

## Transient supranuclear paresis of the abduction in viral encephalitis of the brainstem

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**Abstract** The supranuclear paresis of the abducens system, also known as posterior internuclear ophthalmoplegia of abduction, is a very rare disorder clinically characterized by unilateral or bilateral abduction paresis sometimes associated with nystagmus of the contralateral adducting eye, slowing of abduction saccades, and intact horizontal vestibulo-ocular reflex. Here, we report a 35-year-old woman who presented transient left side abduction deficit in conjunction, as the only symptom of self-limited viral encephalitis of the brainstem. Brain MRI including DWI and ADC maps showed an area of abnormal signal intensity in the mid-right ponto-mesencephalic junction. PCR analysis of cerebrospinal fluid showed an enterovirus infection. Spontaneous clinical recovery rapidly occurred 2 days after onset. The brainstem lesion was undetectable at 5-week brain MRI follow-up.

**Keywords** Supranuclear abduction palsy · Ponto-mesencephalic junction · Encephalitis · Benign · MRI-DW · Enterovirus

### Introduction

Supranuclear abducens paresis (SAP) is a rare, poorly understood neuro-ophthalmological condition presenting

with limitation of abduction, slowing of abducting saccades, nystagmus of the contralateral adducting eye, and intact horizontal vestibulo-ocular reflex [1]. SAP can also be called as the posterior internuclear ophthalmoplegia of abduction, in distinction to the clinically well-known anterior internuclear ophthalmoplegia of adduction. Since disorder causing SAP, such as tumors, demyelinating and ischemic lesions usually involve the meso-diencephalic region and/or the rostral pons, other neurological signs and symptoms are prominent. The disorder is thought to depend by increased tone of the antagonistic medial rectus muscle during lateral gaze, either by hyperactivity of convergence or impaired medial rectus inhibition [2]. The increased convergence tone may account for most midbrain syndromes associated with abduction loss [3, 4]. In rarer cases, interruption of projections from oculomotor internuclear neurons (OINs) of the medial rectus subdivision of the oculomotor nucleus to the contralateral abducens nucleus is postulated [2], although selective lesion of this pathway has never been reported.

Transient benign brainstem encephalitis may complicate acute gastroenteritis due to enterovirus. Although several aggressive epidemics have been noticed with a polio-like brainstem encephalitis and flaccid paralysis [5], in most cases the clinical course is benign and the spontaneous recovery is usually the rule in immunocompetent hosts.

Here, we report the very rare case of a young woman who presented transient left side supranuclear abduction deficit with a mid-right ponto-mesencephalic encephalitis.

### Case report

A 35-year-old woman presented with marked headache associated with horizontal diplopia increasing in leftward

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