Open Journal of
Clinical & Medical
Case Reports

Volume 8 (2022)
Issue 13

Case Report

ISSN: 2379-1039

# Herpes zoster infection involving trigeminal nerve nucleus: A case report

Sundus Aslı Aydın; Petek Sarli; Nevin Horasan; Sule Aydin Turkoglu*

***Corresponding Author: Sule Aydin Turkoglu**

Department of Neurology, Bolu Abant Izzet Baysal University Faculty of Medicine, Turkey.

Email: suleaydinturkoglu@hotmail.com

## Abstract

**Introduction:** Herpes Zoster Ophthalmicus (HZO), commonly known as ophthalmic shingles, is a viral disease characterized by unilateral painful skin rash in the distribution of several dermatomes of the fifth cranial nerve (trigeminal nerve) shared by the eye and ocular adnexa. In this case report, we wanted to emphasize the utility of contrast-enhanced MRI to determine the extent of HZO disease with intracranial dissemination to help determine appropriate patient management with a case report of intracranial trigeminal nucleus involvement in HZO.

**Case report:** A 78-year-old male patient underwent contrast-enhanced brain MRI examination due to headache, diffuse neuropathic pain in the ophthalmic area and myoclonic pulsations in the bilateral arms after periorbital edema, temperature increase and redness in the right eye were observed with keratitis compatible with zona covering the entire right cornea detected by ophthalmoscopic devices. Diffusion restriction matching the right spinal trigeminal nucleus localization was observed. It was thought that it developed secondary to the inflammatory change of the spinal trigeminal nucleus due to viral infection in the patient with a history of orbital shingles.

**Discussion:** HZO is a potentially devastating clinical event and associated with a long-term serious neurological event, including encephalitis, vision loss and postherpetic neuralgia and the possibility of HZO in VZV should be kept in mind. Brain imaging should be performed to exclude other causes of patient symptomatology and reveal related complications, especially when orbital or intracranial involvement is considered. In cases of HZO, asymmetric, abnormal trigeminal nerve root involvement may be seen on cranial MRI.

## Keywords

Herpes zoster ophthalmicus; Magnetic resonance imaging; Trigeminal nucleus.

## Introduction

Varicella Zoster Virus (VZV) or Human Herpes Virus 3 is a member of the Herpesviridae family and its only host is humans. The primary infection picture in susceptible individuals is chickenpox. VZV remains latent in the dorsal root ganglion after primary infection and reactivation may occur in some individuals. It has been reported that approximately 10-20% of people infected with VZV develop shingles [1]. Herpes Zoster Ophthalmicus (HZO), commonly known as ophthalmic shingles, is a viral disease characterized by a unilateral painful skin rash in the distribution of one or more dermatomes of the fifth cranial nerve (trigeminal nerve) shared by the eye and ocular adnexa. The virulence of VZV and the immune status of the host are important risk factors for the development of HZO. The incidence and severity of herpes zoster increase with advancing age in patients over 60 years of age at highest risk [2].

In the case report we wanted to present a case with intracranial trigeminal nucleus involvement HZO. Thus, we wanted to highlight the utility of contrast-enhanced MRI to determine the extent of HZO disease with intracranial spread to help determine appropriate patient management. We present a rare case of HZO with intracranial spread and MRI showing involvement of the trigeminal nerve, trigeminal nucleus and spinal trigeminal nucleus and tract.

## Case Report

A 78-year-old male patient applied to the ophthalmology outpatient clinic with complaints of headache for 2 days, pain around the right eye, and rash. Periorbital edema, temperature increase, and redness in the right eye were observed in keratitis compatible with shingles covering the entire right cornea, detected in ophthalmoscopic devices. Antiviral and antibiotic treatment was started after mild leukocytosis (wbc: 12.91) and mild CRP elevation (CRP: 14.4) are detected in the examinations. The patient with headache and diffuse neuropathic pain in the ophthalmic area was referred to the Neurology clinic. Periorbital edema, temperature increase and redness in the right eye, limited outward gaze in the right eye, and corneal reflex could not be detected. Other neurological examination findings were unremarkable. The EEG of the patient, who had bilateral myoclonic pulsations spread to his arms, was unremarkable. Contrast Brain MRI was performed. Axial fluid-attenuated inversion recovery (FLAIR) sequences demonstrating enhancement of trigeminal nerve with extension to the trigeminal nucleus and spinal trigeminal nucleus and tract with associated flair hyperintensity (Figure 1). Restricted diffusion in the diffusion weighted sequence of MRI demonstrating enhancement of trigeminal nerve with extension to the trigeminal nucleus and spinal trigeminal nucleus and tract with associated flair hyperintensity (Figure 2). It was thought that it developed secondary to the inflammatory change of the spinal trigeminal nucleus due to viral infection in the patient with a history of orbital shingles. Tramadol hydrochloride 200 mg/day was added to her current treatment. The patient's complaint of pain regressed almost completely.

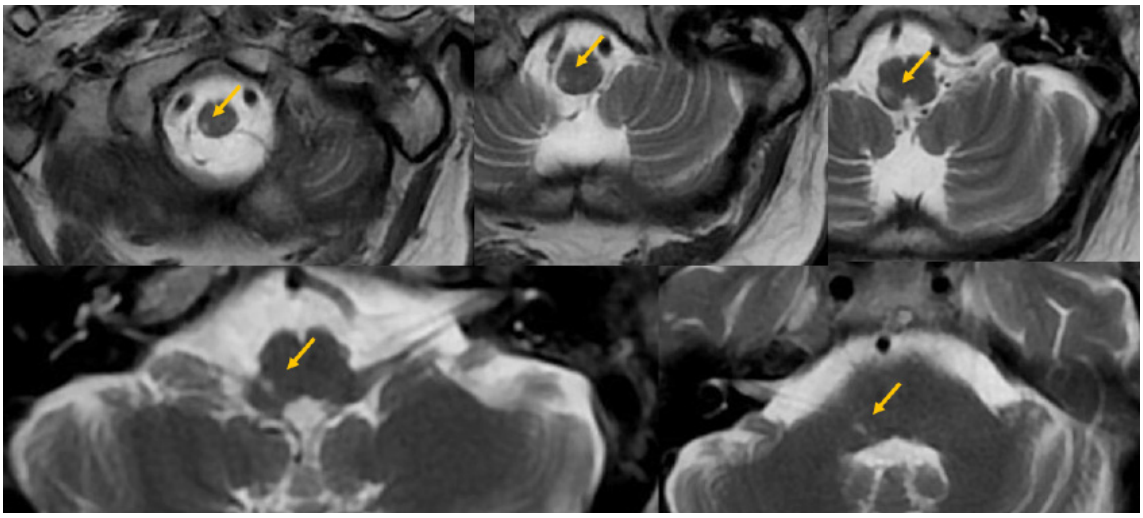

**Figure 1:** Axial fluid-attenuated inversion recovery (FLAIR) sequences demonstrating enhancement of trigeminal nerve with extension to the trigeminal nucleus and spinal trigeminal nucleus and tract with associated flair hyperintensity.

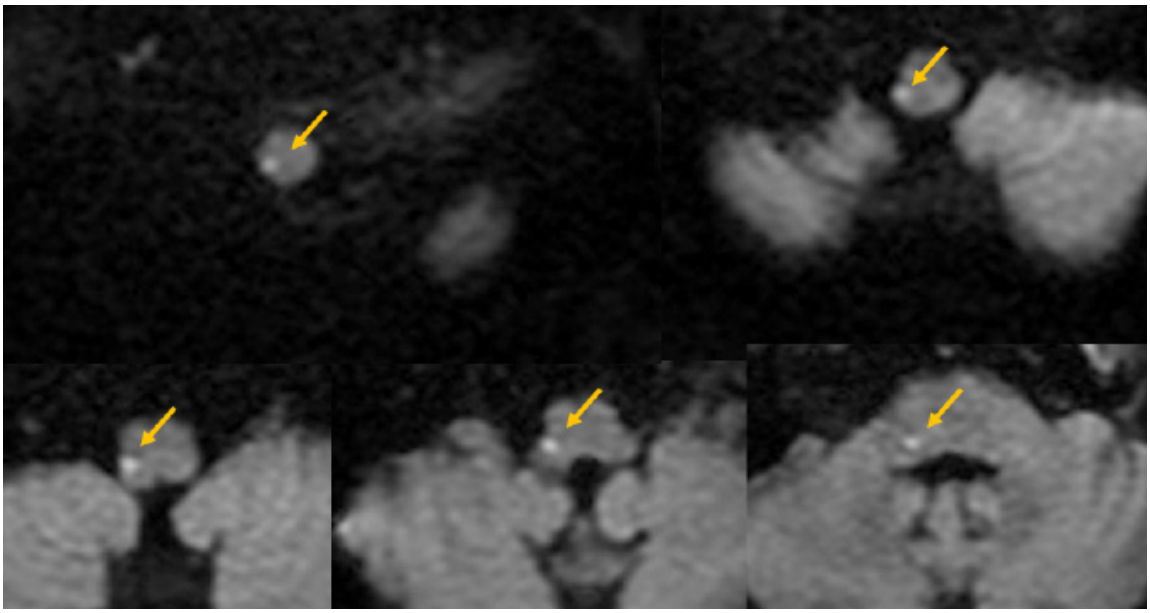

**Figure 2:** Restricted diffusion in the diffusion weighted sequence of MRI demonstrating enhancement of trigeminal nerve with extension to the trigeminal nucleus and spinal trigeminal nucleus and tract with associated flair hyperintensity.

## Discussion

HZO is a potentially devastating clinical event and is associated with a long-term serious neurological event, including encephalitis, vision loss, and postherpetic neuralgia [3-5]. The possibility of HZO in VZV should be kept in mind. Brain imaging should be performed to exclude other causes of patient symptomatology and reveal related complications, especially when orbital or intracranial involvement is considered. In cases of HZO, asymmetric, abnormal trigeminal nerve root involvement may be seen on cranial MRI. In our case, no enhancement was detected in the right fifth cranial nerve, while diffusion restriction of the right trigeminal nerve was observed, matching the localization of the right spinal trigeminal nucleus.

Considering the patient's history, Findings suggested herpetic involvement of the trigeminal nerve, the trigeminal nucleus/tract in the brainstem.

Although ocular involvement is not an uncommon complication of HZO, symptoms typically consist of keratitis, conjunctivitis, and uveitis [6], but rarely, symptoms may be more serious and manifest as ophthalmoplegia or other neurological symptoms. In these cases, cranial MRI can be of great benefit to elucidate the extent of the disease. Early treatment of herpes zoster is essential to reduce the potential complications associated with this condition, and MRI aids in early diagnosis and treatment.

**Conflict of interest:** The authors declare that they have no conflict of interest.

**Acknowledgements:** The authors would like to acknowledge the patient and his family.

**Contributions:** Concept – S.A.A; P.S; S.A.T; Design – S.A.A; S.A.T; N.H; Materials Data Collection and/or Processing: S.A.A; S.A.T; P.S.; Literature Search – S.A.A; S.A.T; N.H; Writing – S.A.A; S.A.T; N.H.

## References

1. Çeviker, Sevil Alkan, et al. "İmmunkompetan Yaşlı Hastada Gelişen Herpes Zoster Oftalmikus: Olgu Sunumu." Batı Karadeniz Tıp Dergisi 3.2: 61-65.

2. Liesegang, Thomas J. "Herpes zoster ophthalmicus: natural history, risk factors, clinical presentation, and morbidity." Ophthalmology. 2008; 115(2): S3-S12.

3. Cavaletti G, Bogliun G, Tagliabue M. "MRI evaluation of a case of herpes zoster ophthalmicus with delayed contralateral hemiplegia." The Italian Journal of Neurological Sciences. 1990; 11(3): 297-300.

4. Vanikieti, Kavin, et al. "Isolated optic neuritis with a concurrent abnormal trigeminal nucleus on imaging: case report of a rare complication of herpes zoster ophthalmicus." BMC neurology. 2018; 18(1): 1-5.

5. Yawn, Barbara P, et al. "Herpes zoster eye complications: rates and trends." Mayo Clinic Proceedings. 2013; 88.

6. Mufti, Musa, et al. "Herpes zoster ophthalmicus caught in the (Tr) act!." Emergency Radiology. 2018; 25(5): 557-559.

**Manuscript Information:** Received: July 16, 2022; Accepted: August 23, 2022; Published: August 31, 2022

**Authors Information:** Sundus Aslı Aydın[1]; Petek Sarli[1]; Nevin Horasan[2]; Sule Aydin Turkoglu[1]*
[1]Department of Neurology, Bolu Abant Izzet Baysal University Faculty of Medicine, Turkey.
[2]Department of Interdisciplinary Neuroscience, Bolu Abant Izzet Baysal University, Turkey.

**Citation:** Aydın SA, Sarli P, Horasan N, Turkoglu SA. Herpes zoster infection involving trigeminal nerve nucleus: A case report. Open J Clin Med Case Rep. 2022; 1895.