Use of Endoscopic Transthoracic Sympathicotomy in Intractable Postherpetic Neuralgia of the Chest*

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Although there are various treatments for postherpetic neuralgia (PHN), none produces definitive effects. We report a case of 72-year-old woman who developed intractable PHN of the chest in which treatment with endoscopic transthoracic sympathicotomy (ETS) produced long-term effective results. When hyperesthesia of the sympathetic nerve participates in PHN, the blocking of sympathetic excitation seems to be effective for PHN suppression. The method using a single resectoscope is safe, accurate, yields excellent results cosmetically, and generates minimal invasion and very little postoperative pain. Although ETS is not always effective for all cases of PHN, it could be a useful method of treating patients with PHN that is resistant to conventional therapies.

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Key words: endoscopic transthoracic sympathicotomy; postherpetic neuralgia

Abbreviations: ETS = endoscopic transthoracic sympathicotomy; PHN = postherpetic neuralgia; WBFPRS = Wong-Baker face pain rating scale; WDRN = wide dynamic range neuron

THE MECHANISM OF POSTHERPETIC NEURALGIA (PHN)

The mechanism of postherpetic neuralgia (PHN) has not been fully elucidated. It is possible that not one but many mechanisms may play a role.1,2 Although there are various treatments for PHN, none produces definitive effects. Although the effectiveness of sympathetic blockade on cingulate pain has been well-recognized clinically since it was reported by Colding,3 its effectiveness in treating patients with PHN has not been elucidated. In this report, a case of intractable PHN of the chest is presented in which therapy with endoscopic transthoracic sympathicotomy (ETS) produced long-term effective results.

CASE REPORT

A 72-year-old woman presented at our hospital for zonal blistering and severe pain in the left chest. Herpes zoster of the region innervated by the VI, VII, and VIII intercostal nerves was diagnosed. Blisters disappeared following the administration of antiviral agents, and 3 months later only discoloration at the site remained (Fig 1). However, “burning” or “tingling” pain persisted for another 3 months (Wong-Baker face pain rating scale [WBFPRS], 4/5 points). During that period, the patient received several treatments. The administration of nonsteroidal anti-inflammatory analgesics and steroids did not relieve the pain. Intercostal nerve block and laser irradiation were also ineffective. Although tricyclic antidepressants were somewhat effective (WBFPRS, 3/5 points), the patient strongly requested additional pain relief. Therefore, epidural anesthesia was performed. Pain disappeared while the anesthetic drug was administered. The finding that epidural anesthesia was effective and that intercostal nerve block was ineffective suggested that the sympathetic nerves played a major role in pain. Consequently, ETS was chosen to obtain pain relief safely and permanently. Surgery was performed with the subject in the recumbent position on her right side. An incision of approximately 1 cm was made at the VIII intercostal region on the middle axillary line (Fig 1). Following the method of Drott and Claes,4 a 24F resectoscope was inserted through the incision (Fig 2). After the sympathetic nerve fiber was identified, the V to IX sympathetic ganglions were transected by cautery (Fig 3).

Following surgery, the PHN disappeared (WBFPRS, 0/5 points). Postoperative pain disappeared within a week. The regions that were controlled by sympathetic nerves that had been subjected to sympathicotomy became warm to the touch. There was slight compensatory perspiration in the abdominal and
femoral regions. No new pain such as intercostal neuralgia appeared. At 35 months after surgery, PHN has not recurred.

**Discussion**

It is said that PHN occurs in approximately 13% of patients with herpes zoster.\(^5\) Pain during the acute period of herpes zoster is principally due to inflammation. However, the mechanism by which the pain occurs in patients with PHN has not been elucidated. Currently, it is believed that PHN belongs to the category of neuropathic pain, and some theories, such as the virus breaking down the gate control system,\(^1\) have been presented. Another important theory is that the sympathetic nerve participates in generating pain. In reality, there is no direct relationship between the sympathetic nerve and the somatic nerve; however, when the peripheral nociceptor is injured, a strong excitation is transmitted to the wide dynamic range neuron (WDRN) at the dorsal horn of the spinal cord. The WDRN is excited most strongly by pain stimulus and, at the same time, is in a long-term hypersensitive state. The hypersensitive WDRN can be excited by a non-noxious stimulus transmitted through non-noxious mechanoreceptor fibers, thus generating pain. An impulse by efferent sympathetic fibers is easily transmitted to non-noxious mechanoreceptor fibers and excites the WDRN, thus generating pain.\(^2\) When hyperesthesia of the sympathetic nerve is the cause of pain, a blocking transmission of sympathetic excitation and increasing blood flow to the region controlled by the nerve seems to be effective for pain suppression, as was observed in our patient.

![Figure 1](image1.png)

**Figure 1.** Pigmentation at the region innervated by the VI, VII, and VIII intercostal nerves remained. A 1-cm incision was made at the VIII intercostal region on the middle axillary line.

![Figure 2](image2.png)

**Figure 2.** A 24F resectoscope was inserted through the incision.
With regard to blocking the transmission of sympathetic excitation, thoracic sympathetic blocking requires a sophisticated technique. Complications such as pneumothorax and drug infiltration to areas surrounding the nerves often occur. Another problem is that the effects of blocking do not last. On the other hand, conventional surgical sympathectomy yields a small visual field, regardless of the direction of the approach, and generates postoperative pain. Consequently, we employed ETS in our case. Sympathicotomy using a resectoscope is merely a thermocautery dissection of sympathetic ganglia. Sympathetic blockade in sympathectomy is as effective as that in sympathectomy, as Drott and Claes\textsuperscript{4} have reported. The operation can be performed through a very small incision, and sympathetic ganglia can be dissected safely and securely. This minimally invasive method generates very slight postoperative wound pain and is excellent cosmetically.

To our knowledge, this is the first long-term success reported with ETS for PHN. Although ETS is not always effective in all cases of PHN, it could be a useful method for treating patients with PHN that is resistant to conventional therapies. Further studies are needed with a greater number of patients.

References


Figure 3. The V to IX sympathetic ganglions were transected by cauterization.