

## REVIEW ARTICLE

# Postherpetic Neuralgia: Practical Experiences Return to Traditional Chinese Medicine



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## Abstract

Post-herpetic neuralgia (PHN) is a complication of herpes zoster that can cause different types of pain in the affected area. It often occurs mainly in severe cases of herpes zoster. The problem is defined as a persisting pain for 90–120 days after relieving of acute phase of herpes lesions. This complication causes suffering in patients and reduces the quality of life.

In western medicine's viewpoints, PHN is due to disturbance in local and dermatomal nerves. There are several topical and systemic drugs that are used to manage the pain relief.

In traditional medicine (TM), PHN is mostly due to incomplete heat and damp clearing in liver and spleen meridians, qi and toxic pathogens stagnation, accumulation of yin (blood stagnation in microcapillary), internal fire, and heat and obstruction of meridians. Acupuncture works based on the eradication of wind, clearing of heat, and destroying of damp by regulating qi and blood movement. In clinics, several methods of TM are used to

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relief PHN, such as simultaneous needling, surrounding needling, acupuncture, electroacupuncture, moxibustion, wet cupping or hijamat, and herbal medicine. In this review, we discussed all these methods and their role in reducing PHN and pain.

## 1. Introduction

After the primary infection of varicella zoster virus (VZV) that causes chicken pox, the virus is implanted in neural ganglions [1–3]. The reactivation of VZV may causes herpes zoster that occurs more in cell-mediated immunity deficiency [4]. Severe forms of herpes zoster occur in organ transplants, hematopoietic stem cell transplantation, lymphoma, leukemia, and HIV [1].

Post-herpetic neuralgia (PHN) is one of the most common and important complications of severe VZV infection [2,5], particularly occurring in 20% of the elderly patients in 1 year [6]. PHN is defined as neuropathic pain persisting for 90–120 days after the acute phase of VZV [1,2]; in Likert scale, it has  $\geq 40$  score and reduces the quality of life [7].

In traditional Chinese medicine (TCM), VZV infection is also called “snake like sore”, “fire girdle sore”, and “snake like red” [3]. VZV occurs due to liver qi stagnation, heat stagnation, damp heat stagnation, and spleen disharmony [8]. What is the meaning of these traditional terms?

Qi, whose imbalance is the base of any disease in TCM, produces and distributes in the primo vascular system. Qi can be responsible for the viability of human body. Original qi is divided into several forms, of which wei qi is located under the skin (in connective tissue) and plays a role of defense against any external and internal pathogens [9].

PHN results from wei qi weakness in clearing VZV infection. Wei qi deficiency and incomplete heat (infection) clearing plus remaining of toxic substance (lesion) results in PHN [8].

In traditional Persian medicine (TPM), PHN is called Namleh. It is described as “rash or several small rashes which are close to each other and matted accompanied with burning, severe warmth, and itching similar to an ant bite” (Namleh means Ant). The lesion is surrounded by inflammation around the main lesions [9].

There is a controversy in treatment and management of PHN [10]; however, traditional medicine (TM), such as acupuncture (in TCM), and TPM claim a high cure rate of PHN. A study shows 100% total effective rate of surrounding acupuncture versus 86.7% by antiviral medication [11]. Recently, another study showed a significant total effect rate of 91.7% versus 83.3% in two groups who received acupuncture and medication (300 mg Brufen, 100 mg vitamin B1 injection, and 0.5 mg vitamin B12 injection), respectively [12].

Considering the increasing incidence and prevalence rate of PHN as well as evidences indicating better and more effective rate for management of PHN by methods of TM, it is necessary to present and introduce TM modalities for PHN management.

## 2. Pathogenesis

### 2.1. Western medicine viewpoint

PHN depends on the disturbance in neural electrolyte channel [11], damage of nerves causing spontaneous discharge which produces pain [13], congestion of inflammatory cells in ganglions, and disturbances in sensory nerves neurotransmitters production [8].

### 2.2. TM’s viewpoint

One of the basic principles of TCM indicates that blood is the mother (producer) of qi and qi is the mother (stimulator) of blood [14,15]. In case of qi deficiency, blood will not move and lead to (native) heat stagnation and/or damp heat. In summary, PHN is the result of qi stagnation and pathogens, like toxic pathogens (the inflammatory effect of virus on the nerve), accumulation of yin (blood stagnation in microcapillary), internal fire and heat, blood stasis, and obstruction of meridians in which acupuncture can stimulate qi circulation in the collaterals [8,10], activate blood movement, and eradicate pathogens [12,16].

For blood movement and nourishing yin, there are some specific acupoints, such as Jiaji points (an extra point) that are located in the back (corresponding to dorsal ganglion) and can produce anti-inflammatory and analgesic effects [10]. The cure of PHN occurs with dredging meridians and relieving pain [16]. The terminology “getting the qi” means the sense of stimulation during penetrating the needle into the acupoint. The earlier “getting the qi” is done, the better the final effect [5].

### 2.3. Effect of TM modalities

Acupuncture can activate the immune system by releasing endogen opioid peptides in the central and peripheral nervous system. Inhibition of inflammatory factors secretion and increasing barrier function are their therapeutic effects [17]. Electro acupuncture (EA) can regulate the meridian function and cause analgesic effect by producing internal neurotransmitters [3]. EA can also regulate immune system activity, inhibit inflammatory products secretion, and increase pain threshold [17]. EA causes elevation in the beta endorphin level in serum and cerebrospinal fluid to modulate the nervous system for controlling pain [18]. Laser acupuncture can circulate blood for improving intracellular enzyme activity, regulate penetration of substance from vessel walls to reduce inflammation substance and repair damaged nerve, regulate immune system, and has anti-inflammatory and

analgesic effect [19]. Pricking and cupping can reduce the pressure of infection on the nerve and produce analgesic effect [12]. Puncture collaterals plus cupping and infrared radiation can also clear heat and remove damp [20]. Moxibustion can activate meridians and collaterals for stopping pain [16]. Herbal medicine reduces fire, dries up damp, produces blood and yin, and regulates qi [21].

### 3. Symptoms

Herpes zoster dermatomal rashes are first macules and papules converting to vesicles and pustules (in 3–5 days) and finally crusted (in 7–10 days), not crossing the midline. There is often burning sensation and itching 2–3 days prior to the appearance of rashes. The reduction of skin sensation, a pricking pain, burning sensation, and pain without pain stimulator persisting for 3–4 months after acute phase of VZV infection or 1 month after the relieving of skin lesion is the classical definition of PHN [1].

Based on TCM concepts, PHN presents three clinical patterns.

1. Damp-heat type: the primary lesions are in the lower part of the body and the characteristic feature of lesion is fluid discharge from the blisters.
2. Wind type: the primary lesions occur in the upper part of the body (face and neck) with intense sensation of itching.
3. Fire or heat (qi/blood stagnation) type: the primary lesions occur in the trunk (upper and lower back, abdomen, intercostal region, and chest) with characteristic feature of severe pain. This type is more compatible with PHN [22].

PHN has three categories of pain: spontaneous burning pain, sudden pain like electric shock, and evoked pain which is exaggerated response to none or mild stimulus. This latter type of pain is called mechanical allodynia and

mechanical hyperalgia, hyperesthesia [1,2]. Occasionally, the disturbance of pain sensation is presented by paresthesia or loss of sensory function [2].

### 4. Diagnosis

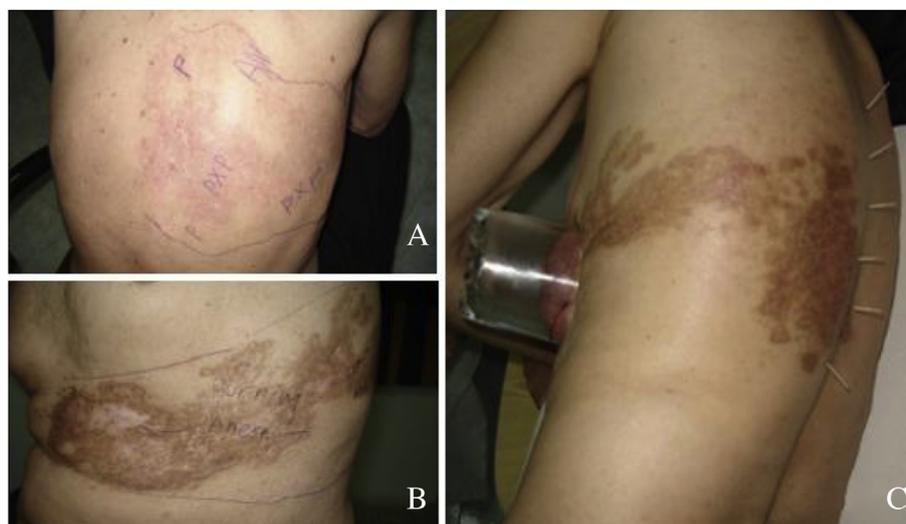
The diagnosis of VZV and PHN is primarily based on the clinical history and physical examination [1,23]. If the rashes are unusual, VZV-ag polymerase chain reaction (PCR) [24] and VZV PCR of saliva is recommended [25]. Often, hyper pigmentation of old lesions or the scar of deep wounds can be present in PHN (Fig. 1A and 1B).

The treatment section of PHN includes integrative view point that contains drug treatment and practical approaches of TCM and TPM. According to integrative medicine beliefs, it would be used in any way to relieve pain and problems. In acute phase of the disease, in short time, drug therapy reduces the duration of symptoms and effects on improvement of clinical manifestations; however, in complicated PHN, only drug therapy alone has the maintenance role in treatment, and TM must be applied [26]. This approach will be discussed in detail.

### 5. Treatment in western medicine viewpoints

The first-line treatment for patients with PHN includes topical lidocaine often in combination with systemic drugs in moderate to severe pain. TCA (nortriptyline), anticonvulsive (gabapentin or pregabalin), opioid, neurolytic blocks, local anesthetic, and intratechal methylprednisolone injection are recommended in severe PHN treatment [2]. Administration of an antiviral agent (acyclovir, Valacyclovir, and famciclovir) in the first 72 hours of VZV infection can prevent PHN [1].

An old report showed that acupuncture medicine has no effect in PHN [27]. However, recent reports and comparison studies have confirmed that acupuncture can effectively treat PHN with a high cure rate [4,10,12].



**Figure 1** (A) Typical involvement of herpes zoster and various types of pain. (B) Determination of pain in the affected area before treatment. (C) Huatuojiaji point needling.

## 6. Practical approaches of PHN management based on TCM

### 6.1. Clinical types of PHN

As described earlier, damp-heat type is a PHN type in which there is pathology of spleen damp heat. Because of the involvement of spleen meridians, main clinical presentations appear in lower extremities. The treatment of this PHN type is based on the use of points that reduce damp.

The second type of PHN is due to the wind pathology that involves liver and gallbladder meridians. It presents in the head and neck area and is treated with the reduction of wind points.

The third type is the fire-heat type occurring due to excessive heat. In this report, PHN of fire-heat syndrome is discussed in detail because of the clinical presentation compatibility of this type with PHN in western medicine [8,22].

### 6.2. Fire-heat type

As mentioned above, this type of PHN is due to qi stagnation [15], which cannot move blood, called "hypochondriac pain" or "pain in chest" in TCM. It leads to a severe prickling like pain in the areas innervated by intercostal nerves and presented as an intense and intractable PHN for a long time. For better management of the fire-heat type of PHN, determination of pain type, such as allodynia (P × P), burning pain (P), hypoesthesia, and paresthesia (AN) is necessary (Fig. 1A and 1B).

In treating PHN, there are some techniques of acupuncture which are not dependent on the acupoints.

### 6.3. Simultaneous needling

Whenever qi and blood stagnation occur, burning pain and allodynia are presented. Simultaneous needling technique

relieves the burning pain. It is done by needling in the center of a painful area or lesion followed by needling in the right and left side toward the central point. It may be more effective if accompanied by EA. The muscles and flesh should be twitched by electrostimulation (Fig. 2A) [28].

### 6.4. Surrounding needling

The stagnation can be treated by qi/blood movement through "Surrounding needling", or "Surround the dragon" (with or without EA) [29]. Horizontal puncturing along the innervating areas of PHN gives rise to dispersing stasis of qi/blood and removing obstruction of collateral. Needles, around the lesions and no regard to acupuncture points, are inserted at 2-cm intervals subcutaneously at a 15° angle to the skin (horizontally) around the rash of PHN. No de qi (energy sensation) needs to be obtained. The numbers of needles depend entirely on the extensiveness of the rash (Fig. 2B and 2C) [8].

The filiform needles were inserted and small amplitude of lifting, thrusting, twirling, and rotating was done. After the arrival of qi (getting the qi), the needles were kept for 20–30 minutes [4,16,19].

In addition to non-acupoint puncturing, acupuncture technique by specific punctuation is described in the following parts.

### 6.5. Specific point selection in PHN

The treatment of PHN may include dispelling wind (in wind type), clear fire (in heat type), and transforming dampness (in damp type) to stop the pain. The general acupuncture points for treating can be TE 6 (Zhigou), LI 4 (Hegu), LR 13 (Zhangmen), PC 6 (Neiguan), and some specific points for any type such as following:

1. Wind type: GB20, LI11, LI4, TH5, and SP10 by reducing method.
2. Damp type: ST36, LV14, GB22, and ST40 by plain reinforcing and reducing method.

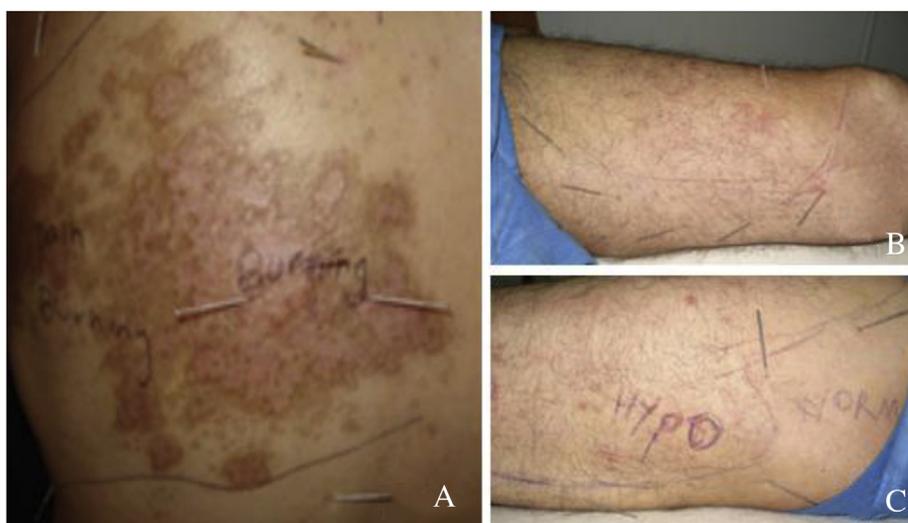


Figure 2 (A) Simultaneous needling in burning pain. (B) Surrounding needling. (C) Surrounding needling.

3. Heat (qi and blood Stasis) Type: LV13, TH17, TH6, GB34, and SP9 by plain reinforcing and reducing [22].

## 6.6. Adjunct points

Yanglingquan (GB 34), Taichong (LR 3), Zusanli (ST 36), addNeiguan (PC 6), Hegu (LI 4), Bilateral Quchi (LI 11), Waiguan (TE 5), and Zhigou (TE 6) are added if the lesions of PHN are located above the waist [8]; bilateral Sanyinjiao (SP 6), Taichong (LR 3), Xuehai (SP 10), and Yanglingquan (GB 34) are added if the lesions are below the waist [30].

## 6.7. Extra and Ashi points

Ashi points are the most painful non-acupoint areas of pain. For those with strikingly painful tenderness, Ashi points and Longyan (extra point) should be added. Namely, in the painful areas, 3–8 Ashi points were needled, centered by the most painful spot, with 3 cm apart between any two points. In addition to Ashi points (around skin lesions, 0.5–1 cm away from the rash), Jiaji (Ex-B 2) points on the affected side can be selected [30].

## 6.8. Huatuojiayi points for heat type

Toxic heat endopathogenic type, which is responsible for Ashi points and allodynia points, can be treated by reducing method in Huatuojiayi points (Fig. 1C).

Acupuncture points of Huatuojiayi are half inch apart from the lower spinous process of spine and at the vertebral level that must be selected corresponding to the location of the involved dermatomal of herpes zoster (plus 1–2 dermatomes above and below the vertebral level of lesion), the selection may produce an obvious analgesic effect (Fig. 1C) [31]. The points can be selected based on the affected segments [19].

The neuralgia on the face was treated by the acupoint of Huatuojiayi (Ex-B2) related to C2-4; the neuralgia on the chest and upper back were treated by the acupoint of Huatuojiayi (Ex-B2) related to T4-11; the neuralgia on the abdomen and lower back were treated by the acupoint of Huatuojiayi (Ex-B2) related to T10-L2; the neuralgia on the upper limbs were treated by the acupoint of Huatuojiayi (Ex-B2) related to C5-T2; and the neuralgia on the lower limbs were treated by the acupoint of Huatuojiayi (Ex-B2) related to L1-5[4,8].

## 6.9. Acupuncture

After the normal sterilization, needling the selected Jiaji points can be done using stainless steel needles of 0.35 mm diameter and 50 mm length. First, Jiaji (Ex-B 2) points are punctured for 30 minutes and/or inserted by embedding needles. This method includes needling 15–25° toward the vertebrae, and after producing a needling sensation (getting the qi) along the distribution of nerves, the tread can be embedded (the lesion must not be painful when touched) [30].

## 6.10. Huatuojiayi (Ex-B 2) point injection

First, 5 mL of 2% lidocaine and 2 mL of vitamin B1 solution were mixed and injected to the related Jiaji points, 1–2 mL per point; the depth of injection should reach the muscle layer. Subcutaneous injection was applied to the selected two to three focal zones on central and around the herpes region (0.5 mL mixed solution per each point). The total volume dose was less than 6 mL [8] per session.

## 6.11. EA

The method can be combined with simultaneous needling; the two opposite needles were connected to EA apparatus as one group. If the pathological changes are on chest and abdomen, 3–5 acupoints above and below Jiaji homologizing the corresponding nerve segments are used. This treatment can be given till the patient is cured [10]. In the case of PHN in face area, the method of surrounding needling and EA is suggested.

## 6.12. Acupoints and moxibustion

Moxibustion is a TCM method, which is a form of a charcoal made of an endemic herb of china. It can warm needles and has several forms and types (Fig. 3).

After selecting the Jiaji points (2–3 points) and some acupoints (1–2 points) on the painful area of the lesion, put moxa stick, ignite, and burn for about 15 minutes [32]. Warming needle by moxibustion and cotton moxibustion [16] are other methods of treatment for qi and blood movement.

## 6.13. Plum blossom technique

Plum blossom is a disposable hammer used for PHN pain (Fig. 3). Sometimes, fine telangiectasia is seen in the area of PHN (Fig. 4A), which is a clinical evidence for qi and blood stagnation as the base of PHN [33]. The painful area and the meridians along the distribution of the involved nerve are tapped with tolerable strength until there is slight bleeding. The area is subsequently cupped for 5 minutes [34].



**Figure 3** Moxa stick with 2 cm in length, plum blossom needle.



**Figure 4** (A) The telangiectasia in the area of postherpetic neuralgia. (B) Disappearance of teleangiectasia. (C) Fix cupping after plum blossom to bloodletting.

#### 6.14. Cupping

The stagnated produced qi [15] and blood in the collaterals can be disappeared by moving cupping and or also fixed cupping after plum blossom needling (Fig. 4C).

#### 6.15. Hijamat or three-edged needling

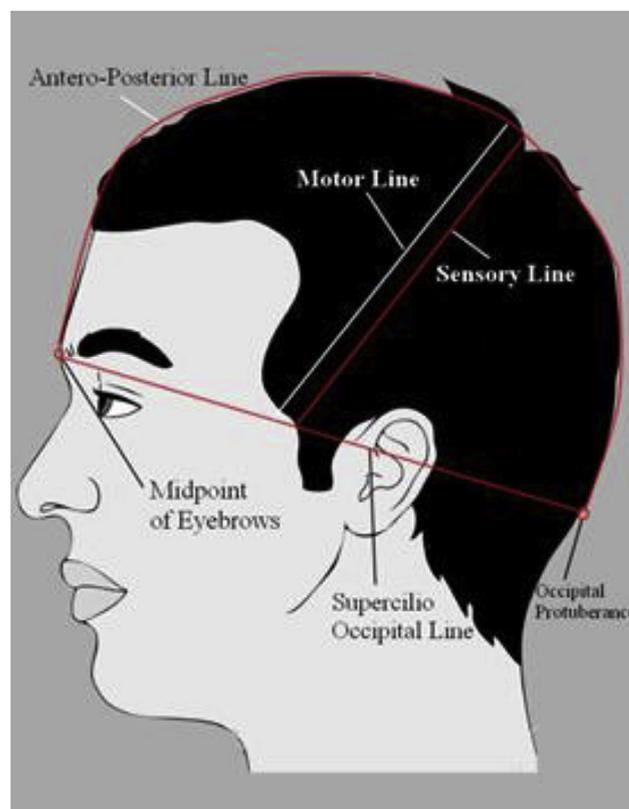
Three-edged needling in TCM and Hijamat in TPM have the same mechanism based on which the most painful area is selected, and after routine sterilization, the three-edged needle is inserted swiftly and removed immediately for three to five consecutive times around the local area or based on TPM method incised by blade for a small incision of 2–3 mm (4–5 incisions for every area), and then put the flare fire cupping for 10–15 minutes and allow to bleed for 3–6 mL [19].

#### 6.16. Herbal

In TPM, there is an herbal remedy for treatment, mainly composed of *Tamarindusindica* L. (Indian Timber or Tam-rehendi) and *Cassia fistula* L. (KHIAR SHAMBAR) which is used orally, plus *Rbinia pseudo acasia* L. (Acacia), *Lyciummafrum* L. (HAZAZ), and *Glauciumcorniculatum* Cunt (MAMISA) as a topical formula [9].

#### 6.17. Scalp acupuncture

It is a distinct type of TCM to treat headache [35] and occipital neuralgia [36] based on the reflex somatotopic system [37]. The method is performed using two needles measuring 30 mm in length and 0.24 mm in diameter inserted subcutaneously into the corresponding “sensory” areas on the scalp and then stimulated at 150 Hz for 20 minutes (Fig. 5) [38].



**Figure 5** Scalp acupuncture—anteroposterior line (connecting the midpoint of eyebrows to occipital protuberance) and supercilio-occipital (connecting the midpoint of eyebrow along the lateral side of the head and occipital protuberance). The sensory line is determined between the intersection point of the supercilio-occipital line and the hairline, and a point 2 cm posterior to the midpoint of the anteroposterior line. This line is divided into five parts, with the upper fifth corresponding to the trunk and lower extremities, the middle two-fifths to the upper extremities, and the lower two-fifths to the face and head.

## 6.18. Auriculotherapy

Another microsystem of TCM for extremity pain [39], cervical pain [40], and lower back pain [41] is auricular therapy and EA apparatus stimulation [37], which can be used simultaneously with the scalp acupuncture in special points Shenmen, Point Zero, the Thalamus point, the Endocrine point, and points of corresponding body areas, according to the site of pain.

## 7. Criteria of effectiveness

VAS (visual analog scale), a scale for pain evaluation (0–10), is a useful method to evaluate the effectiveness of the treatment (Cure: VAS < 2, Effective: VAS < 5, Ineffective: VAS > 6) [4,10,42].

## 8. Area of uncertainty

Clinical types of PHN need further studies to elucidate the pathogenesis and pathology of PHN types. With extensive studies, we can understand the effect of each modality in any type of PHN and consequently plan for algorithmic management. These studies should clarify the pathophysiology, mechanism of techniques effects, and types of mediators that have essential roles in pain relieving.

## 9. Conclusion

The elderly people are more at risk of reactivation of VZV and also its complications, such as PHN. Antiviral therapy has a better effect if performed in the first 72 hours of acute infection. To prevent PHN, we need primary prevention. In TCM, early treatment of herpes causes a better effect on PHN pain control.

PHN is often presented in the hypochondriasis area by intercostal nerves involvement in which the main pathogenesis is blood and qi stagnation at the microcapillary (collaterals in TCM) vessels. The present medications, including TCA, gabapentin, NSAIDs, have mainly sedative and analgesic effects. Instead, the modalities of TM (acupuncture with accompanied modalities, such as EA, moxibustion, laser, plum blossom, three-edged needling, cupping, hijamat, herbal formula) are focused on the relieving of pathology and pathogenesis (relieving of blood and qi stagnation).

TCM treatment modalities are postponed after 3 months of herpes zoster presentation. It means that prior to 1–3 months after presentation, it is not recommended to use any other treatment except conservative and palliative therapy.

## Disclosure statement

There are no conflicts of interest to declare.

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