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Superior laryngeal nerve block for treatment of throat pain and cough following laryngeal herpes zoster: A case report

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Abstract

BACKGROUND

² Herpes zoster is caused by reactivation of latent varicella-zoster virus infection within the sensory nerve ganglion of the spinal or cranial nerves. Laryngeal herpes zoster is rare and involves superior laryngeal nerve, which leads to several complications such as throat pain, and cough.

CASE SUMMARY

⁷ Patient concerns: A 52-year old woman presented with a 70-day history of throat pain and a 67-day history of non-productive cough. Three days after onset of pain, she was diagnosed with laryngeal herpes zoster. Flexible nasolaryngoscopy revealed multiple white ulcerated lesions on the left hemi epiglottis and the left supraglottic area. She was prescribed with 750 mg famciclovir a day for 7 days, and 150 mg pregabalin, 100 mg tramadol and 10 mg nortriptyline a day for 67 days. However, despite of these medications, she complained of pain and persistent cough. Therefore, superior laryngeal nerve block under ultrasound guidance was performed. Three days after the intervention, the throat pain and cough disappeared. The patient remained symptom-free at 3 mo follow-up.

CONCLUSION

A superior laryngeal nerve block ¹ can be an effective option for treatment of pain and cough following laryngeal herpes zoster.

INTRODUCTION

² Herpes zoster is caused by reactivation of latent varicella-zoster virus infection within the sensory nerve ganglion of the spinal or cranial nerves^[1]. Herpes zoster is characterized by acute pain and erythematous maculopapular rash in the affected dermatome and most commonly involves the thoracic dermatome. Laryngeal herpes zoster is rare and involves superior laryngeal nerve, which ⁴ leads to several complications such as throat pain, and cough^[2]. Here, we present a case of a 52-year-old woman with a 70-day history of throat pain and a 67 day history of non-productive cough following herpes zoster on the left hemi-epiglottis and the left supraglottic area. The pain and cough were successfully treated with left superior laryngeal nerve block with lidocaine and triamcinolone under ultrasonography guidance.

CASE PRESENTATION

Chief complaints

A 52-year-old female with throat pain and non-productive cough was referred to the pain management center from otolaryngology department.

History of present illness

Her throat pain occurred 70 days prior to presentation. Three days after onset of pain, she noticed non-productive cough.

History of past illness

She was diagnosed with laryngeal herpes zoster by an otolaryngologist 67 days prior to presentation.

Personal and family history

She had no significant medical history and family history

Physical examination

Three days after onset of pain, a flexible nasolaryngoscopy revealed multiple mucosal eruptions and swelling on the left hemi-epiglottis and the left supraglottic area (Figure 1). The vocal movements were bilaterally normal.

Laboratory examinations

Blood laboratory tests including leukocyte count, C-reactive protein, and erythrocyte sedimentation rate showed no abnormalities.

Imaging examinations

Chest radiography showed no abnormalities.

FINAL DIAGNOSIS

She was diagnosed with throat pain and cough following laryngeal herpes zoster.

TREATMENT

The patient was diagnosed with laryngeal herpes zoster by an otolaryngologist 67 days prior to presentation and 750 mg famciclovir once daily for 7 days was initially prescribed. In addition, she suffered from throat pain of 8 using the numerical analog scale (NRS) from 0 (no pain) to 10 (worst pain imaginable) and therefore, was treated with 75 mg pregabalin twice daily, 50 mg tramadol twice daily and 10 mg nortriptyline once at bedtime for 67 days. However, despite of these medications, the throat pain was 4 on the NRS. In addition, she complained of no improvement of cough. The patient suffered from mild constipation and dizziness due to medications and was reluctant to increase the dose. Her herpetic lesion was on the left supraglottic area, which are innervated by the internal branch of superior laryngeal nerve. Therefore, we decided to perform superior laryngeal nerve block under ultrasound

guidance (Sonosite Edge 2, Fujifilm sonosite, Bothell, USA). The patient was placed in a supine position with the neck extension. The high frequency linear probe was placed over submandibular area in a longitudinal orientation. The greater horn of hyoid bone and thyroid cartilage were hyperechoic signals on sonography. Thyrohyoid muscle and thyrohyoid muscle were identified between two structures (Figure 2). Using out of plane approach, 2 mL of 50:50 mixture of 1% lidocaine and triamcinolone (40 mg/mL) was injected into the area of the posterior thyrohyoid membrane. After the procedure, the throat pain decreased to 1 on the VAS score, and the cough was greatly improved. Consent for publication of this case report was obtained from the patient.

OUTCOME AND FOLLOW-UP

Three days after the intervention, the pain and cough had completely disappeared. The patient remained symptom-free at a 3 mo follow-up.

DISCUSSION

Herpes zoster involves the sensory ganglion of spinal or cranial nerve, which subsequently, spreads along the peripheral nerves to the skin, leading to several complications such as rash, acute pain and postherpetic neuralgia^[1]. The diagnosis of herpes zoster is usually made on the history and examination findings. In this case, antibody titer to varicella zoster virus was not measured and the patient was diagnosed with laryngeal herpes zoster on the basis of the clinical presentation. The herpes zoster most commonly affects the thoracic region, followed by the ophthalmic branch of the trigeminal nerve^[1]. Laryngeal herpes zoster is rare, involving the sensory of vagus nerve^[2]. The sensory distribution of the vagus nerve includes superior laryngeal nerve and auricular nerve. The internal branch of the superior laryngeal nerve enters the thyrohyoid membrane and provides sensation of supraglottis above the vocal cord whereas the auricular branch of the vagus supplies part of the external auditory meatus^[3]. In the present case, herpes zoster involved the left side of supraglottic region including the epiglottis, and vallecular, leading to unilateral throat pain.

Generally, the herpes zoster rash resolves within 2-4 wk. Administration of antiviral agents including acyclovir and famciclovir within 72 h after onset of herpes zoster effectively decreases acute pain, promotes lesion healing and prevents PHN^[14]. However, postherpetic neuralgia can occur due to nerve tissue injury during an outbreak of herpes zoster. Several inflammatory materials were released from the injured tissue including substance P, histamine and bradykinin, resulting in peripheral sensitization^[5,6]. These excitatory materials increase ectopic discharge of C fibers and lead to spontaneous pain, allodynia, and hyperalgesia^[7].

In the present case, three days after onset of throat pain, the patient noticed non-productive cough, easily triggered by speaking, which mildly affected the patient's daily life.

When cough lasts more than 8 wk without clear external stimuli to the cough mechanism, neurogenic cough is conserved, which is associated with hypersensitivity of the superior laryngeal nerve^[8]. It was reported that chronic cough occurs as a sequela to sensory nerve damage during laryngeal herpes zoster. ^[2,8].

The anti-convulsant such as gabapentin or pregabalin and anti-depressant including tricyclic antidepressants represent first-line treatment options for neuropathic pain^[1,9]. Postherpetic cough is associated with neurogenic hypersensitivity and is analogue to postherpetic neuralgia. Therefore, medical treatment with pregabalin and amitriptyline can be considered to be effective to treat pain and cough following herpes zoster^[2,8]. However, such complications associated with herpes zoster are often resistant to medical treatments^[1,2,8]. In the present case, the patient complained of throat pain at a 4 on the NRS and cough despite medication with pregabalin, nortriptyline and tramadol.

Administration of local anesthetic plus steroid around nerve affected by herpes zoster is effective in treating zoster pain and preventing postherpetic neuralgia^[1,10,11]. It was reported that the superior laryngeal nerve with local anesthetic and steroid was effective to treat chronic neurogenic cough after post-viral neuropathy^[12,13]. Steroids, a strong anti-inflammatory agent, can decrease the perineural inflammatory response and reduce ectopic discharge in the involved nerve^[14,15]. In addition, it can help hasten

recovery of the injured nerve^[14]. In the present case, the pain and cough following herpes zoster was completely resolved with superior laryngeal nerve block under ultrasonography guidance.

CONCLUSION

In conclusion, laryngeal herpes zoster is a rare form of herpes zoster. It can cause several complications such as throat pain and cough. A superior laryngeal nerve block with steroid can be an effective option for treatment of persistent pain and cough following laryngeal herpes zoster. Clinicians should be aware of this entity to provide appropriate treatments.

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