Review

Beware of the Travel-Sick Doctor!

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Abstract

An acute-onset, unilaterally fixed mydriasis can be a sign of life-threatening intracranial pathology e.g. intracranial bleed, but can also be due to more benign causes. We present a case of a healthy 46-year-old ICU nurse who developed an acute-onset unilateral mydriasis secondary to the accidental inoculation of her eye with hyoscine from a scopolamine patch she'd applied to a doctor for motion sickness. Due to the association of life-threatening intracranial pathology with a fixed mydriatic pupil, it is important to differentiate between pharmacologically-induced and pathological anisocoria. In this instance, the concern to exclude intracranial pathology can often lead to a plethora of unnecessary investigations and significant patient anxiety.

Keywords

Unilateral fixed mydriasis scopolamine patch

Learning points

- It is important to recognise both the benign and imminently life-threatening causes of an acute-onset unilateral mydriasis.
- Transdermal scopolamine patches are often utilised as anti-emetics and their potential mydriatic and cycloplegic effects should be considered in patients who present with new onset visual disturbance and/or anisocoria.
- One cannot underestimate the importance of thorough history-taking and conscientious clinical exam in determining accurate diagnosis and in-turn avoiding unnecessary, costly investigations and patient anxiety.

Case presentation

A 46 year-old senior Intensive Care Unit (ICU) nurse developed an acute onset of blurring of her left eye whilst on the phone to a tertiary hospital to arrange an inter-hospital transfer of one of the ICU patients. It was associated with a mild retro-orbital pressure behind the left eye and staff noted her left pupil had become significantly dilated. She denied any thunder-clap headache, vomiting, photophobia or focal neurological symptoms. Her past medical included meningitis 20 years previously, from which she had made a full recovery and she was on no regular medications.

On examination, her baseline observations were within normal limits. Positive examination findings included a fixed, dilated left pupil, unreactive to light (both direct and consensual reflex). There was no restriction of eye movements and no ptosis. Her right eye examination and the rest of her cranial nerve and peripheral nerve examination were normal. Fundoscopic examination also appeared to be normal.

Although no evidence of a III nerve palsy, in along with the headache (albeit mild), the initial concern was of a posterior communicating artery aneurysm and the patient was urgently transferred to radiology for an unenhanced computerised tomography (CT) brain, which was normal, followed by a CT angiogram (CTA) and Magnetic Resonance Angiogram (MRA), which were also normal. Baseline bloods were all normal.

At this point, the diagnosis was unclear with differentials including optic neuritis (although no pain on ocular movement and fundoscopy appeared normal) and acute closed-angle glaucoma (but no eye injection and usually associated with severe headache +/- vomiting). She was reviewed by ophthalmology, had normal eye pressures and fundoscopic examination and they were also unclear as to the cause of her dilated pupil.

Upon further questioning, it was unearthed that prior to this episode of blurred vision, our patient had applied a scopolamine (transdermal hyoscine hydrobromide) patch, as a form of motion sickness prophylaxis, to the post-auricular view of the acute onset of a fixed dilated pupil, area of a doctor who was accompanying the ICU patient on the inter-hospital transfer. Although our patient couldn't recall the exact events following the administration of the patch, the theory is that she must have inadvertently rubbed her left eye with the same hand with which she had applied

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the patch, with the assumption that there was a trace of drug residue remaining on her hand. The final diagnosis was therefore that of a unilateral mydriasis secondary to the accidental inoculation of her eye with hysocine from the scopolamine patch she'd applied to the doctor for motion sickness prophylaxis. Towards the end of the day, her pupil began reacting to light and was less dilated and she went on to make an unremarkable recovery.



Discussion

A scopolamine patch is an anticholinergic patch, usually applied to the post-auricular area of a patient, and is commonly used in the prevention of motion sickness and post-operative nausea and vomiting. By blocking the muscarinic receptors of the sphincter pupillae in the iris, it can cause mydriasis.[1] This can occur through high systemic scopolamine levels being released through the patch,[2] or through accidental contamination of the eye, as in our case. Two other cases of inadvertent self-contamination by healthcare providers have been published in the literature.[3, 4]

Although we hadn't considered this for our case, a pilocarpine test could have simply distinguished pharmacological blockade from neurogenic pupillary dilatation. Pilocarpine drops are instilled into both eyes. In the absence of traumatic injury to the eye, and normal intraocular pressure, failure of the dilated pupil to constrict within 30 minutes is proof of chemical blockage of the iris muscles.[5]

Our case highlights an important side-effect of using a scopolamine patch as an anti-emetic, which in conjunction with a thorough history, examination and a pilocarpine test confirming chemical blockage, could have avoided the need for further unnecessary investigation and patient anxiety. It has been reported that mydriasis caused by scopolamine or hyoscine normally resolves spontaneously within 24-72 hours.[3, 6] However, its effects can last anywhere between 3 days to 2 weeks.[7] If the patch is deemed necessary to be used as an anti-emetic, it is important to counsel both patients and healthcare professionals in relation to its potential side-effects, as well as the importance of thorough hand-washing following application of patch.

Declaration of competing interests

Nothing to declare.

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