



## CASE REPORT

# An unusual obstacle to the thoracic interlaminar epidural injection for the treatment of post-herpetic neuralgia

*Postherpetik nevralji tedavisinde torasik interlaminar epidural enjeksiyonuna beklenmedik bir engel*

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## Summary

Interlaminar epidural steroid injections corresponding to dermatomes affected by post-herpetic neuralgia (PHN) were found effective in reducing pain. Diffuse idiopathic skeletal hyperostosis (DISH) is a non-inflammatory condition that mainly occurs with calcification and ossification of spinal ligaments such as anterior and posterior longitudinal, interspinous, supraspinous ligament, and ligamentum flavum. In this case, it is presented that the failure of the access to the T7-T8 interlaminar space due to the supra/interspinous ligament calcification and ossification accompanied by thoracic DISH in a 73-year-old male for the treatment of PHN.

Keywords: Diffuse idiopathic skeletal hyperostosis; epidural injection; pathologic calcification; postherpetic neuralgia; thoracic spondylosis; thoracic vertebrae.

## Özet

Postherpetik nevraljide etkilenen dermatomlara yönelik interlaminar epidural steroid enjeksiyonlarının ağrıyı azaltmada etkili olduğu bulundu. Diffüz idiyopatik iskelet hiperostoza esas olarak anterior ve posterior longitudinal ligament, interspinöz, supraspinöz ligament ve ligamentum flavum gibi spinal ligamentlerin kalsifikasyonu ve kemikleşmesi ile ortaya çıkan inflamatuvar olmayan bir durumdur. Bu olguda, 73 yaşında postherpetik nevraljisi olan bir erkek hastada, torakal diffüz idiyopatik iskelet hiperostoza eşlik eden supra/interspinöz ligament kalsifikasyonu ve kemikleşme nedeniyle T7-T8 interlaminar epidural alana erişimin başarısız olma durumu sunuldu.

Anahtar sözcükler: Epidural Enjeksiyon; diffüz idiyopatik iskelet hiperostoza; patolojik kalsifikasyon; postherpetik nevralji; torakal spondiloz; torakal vertebra.

## Introduction

Post-herpetic neuralgia (PHN) which refers to pain lasting more than 4 months beyond healing of the rash is the most common complication of acute herpes zoster. The pain has been described as a constant or intermittent, burning, or stabbing sensation and most of patients with PHN also have allodynia.<sup>[1]</sup> Epidural steroid injections are used for the treatment of pain associated with herpes zoster.<sup>[2]</sup> Interlaminar epidural steroid injections corresponding to dermatomes affected by the disease were found effective in reducing pain.<sup>[3]</sup>

Diffuse idiopathic skeletal hyperostosis (DISH) is a non-inflammatory condition that mainly occurs with calcification and ossification of spinal ligaments and entheses. The presence of continuous ossification along the anterolateral aspect of at least four contiguous vertebral bodies especially in the thoracolumbar spine is used as diagnostic criteria.<sup>[4]</sup> Although calcification and ossification of ligaments occurs in anterolateral site of vertebral bodies in patients with DISH.<sup>[5]</sup> It may occur in posterior paraspinal ligaments such as supra/interspinous ligaments.<sup>[6]</sup> The calcification and ossification of these ligaments at the in-

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Submitted (Başvuru) 13.07.2020 Accepted (Kabul) 22.07.2020 Available online (Online yayımlanma) 07.08.2020

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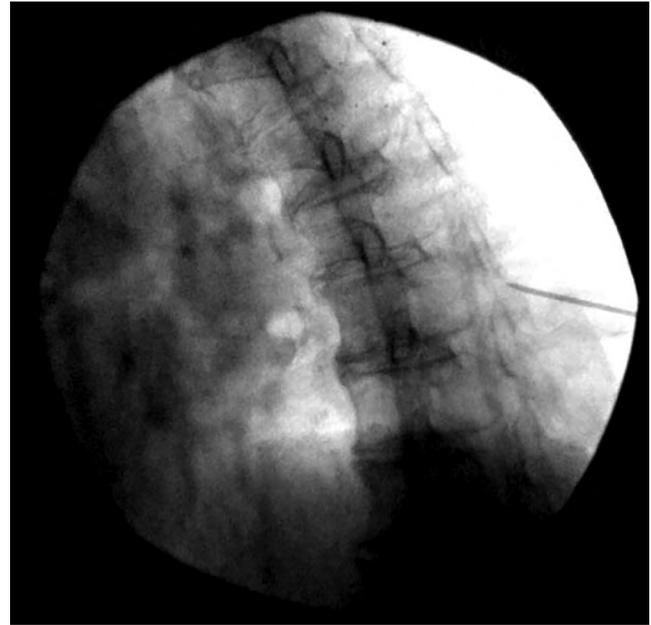
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terlaminar epidural injection level may prevent the needle from reaching the epidural area. Therefore, the effectiveness of interlaminar epidural injections that cannot be made at the affected level may also be low. In this case, the failure of the access to the T7-T8 interlaminar space due to the supra/interspinous ligament calcification and ossification accompanied by thoracic DISH in a 73-year-old male for the treatment of PHN is presented.

## Case Report

A 73-year-old man was referred to our pain clinic for advanced pain management due to failure of medical treatment. The patient reported a severe burn sensation and constant pain started in the right back 4 months ago. He took non-steroid anti-inflammatory drugs. After 1 day, he noticed the eruption of vesicles over the right back and applied to hospital. He was diagnosed with acute herpes zoster and hospitalized. Discolored scarring over his right back and chest wall corresponding to the dermatome of T6-T8 was seen. Gabapentin 600 mg twice a day, duloxetine 30 mg once a day, and acetaminophen 500 mg/codeine phosphate 30 mg 3 times a day were prescribed. After 1 month, he reported that his pain was not effectively decreased. The numeric rating scale (NRS) score for pain was ten out of ten. Therefore, the thoracic interlaminar epidural steroid injection in the T7-T8 interlaminar space was planned.

The patient was placed in the prone position and the thoracic area was anesthetized in sterile fashion. The fluoroscope was then tilted caudad to maximize the T7-T8 interlaminar space between the overlapping laminae and spinous processes. A 20-gauge, 10-cm Tuohy needle, was advanced under fluoroscopic guidance with a right paramedian approach. However, the needle could not be advanced through supra/interspinous ligaments (Fig. 1). After a few tries, the Tuohy needle was directed to the T12-L1 interlaminar space which was seen more obviously. Then, an epidural catheter was inserted with the tip advanced to T7 level. After contrast, media was seen in the epidural space, 80 mg triamcinolone and 10 mg 0.5% bupivacaine were given. The procedure was completed without major complications. After 1 h of the procedure, he had no complaints except a minimal pain at the injection site and was discharged.



**Figure 1.** Lateral radiograph of the thoracic spine during interlaminar thoracic epidural injection. A Tuohy needle not advanced through the T7-T8 interlaminar space.

After procedure, thoracic spine X-ray and computed tomography of the patient were examined (Fig. 2). The presences of continuous ossification along the anterolateral aspect of T6-T10 that compatible with the DISH was noticed. The calcification and ossification of supra/interspinous ligaments corresponding to these levels were also seen. This explained the failure of interlaminar injection at this level. After 1 h of procedure, NRS for pain was 6 out of 10. After 4 weeks, his pain was almost the same as it was before procedure (NRS 9 out of 10).

## Discussion

In this case, the failure of the access to the T7-T8 interlaminar space due to the supra/interspinous ligament calcification and ossification accompanied by thoracic DISH in a 73-year-old male for the treatment of PHN is presented. After a few tries, the needle was directed to the T12-L1 interlaminar space and epidural catheter was inserted with the tip advanced to T7. The procedure was completed without major complications. After 1 month, his pain was similar to the pain before the procedure.

DISH is characterized by the calcification and ossification of ligaments and entheses. The calcification and ossification of anterior longitudinal ligament, especially right-sided is the most prominent finding of DISH.<sup>[5]</sup> Besides, calcification and ossification



**Figure 2.** Thoracic X-ray and computed tomography (CT) of the patient. X-ray shows the presences of continuous ossification along the anterolateral aspect of thoracic spine. CT shows the calcification and ossification of supra/interspinous ligaments (red arrows).

may occur in other paravertebral ligaments such as posterior longitudinal, interspinous, supraspinous ligament, and ligamentum flavum.<sup>[6]</sup> The prevalence of supra/interspinous ligament ossification in patients with cervical radiculopathy due to posterior ligament ossification was found 29%.<sup>[7]</sup> In our case, supra/interspinous calcification and ossification, which is less frequently observed in DISH, was detected. It is known that interspinous ligament calcification and ossification may be a potential anatomic impediment to the interlaminar epidural steroid injection.<sup>[8]</sup> Therefore, in the patients with DISH, radiological examination of supra/interspinous ligament calcification and ossification may be important for the prevention of possible unsuccessful interlaminar epidural steroid injections.

Herpes zoster (shingles) is a condition that occurs after the reactivation of the Varicella Zoster virus that becomes latent in the dorsal root ganglia after the first infection or vaccination.<sup>[9]</sup> PHN is the most common complication of acute herpes zoster.<sup>[1]</sup> Older age, greater acute pain and rash severity,<sup>[10]</sup> and immune suppression<sup>[11]</sup> are risk factors for acute herpes neuralgia becoming to the PHN. In our case, severe rash and severe acute pain of his acute herpes and patient's older age may be associated with PHN.

Gabapentin,<sup>[12]</sup> pregabalin,<sup>[13]</sup> tricyclic antidepressants such as amitriptyline,<sup>[14]</sup> and opioids<sup>[15]</sup> are effective for the treatment of PHN. These medications are prescribed with the recommended starting dose and increased until adequate clinical response is obtained. However, they have significant intolerable side effects limiting the dose. In cases which oral therapy is not effective, botulinum toxin injections over the affected area,<sup>[16]</sup> sympathetic ganglion blocks,<sup>[17]</sup> and the affected nerve blocks<sup>[18]</sup> may be used. Although epidural injections have been used both to treat zoster-associated pain and to prevent PHN,<sup>[19]</sup> they can also use to relieve symptoms of patients with PHN.<sup>[20]</sup>

However, in our case, the interlaminar epidural steroid injection with the epidural catheter that the tip was advanced to T7 level was not effective. This situation may be related to the inability of injection directly to the affected level due to the calcification and ossification of supra/inter ligaments and the whole injectate may not have been given to this level. In addition, the effectiveness of epidural injections has been demonstrated in the acute period of herpes-related pain, but, in our case, the patient was in the chronic period of pain.

This case is valuable in that it demonstrates that supra/interspinous ligaments calcification and ossifica-

tion, which can occur in patients with DISH, may be one of the technical and therapeutic failure in the thoracic epidural injection.

The epidural steroids injections are used to relieve symptoms of patients with PHN. If these patients also have DISH which can be seen calcification and ossification of paravertebral ligaments, it may be more appropriate to plan the transforaminal route instead of the interlaminar route.

**Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.**

**Conflict-of-interest issues regarding the authorship or article: None declared.**

**Peer-review: Externally peer-reviewed.**

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