

Superficial Cervical Plexus Block for Acute Herpes Zoster at C3-4 Dermatome

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A 50-year-old man visited our pain clinic due to acute herpes zoster with rash occurred 10 days ago. The crusts formed and covered left C3-4 dermatome. Neuroaxial block was worried about infection. Superficial cervical plexus block (SCPB) was performed at left C4 level twice for a month with 1% lidocaine 20 mL and triamcinolone 20 mg. After SCPB, pain and itching were reduced and the patient could sleep at night without awakening. But pregabalin 150 mg/day was kept due to mild to moderate pain and itching 7 months later from rash. In this case, SCPB was effective method to reduce acute pain and itching but it could not prevent postherpetic neuralgia.

Key Words: Cervical plexus, Herpes zoster, Nerve block, Postherpetic neuralgia

Introduction

Acute herpes zoster results from reactivation of endogenous varicella zoster virus which cause chickenpox in childhood and become latent in dorsal root ganglia of spinal nerve or trigeminal ganglia. Pain caused by acute herpes zoster is characterized as shooting, burning, throbbing, and itching with or without allodynia [1].

Sympathetic block, epidural block or paravertebral block were performed as interventions to prevent postherpetic neuralgia (PHN) [2-4]. Deep cervical plexus block combined with stellate ganglion block or occipital nerve block in 2 cases might reduce acute pain and prevent PHN [5].

The superficial cervical plexus composed with ventral rami of C1-4 spinal nerve. The dye spread of superficial cervical plexus block (SCPB) was found at deep cervical space [6]. Therefore, SCPB may be

helpful for reduction of pain in acute herpes zoster around neck and prevent PHN in cases which epidural block is relatively contraindicated.

In this article, we reported 50-year-old man who had acute herpes zoster in the left C3-4 area suffering with severe itching and shooting pain, was treated effectively with SCPB.

Case Report

A 50-year-old man, who had crust formation without pustule in the left neck, visited our pain clinic due to pain. The rash was formed 10 days ago and throbbing pain preceded 3 days before rash eruption. He complained pain which characterized with pricking, shooting and itching. The Visual analogue scale (0 = no pain, 10 = worst pain imaginable) was 7-8 and severe itching occurred abruptly. The symptoms disturbed sleep frequently. Pregabalin 300 mg/day, celecoxib 200 mg/day, nortriptyline 10 mg/day and famciclovir 250 mg/day was prescribed for pain control. In the past medical history, he had hypertension only.

In inspection, the dermatome C3-4 covered with a lot of crusts spreading broadly left anterior to posterior neck (Fig. 1). Although, laboratory findings such as white blood cell count, erythrocyte sedimentation rate, and C-reactive protein were normal, epidural block for left unilateral injection worried about infection in neural axis. Instead of epidural block, we considered that SCPB might be adequate block to reduce pain and escape infection risk of neural axial injection although increasing infection risk of injection site.

The ultrasound (10-15 Hz, linear probe, SSD 4000, Aloka) guided SCPB block was done at the C4 level. The skin was prepared with 10% povidone iodied. The needle was positioned to behind sternocleidomastoid (SCM) muscle but



Fig. 1. Crusts formation was observed in left C3-4 dermatome from anterior to posterior neck. The skin was cured without infection.

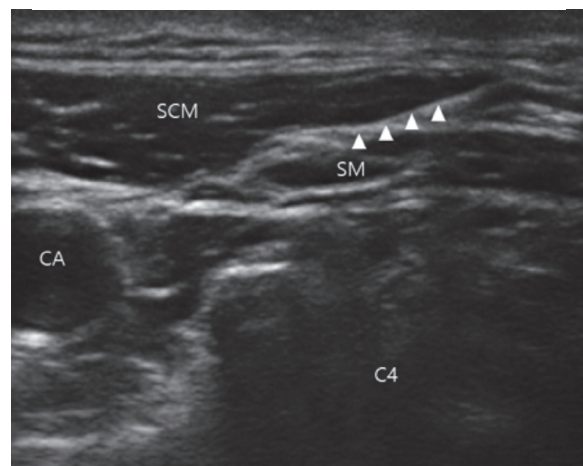


Fig. 2. Superficial cervical plexus block was done at left C4 level. The arrowheads points needles which located behind sternocleidomastoid (SCM) muscle and did not penetrate deep fascia. CA: carotid artery, SM: scalenus medius.

superficial to the deep fascia (Fig. 2). The 0.5% lidocaine 20 mL mixed with triamcinolon 20 mg

was injected and it spread toward to carotid sheath. The procedure was done twice for a month with two weeks intervals. One month after first SCPB, pregabalin 300 mg/day was maintained and the pain was reduced (VAS 3-4). The frequency and intensity of itching were reduced but sporadic itching sensation with few seconds bothered the patient 6-7 times during daytime. The patient could sleep at night without awakening so he did not want additional neuroaxial block for work even though wound of skin had been clear. After pregabalin 300 mg/day was kept for two months, the dose of pregabalin could be reduced to 150 mg/day. The pain (VAS 3-4) and mild to moderate itching for a few times were continued to 7 months later from rash. The SCPB was effective to reduce symptom of acute herpes zoster without infection but it could not prevent PHN.

Discussion

The patient was diagnosed with acute herpes zoster at left C3-4 dermatome with prodromal symptom 3 days before rash. He complained severe pain (VAS 7-8) and itching which occurred abruptly and disturbed sleep. The SCPB was performed twice for a month and it reduced the pain and itching of acute herpes zoster. It could reduce the dose of medication also, but could not prevent PHN.

The definition for PHN is different among the researchers. PHN defines continuation of pain over 90 days after acute herpes zoster rash. The severity of pain is ≥ 3 (0 = no pain, 10 = as imagine as) [7]. The prevalence of PHN increases with age more than 50 years [8]. Old age, acute pain intensity and deep pain are important factors as the predictor of PHN [9,10]. The mean of deep pain is deeper pain compared with superficial pain which was from

cutaneous surface or evoked by finger pinch of skin [10]. Other factors increased incidence of PHN were walking problem at enrollment and pain which influence relationship with other people at enrollment [11]. In this case, the patient was 50-year-old with hypertension. Therefore, the risk factors in this case were old age, and severity of pain.

To treatment of herpes zoster, early antiviral drugs administration reduces acute pain [12]. Another important method for prevention of PHN is neuroaxial block. Continuous epidural block revealed more effective to reduce intensity of pain and incidence of sustenance for pain than intermittent epidural block [13]. Peripheral nerve block was used sometimes in cases which neuroaxial block accompany with some risks such as infection and hematoma. Peripheral nerve block with steroid reduced pain in nerve injury model. The mechanism suggested that steroid reduce ectopic discharge from damaged neuron [14] and reduce perineural inflammation which results to stabilize membrane [15]. Three-in-one-block or deep cervical plexus block were used and had effective reduction of pain in acute herpes zoster [5,16]. Superficial cervical plexus gives four branches which are lesser occipital nerve (C2), greater auricular nerve (C2,3), transverse cutaneous nerve of neck (C2,3) and supraclavicular nerve (C3,4). Those branches emerge from posterior border of SCM muscle. SCPB easily performed by ultrasound guided block. Especially in SCPB, local analgesics spread to cervical root in cadaveric study [6]. In our case, SCPB was done with 0.5% lidocaine 20 mL plus triamcinolone 20 mg twice using ultrasound and we observed local anesthetic spread from behind SCM muscle to carotid sheath.

The sympathetic block was traditionally used for treatment of herpes zoster to relieve acute pain and prevent PHN. Sympathetic action after nerve

injury was observed through α -adrenergic antagonist relieved pain [17] or sympathetic axons sprout onto dorsal root ganglion after peripheral nerve injury [18]. Shin *et al.* [19] reported that symptoms of acute herpes zoster at C3 dermatome in 65-year-old man were reduced effectively by stellate ganglion block and SCPB, but did not described long-term follow up in that case. In our case, only SCPB was performed twice for a month and contributed effectively to reduce acute herpes zoster pain and minimized chronic pain, but unfortunately, might be insufficient to prevent PHN.

In conclusion, SCPB reduced acute pain effectively induced by herpes zoster in C3-4 dermatome level but it did not prevent postherpetic neuralgia. More study should be needed for whether SCPB prevent PHN.

References

1. Johnson RW, Wasner G, Saddier P, Baron R. Herpes zoster and postherpetic neuralgia: optimizing management in the elderly patient. *Drugs Aging* 2008;**25**:991-1006.
2. Pasqualucci A, Pasqualucci V, Galla F, De Angelis V, Marzocchi V, Colussi R, *et al.* Prevention of postherpetic neuralgia: acyclovir and prednisolone versus epidural local anesthetic and methylprednisolone. *Acta Anaesthesiol Scand* 2000;**44**:910-8.
3. Ji G, Niu J, Shi Y, Hou L, Lu Y, Xiong L. The effectiveness of repetitive paravertebral injections with local anesthetics and steroids for the prevention of postherpetic neuralgia in patients with acute herpes zoster. *Anesth Analg* 2009;**109**:1651-5.
4. Makharita MY, Amr YM, El-Bayoumy Y. Effect of early stellate ganglion blockade for facial pain from acute herpes zoster and incidence of postherpetic neuralgia. *Pain Physician* 2012;**15**:467-74.
5. Hardy D. Relief of pain in acute herpes zoster by nerve blocks and possible prevention of post-herpetic neuralgia. *Can J Anaesth* 2005;**52**:186-90.
6. Pandit JJ, Dutta D, Morris JF. Spread of injectate with superficial cervical plexus block in humans: an anatomical study. *Br J Anaesth* 2003;**91**:733-5.
7. Oxman MN, Levin MJ, Johnson GR, Schmader KE, Straus SE, Gelb LD, *et al.* A vaccine to prevent herpes zoster and postherpetic neuralgia in older adults. *N Engl J Med* 2005;**352**:2271-84.
8. Yawn BP, Gilden D. The global epidemiology of herpes zoster. *Neurology* 2013;**81**:928-30.
9. Drolet M, Brisson M, Schmader K, Levin M, Johnson R, Oxman M, *et al.* Predictors of postherpetic neuralgia among patients with herpes zoster: a prospective study. *J Pain* 2010;**11**:1211-21.
10. Kanbayashi Y, Onishi K, Fukazawa K, Okamoto K, Ueno H, Takagi T, *et al.* Predictive factors for postherpetic neuralgia using ordered logistic regression analysis. *Clin J Pain* 2012;**28**:712-4.
11. Kawai K, Rampakakis E, Tsai TF, Cheong HJ, Dhitavat J, Covarrubias AO, *et al.* Predictors of postherpetic neuralgia in patients with herpes zoster: a pooled analysis of prospective cohort studies from North and Latin America and Asia. *Int J Infect Dis* 2015;**34**:126-31.
12. Wassilew S. Brivudin compared with famciclovir in the treatment of herpes zoster: effects in acute disease and chronic pain in immunocompetent patients. A randomized, double-blind, multinational study. *J Eur Acad Dermatol Venereol* 2005;**19**:47-55.
13. Manabe H, Dan K, Higa K. Continuous epidural infusion of local anesthetics and shorter duration of acute zoster-associated pain. *Clin J Pain* 1995;**11**:220-8.
14. Johansson A, Bennett GJ. Effect of local methylpredni-solone on pain in a nerve injury model. A pilot study. *Reg Anesth* 1997;**22**:59-65.
15. O'Gradaigh D, Merry P. Corticosteroid injection for the treatment of carpal tunnel syndrome. *Ann Rheum*

- Dis* 2000;**59**:918-9.
16. Hadzic A, Vloka JD, Saff GN, Hertz R, Thys DM. The "three-in-one block" for treatment of pain in a patient with acute herpes zoster infection. *Reg Anesth* 1997;**22**:575-8.
17. Raja SN, Treede RD, Davis KD, Campbell JN. Systemic alpha-adrenergic blockade with phentolamine: a diagnostic test for sympathetically maintained pain. *Anesthesiology* 1991;**74**:691-8.
18. McLachlan EM, Janig W, Devor M, Michaelis M. Peripheral nerve injury triggers noradrenergic sprouting within dorsal root ganglia. *Nature* 1993;**363**:543-6.
19. Shin HY, Kim DS, Kim SS. Superficial cervical plexus block for management of herpes zoster neuralgia in the C3 dermatome: a case report. *J Med Case Rep* 2014;**8**:59.
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