Patterns and Treatment of Post-Herpe tic Neuralgia: A Case Study
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Abstract
Post-herpetic neuralgia (PHN) results from a herpes zoster complication in the elderly, with variable onset and presentation of nerve pain. Diagnostic criteria of post-herpetic neuralgia include onset of pain persisting for greater than three months with or without the persistence of a maculopapular rash and vesicular eruptions along dermatomes. Understanding PHN is useful for early diagnosis and treatment to minimize the severity of pain. To properly diagnose PHN, clinical symptoms, risk factors, and antibodies for varicella zoster are analyzed. Studies demonstrate that preventative measures, including early varicella-zoster vaccination in children and vaccination in adults over 60 years with live and attenuated shingles, were likely to reduce post-herpetic neuralgia by 66.5%. Osteopathic treatment options, including indirect manipulative techniques, can help alleviate the pain caused by PHN. Thus, by creating an understanding of prompt treatment and prevention, we may reduce the overall risk and severity of PHN.

Introduction
Postherpetic neuralgia (PHN) is a common complication following reactivation infection with human herpesvirus 3 (HHV-3) or varicella zoster virus (VZV). This reactivation is referred to as herpes zoster.1,2 and presents as a blistering, painful rash in the affected dermatomes (Figure 1).3 Risk factors for reactivation of the virus, commonly known as shingles, include autoimmune disease, immunomodulation, and advanced age.2 In most patients, the painful vesicular rash resolves within a few weeks; however, in some patients the pain associated with the rash persists long after the rash has dissipated. If pain continues for greater than three months after the rash has resolved, it is termed PHN.4 The pain is believed to be generated by nerve damage, specifically to the trigeminal nerve and geniculate or dorsal root ganglion, where the virus remains dormant after the initial infection.4

About 20% of patients infected with herpes zoster will experience PHN with significant morbidity, with elderly patients (those over 60 years) most often affected.5 Risk factors for developing PHN include worsening, acute zoster pain, increased age, a more severe eruption at presentation, and the presence of a painful prodrome.6 The annual incidence of herpes zoster is about 3.4 cases per 1,000 persons; in those over 90 years of age, the incidence rate increases to 11 cases per every 1,000 persons.6 Of note, the rate of re-infection in immunocompetent patients is less than 6%. PHN can present as persistent “burning,” “stabbing,” “electric,” or “shooting” pain along a single affected dermatome. Physical exam findings include increased or decreased sensation, scarring, allodynia (pain from stimuli that don't usually cause pain, such as a light touch with a cotton swab or clothing touching the affected area), mechanical hyperalgesia (heightened sensitivity to mechanical stimulus or pain) and/or altered autonomic function.7

PHN treatment options are limited, and many patients express dissatisfaction with treatment outcomes. This presents an issue for the population of patients experiencing decreased quality of life, psychological wellbeing, and physical functioning1 due to long-standing pain.8 PHN may play a role in the loss of independent functioning and lead to an increased need for a higher level of care, which results in suffering and a disproportionate burden on both those affected with PHN and the health care system as a whole.1

Postherpetic neuralgia (PHN) is a painful neuropathic syndrome lasting more than three months caused by reactivation of dormant varicella zoster virus (VZV) in sensory ganglia of cranial or spinal nerves. Those affected by PHN report severe interference in their daily lives physically and subsequently psychologically.1,4 Recognizing the implications of PHN may benefit early recognition, diagnosis, and therapeutic treatment.

Case Report
A 95-year-old male was examined seven days after a vesicular-bullous rash occurred on the right side of his chest and back (Figures 2, 3). He complained of severe pain in the involved areas as well as the right aspect of his head. Interestingly, he stated he had been vaccinated for herpes zoster.

Diagnosis: Multiple dermatomal herpes zoster (T₃-T₆) with associated neuralgia.

Treatment: Due to extensive involvement and severe discomfort, the patient was prescribed oral famciclovir antiviral 500 mg TID and prednisone 5 mg TID for 10 days.

Results: Ten days later, follow-up exam showed considerable improvement of the vesicular-bullous
lesions (Figures 4, 5) but marked post-herpetic neuralgia over the affected dermatomes as well as dermatomes of the right trigeminal nerve and T2 of the right arm.

Discussion

The classic clinical presentation of a herpes zoster outbreak is a maculopapular rash followed by a painful vesicular eruption in the affected dermatomes. This may be accompanied by pain, itching, paresthesia, and/or allodynia. Usually the rash and associated symptoms resolve within a few weeks, but a small subset of patients may present with pain that continues for three months or more following the resolution of the vesicular eruption. This condition is defined as postherpetic neuralgia (PHN).

Clinically, the presentation of PHN is similar to that of a herpes zoster outbreak, but the painful symptoms typically persist for months to years. The quality of the pain in the affected areas is often described as burning, stabbing, or electric. Because many of the symptoms of PHN are sensory, a neurologic exam testing dermatomal sensation bilaterally may be useful in assessing patients with suspected PHN. Age and past medical history may also provide useful clues in the diagnosis of PHN. Incidence of PHN increases with age, affecting just 8% of patients aged 50 to 54 years compared with 21% of patients aged 80 to 84 years. PHN may also occur more frequently in patients who suffered more severe symptoms in the acute phase of infection, and some evidence suggests the incidence of PHN increases among patients with other chronic diseases, such as diabetes.

The optimal treatment of PHN is prevention. The herpes zoster vaccine (HZV) boosts cell-mediated immunity to both VZV and HZ. Children born after 1995 should receive the VZV vaccine and avoid those affected with chickenpox. For those infected with VZV as a child, the latent VZV can cause HZ and PHN. The best prevention for these patients, as long as they are immunocompetent, is to receive the live attenuated shingles vaccine once they are 50 years or older. This vaccine has demonstrated the ability to reduce the zoster-related burden of illness and the incidence of both zoster and PHN. Widespread vaccination could significantly reduce infection, by a quarter of a million cases annually, lowering both consequent costs and morbidity associated with VZV.

PHN is challenging to treat. Choice of medication(s) is guided by a patient’s response to medication, preference, comorbidities, and drug adverse effects. Treatment options are aimed to attack the multiple mechanisms of disease. Combination therapy has been the standard in clinical practice, although there is no data that evaluates a synergistic or additive benefit. Currently, the first line of treatment includes gabapentin and lidocaine patch 5%, as they demonstrate tolerability profiles. In the past, tricyclic antidepressants were considered the first-line treatment for PHN. In addition to anticonvulsants and tricyclic antidepressants, oral regimens have included pregabalin, opioids, steroids, and NSAIDs. Pregabalin and opioids have been used for treatment of resistant PHN. Topical treatments have been used, often in combination with oral medications like clonidine, gabapentin, capsaicin, dicyclofenac, amitriptyline, opioids, ketamine, and botulinum toxin type A. Both topical and oral treatments have had varying and limited degrees of success in pain management.

New and alternative therapies show promising results in pain management and control of PHN. Physical therapy, dry needling, trigger-point injections, and percutaneous nerve stimulation have been used as alternative therapies for some patients. A newer treatment option is narrowband ultraviolet B (nBUB) phototherapy. It may prevent or decrease the pain of PHN by suppressing inflammatory response surrounding sensory neurons due to HZ. Low-level laser therapy (LLLT) is another approach currently under review. Use of low-level laser therapy within the first five days of HZ eruption significantly reduces the incidence of postherpetic neuralgia. LLLT may have the ability to prevent PHN, but further well-designed, randomized controlled trials are required.

It has been shown that patients with PHN exhibit myofascial pain, so osteopathic manipulative therapies may provide relief. Indirect techniques such as counterstain, which positions stressed tissues at a point of balance and allows myofascial tissues to relax, may facilitate relief of tender points and alleviate pain. Indirect treatments may offer significant benefits to some patients when compared to the effectiveness and risks associated with pain medications.

PHN is the most common complication of herpes zoster disease, affecting up to one third of the approximately 1 million VZV patients in the United States. While not fatal, patients experiencing PHN have been shown to experience poor quality of life and dissatisfaction with treatment.

Research has shown that the best way to prevent PHN is to avoid VZV infection in the first place. For children, this is accomplished via the chickenpox vaccination; for adults over age 50 who had chickenpox as children and now have latent VZV, vaccination with the live attenuated shingles vaccine has resulted in a 61.1% reduction in VZV disease reactivation. Emerging studies show evidence of relief through the use of phototherapy, physical therapy, dry needling, trigger-point injections and percutaneous nerve stimulation, and indirect osteopathic techniques may help alleviate pain.

References


