

Triptans and third nerve paresis: a case series of three patients

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Abstract

Purpose The aim of this report is to increase awareness of a possible association between cranial nerve paresis and the use of sumatriptan in migraine sufferers, particularly in patients who have additional vascular risk factors.

Patients and methods We describe a series of three cases where third nerve paresis developed in patients who were treated with the oral form of sumatriptan. All of the patients had a clear history of repetitive migraine headache and none of them had previous third nerve paresis.

Conclusion Among a variety of medications for the treatment of migraine, there are some drugs with vasoconstrictive effects, particularly triptans. These drugs may be a contributing factor for microvascular damage of the cranial nerves and other organs.

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Introduction

Microvascular third nerve damage is typically diagnosed in patients with vascular risk factors, when other causes of acute ocular motor mononeuropathies have been excluded.^{1–3} There are also conditions more rarely associated with isolated cranial nerve paresis, particularly migraine, where the exact mechanism of the nerve damage is not well understood.^{4,5}

The triptans are among a number of migraine treatments that have a vasoconstrictive mechanism of action.⁶ There are sparse case reports in the literature describing different ischaemic side effects of this drug group.^{5,7–13}

We report three cases where third nerve paresis developed in patients who were treated with oral sumatriptan for recurrent non-ophthalmoplegic migraine.

Case 1

A 19-year-old man presented 3 days after an episode of severe headache and nausea, which resolved after a single oral dose of sumatriptan

50 mg, following which he developed right pupil sparing third nerve paresis. He had never used sumatriptan before. There was no relevant past ocular history. He had suffered from recurrent classical migraines for 3 years without visual symptoms or double vision and was an occasional smoker. His symptoms and the third nerve paresis completely resolved 3 months later.

Case 2

A 63-year-old woman presented with a 10-day history of generalised headache followed by horizontal diplopia and partial left ptosis. She had experienced a similar episode 2 months previously and on both occasions took oral sumatriptan 50 mg at the peak of the headache before developing double vision and ptosis. Examination showed a left pupil sparing partial third nerve paresis. She had no other past ocular or medical history apart from recurrent migraine for 15 years with no ocular symptoms. She had taken sumatriptan 50 mg approximately three times a year for the past 3 years. The patient's symptoms and third nerve paresis completely resolved at 4-month follow-up.

In both cases, neurological assessment and further investigation, including MRI, MRA, inflammatory markers, anti-AChR antibodies, and single fibre EMG, revealed no other cause of acute third nerve paresis.

Case 3

A 74-year-old female presented with a 7-day history of right-sided headache with progressive horizontal and vertical diplopia and right ptosis. Examination showed a right pupil sparing partial third nerve paresis. Past medical history included successful surgery for a right frontal lobe meningioma 18 months previously, well controlled non-insulin-dependent diabetes for 3 years, and migraine since very young age. The pattern of migraine headache did not change after neurosurgery and the patient described her

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current headache as her 'usual migraine'. Apart from her regular medications (metformin, atorvastatin, fluoxetine, esomeprazole, and ondasteron), she had started to take oral sumatriptan 50 mg on alternate days 5 days before the onset of diplopia. Neurological assessment, blood pressure, blood glucose, HbA1C, and inflammatory markers were normal. Urgent neuroimaging, including CT, MRI, and MRA, showed no new abnormalities compared with previous imaging. One week after presentation, the patient's symptoms progressed. She felt light-headed with increasing headache and the right pupil sparing third nerve paresis progressed so that she developed complete ptosis. On admission to hospital, she admitted that for the past week she had taken sumatriptan 50 mg almost every day. The medication was discontinued and 1 month later, the patient's headache had completely resolved. The third nerve paresis completely resolved at 4-month follow-up.

Discussion

Pathophysiology of migraine is not well understood.⁵ However, some of the clinical manifestations of migraine, particularly aura, are believed to result from vasospasm followed by vasodilatation of cranial vessels.⁵

Triptans are widely used as rescue treatment for migraine due to their vasoconstrictive effect and are considered to be a relatively safe treatment.^{11,14,15} We believe that the vasoconstrictive effect of sumatriptan may result in ischaemic side effects, which may be underreported.

There are only two case reports describing an association between sumatriptan and cranial nerve palsies.¹¹ Rothner *et al*¹¹ reported a case of facial nerve palsy in a teenager using sumatriptan nasal spray. Hossein *et al*¹³ described a recurrent paresis of the superior division of the oculomotor nerve occurring after subcutaneous administration of the drug.

Although case 3 had additional vasculopathic risk factors and a previous history of a microvascular event, the other two cases were otherwise healthy and we feel their cranial nerve damage was most likely drug related. In case 3, the frequent use of the medication could have caused an additional vasoconstrictive impact, which resulted in third nerve paresis.

We believe that these cases demonstrate a possible association of microvascular third nerve paresis with sumatriptan intake.

This should be considered when this medication is prescribed to migraine sufferers, particularly when other vascular risk factors are present.

Summary

What was known before

- Triptans have a vasoconstrictive effect but are considered to be a relatively safe treatment.
- There are sparse case reports in the literature describing different ischaemic side effects of this drug group, including gastrointestinal and spinal necrosis, placental infarction, facial nerve paresis, ischaemic colitis, myocardial infarction, and transient paresis of the superior division of the oculomotor nerve after subcutaneous injection of sumatriptan.

What this study adds

- Our case series describes possible association of microvascular third nerve paresis with oral intake of sumatriptan in three individuals.
- This must be considered when this medication is prescribed to migraine sufferers, particularly when other vascular risk factors are present.

Conflict of interest

The authors declare no conflict of interest.

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