CASE REPORT

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Segmental Zoster Paresis Misdiagnosed As Frostbite

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ABSTRACT Herpes Zoster is presented with as dermatomal vesicular skin lesions and neuropathic pain. However, segmental zoster paresis is characterized by asymmetric focal motor weakness and it is a relatively rare complication. It is commonly reported that it occurs within 2 weeks after the appearance of the herpetic rash. Weakness is most frequently seen in the C5-C7 and L1-4 segments. We describe a 65-year-old woman who presented with sudden onset burning pain in the left arm, rashes and hypoesthesia over the left forearm and hand. She had moderate weakness in her left hand. She was initially diagnosed as frostbite because of severe pain and bullous lesions. We found that there is C8-T1 radiculopathy by electrophysiological studies.

Keywords: Segmental zoster paresis; herpes zoster; radiculopathy; postherpetic neuralgia

Herpes Zoster (HZ) is seen in the general population with an annual incidence of approximately 3-5/1000. HZ typically presents as a common vesicular rash associated with pain and sensory symptoms that follow dermatomal distributions and results from the reactivation of the varicella-zoster virus. The neurological complications of HZ include aseptic meningitis, myelitis, encephalitis, Guillain-Barre syndrome, stroke, and peripheral neuropathy. Segmental Zoster Paresis (SZP) is a rare neurologic complication of HZ. The pathogenesis of SZP remains unclear. It is believed that motor involvement may develop due to the viral spread from the dorsal root ganglia to the ventral roots or anterior horn cells.[1] The prognosis of zoster paresis is generally good. Complete or partial recovery is reported to occur in more than half of patients within 6 to 12 months.[2] Initiating antiviral treatment reduces the possibility of paresis and prevents damage to the peripheral nervous system.[3]

However, due to insufficient awareness among neurologists, it causes misdiagnosis and delays in treatment. Therefore, we report a case of a patient with Herpes zoster-induced radiculopathy who was misdiagnosed as frostbite.

CASE REPORT

The 65-year-old woman with a medical history of hypertension and diabetes mellitus (DM) presented to the neurology department with a complaint of sudden onset severe, burning pain in the left upper extremity that had suffered approximately 6 weeks previously. The patient was treated with analgesic therapy and cold therapy in the pain unit. On the 15th day after the onset of symptoms, bullous rashes appeared over the left forearm and hand. She visited the emergency department with this complaint, was diagnosed with frostbite and was treated in the burn

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FIGURE 1: The rashes are consistent with C8-T1 dermatomal segments.

unit by the plastic surgery department. Unfortunately, the treatment failed to alleviate the pain, and weakness in the left hand progressively developed. Recently, she experienced numbness in the left ring finger, little finger, and the medial aspect of the forearm. Upon examination, healing cutaneous papulovesicular rashes were noted along the medial aspect of her left forearm down to her left hand (Figure 1). The rash corresponded to C8-T1 dermatomal distribution. Sensory testing revealed hypoesthesia along the same region. She exhibited moderate weakness of left finger extension, abduction, adduction with normal reflexes. Magnetic resonance imaging of the cervical spine showed mild degenerative changes with multilevel intervertebral disc bulgings at C3-T1. Electrophysiological studies identified a reduction in the amplitude of the compound muscle action potential on stimulation median, ulnar and radial nerves. Sensory nerve conduction identified a reduction in the amplitude of sensory nerve action potential on the stimulation ulnar nerve. Needle electromyography showed spontaneous activity (positive sharp waves and fibrillations) in the left extensor indicis proprius, abductor pollicis brevis, 1st dorsal interosseous, extensor digitorum communis and C8-T1 paraspinal muscles, and reduced motor unit potential recruitment. Asyclovir, analgesics, gabapentin were administered for pain. She also received physical therapy which included range of motion and strengthening exercises. The physiotherapy department followed her up. The patient has given a consent.

DISCUSSION

HZ may have a prodromal phase of pain and itchiness before the classic vesicular rash develops. The rash can last 2 to 4 weeks before it improves.[4] Therefore, most patients are diagnosed only retrospectively when the rash appears. Physicians should be highly suspicious of pain symptoms because postherpetic neuralgia is the most common neurological complication of HZ, especially in high-risk patients such as the elderly and immunocompromised patients.

The pathogenesis of motor involvement in HZ is still unclear. It is commonly believed that local inflammation around the dorsal root ganglion causes hypervascularity in the perineural structure or disruption of the blood-nerve barrier, which leads to motor deficits.[5] The most known clinical feature of motor paresis-induced HZ is Bell's palsy which affects the facial nerve and has been reported in nearly 50% of SZP cases. The 2nd most common region reported in SZP is the upper extremity with a predominant involvement of the proximal muscles C5-C7.[5-7] Segmental limb paresis occurs in %3 to %5 of HZ patients. Limb weakness is more common in the upper extremity than the lower extremity and most frequently affecting in the C5-7 and L1-4 segments.[8] Rarely diaphragmatic paralysis and acute urinary retention can develop.[9] The latency period between the onset of eruption and the development of limb weakness ranges from approximately 1 day to 4 months, with an average of 2-3 weeks.[10] Focal motor weakness occurs in the same segment where the skin eruptions are observed.[2,4,5] Risk factors such as old age, malignancy and DM increase the risk of motor involvement.[11] The characteristic HZ skin rashes were seen in our patient approximately 5 weeks before the onset of weakness in the same arm. Our patient has DM and old age. In contrast to the literature, the distribution of weakness in our patient has been in the C8-T1 segments which is consistent with the localization of vesicular rashes. Aykaç et al. detected a higher frequency of C8-T1 involvement in their cases.[12]

Cold therapies have anti-inflammatory and antispasmolytic effects, can also be used to reduce edema and swelling. Burns from cold exposure known as frostbite are commonly reported in the literature. Firstly, Toole reported a case of a burn caused by an ice pack in 1999.[13] Second-degree injury of frostbite causes blisters surrounded by erythema and edema. Initially, the patient may describe numbness in the affected area and clumsiness in the hands.[14] Conditions, such as peripheral vascular disease, malnutrition, DM, and tobacco use facilitate tissue damage.[15]

Our patient had cold therapy in this latent period. In addition, our patient is elderly and has a medical history of DM. These may lead to confusion about neuropathic pain and skin lesions.

Although herpes zoster viral infection is common in society, segmental motor paresis is rarely seen and develops secondary to an independent spinal pathology. It is important to recognize motor involvement early, as it has a very good prognosis when treated promptly.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Ayşe Gamze Şahin;* ***Design:*** *Ayşe Gamze Şahin, Betül Özenç, Zeki Odabaşı;* ***Control/Supervision:*** *Ayşe Gamze Şahin, Betül Özenç, Zeki Odabaşı;* ***Data Collection and/or Processing:*** *Ayşe Gamze Şahin;* ***Analysis and/or Interpretation:*** *Ayşe Gamze Şahin, Betül Özenç, Zeki Odabaşı;* ***Literature Review:*** *Ayşe Gamze Şahin;* ***Writing the Article:*** *Ayşe Gamze Şahin;* ***Critical Review:*** *Ayşe Gamze Şahin, Betül Özenç, Zeki Odabaşı;* ***References and Fundings:*** *Ayşe Gamze Şahin;* ***Materials:*** *Ayşe Gamze Şahin, Betül Özenç.*

REFERENCES

1. Balta S, Köknel Talu G. Segmental zoster paresis of the lower extremity: case report. Agri. 2023;35(3):177-80. English. [PubMed]
2. Ünlü E, Ulaş EH, Odabaşı Z, Yılmaz Ö, Çakçı A. Herpes zoster radiculopathy: Report of two cases. Journal of Neurological Sciences (Turkish). 2005;22(3):319-24. [Link]
3. Eyigor S, Durmaz B, Karapolat H. Monoparesis with complex regional pain syndrome-like symptoms due to brachial plexopathy caused by the varicella zoster virus: a case report. Arch Phys Med Rehabil. 2006;87(12):1653-5. [Crossref] [PubMed]
4. Castro LF, Atwal SA, Ramirez JM, Garza J, Lalmuanpuii J. A report of a case of segmental zoster paresis demonstrated by limb paralysis and a review of the literature. Cureus. 2023;15(9):e45691. [Crossref] [PubMed] [PMC]
5. Yoleri O, Olmez N, Oztura I, Sengül I, Günaydin R, Memiş A. Segmental zoster paresis of the upper extremity: a case report. Arch Phys Med Rehabil. 2005;86(7):1492-4. [Crossref] [PubMed]
6. Chen GB, Tuan SH, Liou IH, Huang HY, Hu YC, Wu SY. Segmental zoster paresis of unilateral upper extremity: a case report and literature review. Medicine (Baltimore). 2020;99(28):e20466. [Crossref] [PubMed] [PMC]
7. Yaszay B, Jablecki CK, Safran MR. Zoster paresis of the shoulder. Case report and review of the literature. Clin Orthop Relat Res. 2000;(377):112-8. [Crossref] [PubMed]
8. Kawajiri S, Tani M, Noda K, Fujishima K, Hattori N, Okuma Y. Segmental zoster paresis of limbs: report of three cases and review of literature. Neurologist. 2007;13(5):313-7. [Crossref] [PubMed]
9. Nişancı P, Forta H, Atılganoğlu U. Brakiyal paralizi yapan Herpes Zoster olgusu.Türkderm. 1992;26:124-5.
10. Melikoglu M, Melikoglu MA. An unusual cause of shoulder pain; herpes zoster induced brachial plexopathy, a case report and review of the literature. J Back Musculoskelet Rehabil. 2013;26(3):243-5. [Crossref] [PubMed]
11. Apaydın R, Bilen N, Dursun N, Dokmeci S, Dursun E. Herpes Zoster parezisi: fizik tedavi ve rehabilitasyon ile düzelen bir olgu. Turkiye Klinikleri Journal Of Dermatology. 2000, 10:74-6. [Link]
12. Aykaç S, Arı A, Ozoglan H, Mermi Dibek D, Bademkıran F, Uludağ B et al. Zoster-associated limb paralysis: clinical and electrophysiological data of 15 cCases with segmental Zoster paresis with the literature review. Neurological Sciences and Neurophysiology. 2024;41(2):83-9. [Crossref]
13. O'Toole G, Rayatt S. Frostbite at the gym: a case report of an ice pack burn. Br J Sports Med. 1999;33(4):278-9. [Crossref] [PubMed] [PMC]
14. Murphy JV, Banwell PE, Roberts AH, McGrouther DA. Frostbite: pathogenesis and treatment. J Trauma. 2000;48(1):171-8. [Crossref] [PubMed]
15. Basit H, Wallen TJ, Dudley C. Frostbite. 2023. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025. [PubMed]