



# The Isolated Abducens Nerve Palsy Occured After Postviral Infection in a Diabetic Patient

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## ABSTRACT

Malignancy, immunosuppressive drug use, and diabetes mellitus (DM) are defined as risk factors for herpes zoster. A 58-yearold male patient with the diagnosis of DM was admitted to the emergency room with the complaints of double vision. His neurological examination revealed under activity of the right lateral rectus muscle and hypoactive deep tendon reflexes. In this report, we discuss a rare case of isolated abducens nerve palsy that occurred after postviral infection in the patient.

**Keywords:** Cranial nerve palsies, zona, diabetes mellitus

## Introduction

Isolated paralysis of the sixth cranial nerve may occur in pons lesions associated with various etiologies, in cases of increased intracranial pressure, in intracavernous lesions, after vaccination such as tetanus and diphtheria, in shingles-like viral diseases, and in the presence of trauma, malignancy and diabetes (1). Shingles is a disease that can be seen sporadically in cases in which the balance of the organism resistance is impaired against the organism due to the latent virus in the dorsal root ganglia of patients having had primary disease. Herpes zoster (HZ) first causes pain and paresthesia in the dermatoma that it has affected, then skin rash occurs.

The rash starts in the form of erythematous macules and papules, vesicles develop, then they turn into pustules and crusts appear (2, 3). It often affects the thoracic, especially dermatomas between the T5 and T12 (2). HZ has cutaneous, visceral and neurological

complications (postherpetic neuralgia, meningoencephalitis, transverse myelitis, peripheral nerve paralysis, cranial nerve paralysis, loss of sensation, deafness, eye complications, granulomatous angiitis causing contralateral hemiparesis) (2, 3). Diabetic ophthalmoplegia has an important role in the differential diagnosis of painful ophthalmoplegia. Isolated or combined paralysis of the 3rd, 4th and 6th cranial nerves can be seen (4). In some publications, 3rd cranial nerve palsy is reported to be seen more frequently and in some other cases, 6th cranial nerve palsy is reported to be more frequent (5).

## Case Presentation

A 58-year-old male patient who had been diagnosed with diabetes mellitus for six years was diagnosed with shingles due to vesicular lesions (Figure 1) in the right T5-T8 dermatoma for 2 weeks and used gabapentin and acyclovir. He was evaluated in the emergency unit for his complaint of diplopia lasting for one day. After

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receiving the consent of the patient, he was hospitalized in the department of neurology for further examination and treatment.

In the neurological examination, no abnormality was detected, except for hypoactivity of deep tendon reflexes in all foci and outward vision restriction in the right eye (Figures 2 and 3). There was no abnormal value except HbA1c 8.0% in routine blood tests. The results of contrast-enhanced cranial magnetic resonance (MR) (fine section of the brain stem), Cranial Venous / Arterial MR Angiography, and Computerized Tomography (CT) Angiography for Cervical and Cranial Arteries were normal (Figure 4). Cerebrospinal examination could not be performed because patient's consent could not be obtained for lumbar puncture examination. In the ophthalmological examination performed by an ophthalmologist, there were no features except isolated 6th cranial nerve paralysis on the right. Acyclovir 5x800 mg / day treatment was completed in 7 days. At the 8th week follow-up after the treatment, while skin lesions of the patient partially continued, the outward gaze restriction was completely resolved. After ruling out other reasons, it was thought that the 6th cranial nerve injury might be cranial neuropathy associated with the coexistence of diabetes and shingles



**Figure 1:** Rash, crusted lesions in the right T5-T8 dermatoma



**Figure 2:** Abduction restriction during outward gaze in the right eye

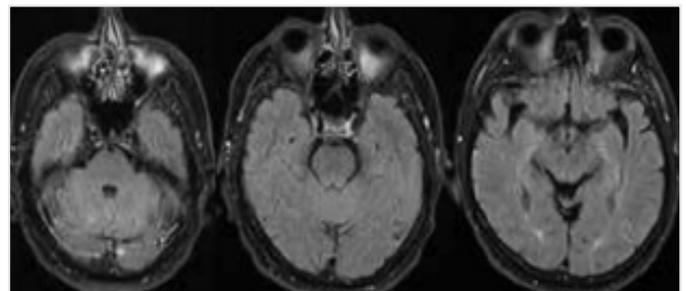
## Discussion

Malignancy, immunosuppressive drug use and diabetes mellitus (DM) are defined as risk factors for herpes zoster (HZ). The incidence of HZ is determined by the factors affecting the host-virus relationship. It is seen in 50% of the individuals whose immune system is suppressed. One of them is age (2). Our case also had risk factors for the development of shingles in terms of immunosuppression secondary to age and diabetes mellitus. In diabetic patients, 3rd, 4th and 6th cranial nerve paralysis can be sudden-painless or painful in the periorbital-frontal region (3). In our case who presented with painless isolated 6th cranial nerve palsy, diabetic cranial neuropathy was firstly considered as a result of the performed examinations. However, cranial nerve paralysis associated with autoimmune response secondary to shingles was not ignored in the patient and shingles could not be ruled out in the etiology.

Although there are 'postviral causes' in the group of rare causes in the etiology of isolated abducens paralysis, we could not find a case report in the literature review. However, although rare, isolated 6th cranial nerve paralysis is seen in the cases of herpes ophthalmicus. In our case, herpes ophthalmicus was not considered since there were no facial vesicles. Since 6th cranial nerve palsy may be the first manifestation of many systemic or neurological diseases and many of these reasons are treatable, it is important to determine the etiology through detailed anamnesis and examination. In most of the cases, recovery is often obtained spontaneously or by applying treatment for underlying etiologic



**Figure 3:** The improved state of right lateral rectus paralysis in 8 weeks after acyclovir treatment



**Figure 4:** T1-weighted (with contrast enhancement) axial magnetic resonance imaging section (normal)

cause. In our case, nearly complete improvement after the antiviral treatment was reached in the 8th week.

## Conclusion

In this case, the coexistence of diabetes and shingles, which is a postviral condition, that may cause isolated 6th cranial nerve paralysis has been discussed. Herpes zoster may be encountered especially with diabetic atypical region involvements.

**Informed Consent:** Written informed consent was obtained from the patient.

## Author Contributions

Concept - G.A., Y.D.; Design - G.A., Y.D.; Supervision - G.A.; Resources - G.A.; Materials - G.A.; Data Collection and/or Processing - G.A.; Analysis and/or Interpretation - G.A.; Literature Search - G.A., Y.D., B.N., S.M.; Writing Manuscript - G.A.; Critical Review - P.N., Y.S., A.Ö. **Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** The authors have no conflict of interest to declare.

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