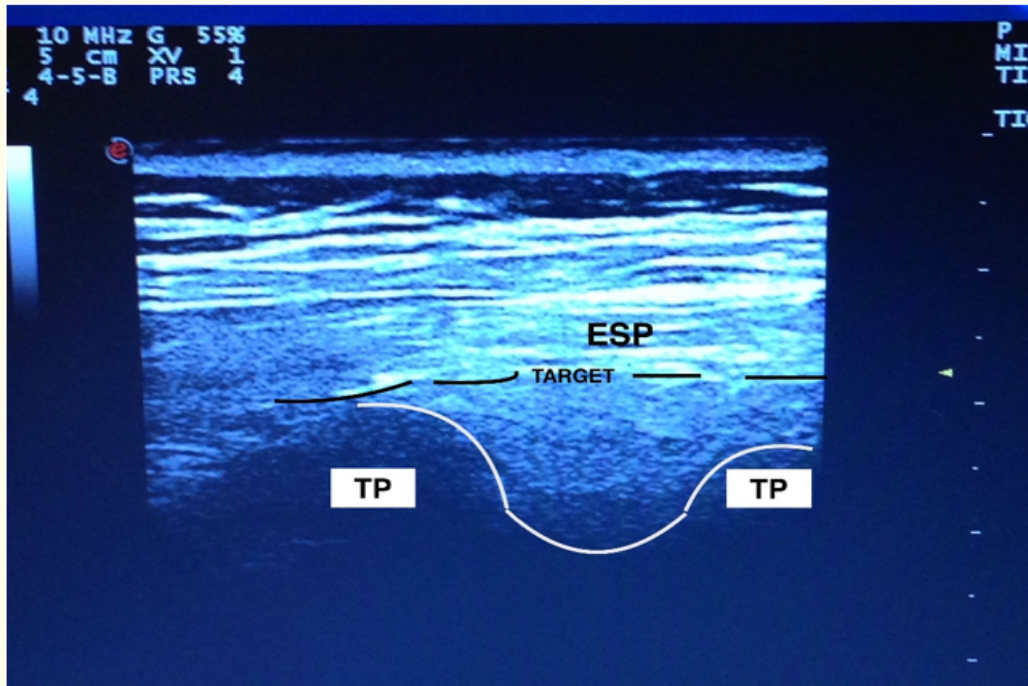


Figure 5: Different view of the same target, doing more pressure on the skin with the probe, it's easier to see the TP.



Figure 6: Needle direction of insertion.

After 30 days from the first block, the patient reported complete absence of pain in the axillary region or in the arm but persistence of suprascapular pain (site of primary eruption) with reduced intensity, average NRS of 4, and neuropathic intermittent symptoms. So we opted for repetition of the block at T1/T2 level, this time achieving a more complete and long lasting relief. No adverse effects were reported after each block.

Discussion

Even though the patient had a symptomatology involving C8-T1 dermatomes, that can make think it would be more indicated a combined injection of the lower branch of the brachial plexus in association with the 1st thoracic root, after a literature search, we find a description of a block performed a T2/T3 level to treat chronic shoulder pain [4]. Considering this, we decided to perform the block a T1/T2 level, in correspondence of the area first interested by the herpetic eruption. Probably because of the spread of the anaesthetic in longitudinal fashion, as described by Forero [5], we achieved a complete remission of the symptomatology immediately after the first block, that unfortunately didn't last completely.

Basing our considerations on a case series about post thoracotomy pain syndrome [6], we decided the second time to perform the ESP block at the same level, adding a little dose of steroid, trying to turn off all the remaining symptoms.

As wished, at the control visit, 45 days from the second block, the patient reports no pain at all, he didn't takes analgesics any longer, he just kept the therapy with PEA (as an initial indicated) until the end of the 4 month' cycle. Only itching occurred in the region of herpetic eruption in a discontinuous way, and some rash still stands despite local application of antiviral cream. At 4 month after the first interventional treatment the patient has a complete relief.

Conclusion

The ESP block is a new therapy that can provide effective and extensive thoracic analgesia [7], it can also be used for the treatment of shoulder and arm pain [4].

There is more than one evidence that this technic is efficient both for neuropathic pain [2-9] and nociceptive post-surgical pain [7-10] and more evidence exist that this block is useful in the treatment of complex pain as in malignancy [3-11].

ESP block major point are that is a very easy technic to be performed, it can be done in ambulatory settings or at patient bedside [6-9], and has a really low rate of side effects, which the most relevant one is systemic aesthetic toxicity via absorption [4-9].

Even though there are no major report for infective complication using this block [6,12], it is important to perform the technique in a sterile settings at all times. Other procedures described for the same pathologies, as the epidural block, have been reported for rare but not negligible incidence of severe infective complication [13,14], most of that regarding people with immunity alteration as for patient in long term haemodialysis treatment [15]. We want to underline that this block is more likely to be considered as a peripheral block that usually have less incidence of infective complications than neuraxial blocks [12].

At this moment it is unclear the exact mechanism which make a peripheral block able to stop a "loop circuit" of chronic pain, or how a single block or a series of blocks could cure a neuralgia having an effect that last way much longer than the half-life time of the used drugs [4,5], studies are need in this direction. Anyway there is more than an evidence about peripheral block effectiveness in these pathologies.

Two things it's important for us to underline in this article, first that it is mandatory to treat herpetic pain as soon as possible even with interventional technics in order to prevent developing of chronic pain; second, that there are always more options to help our patient affected by chronic pain, some of them are easier and safer, with a high success rate, some less but we should always consider them, especially in those patients refractory to classic drugs treatment.

Disclosure of Funding Received

None.

Conflicts of Interest

None.

Author's Contribution

- Elias Ceravola: Performed the blocks and proposed the study.
- Chiara Marzorati: Assisted at all procedures and to the articles wording.
- Paolo Maniglia: Helped in patient valuation and literature search.

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