

# Avoiding investigations through history taking and examinations to differentiate serious from comparably benign aetiology

## Introduction

Anisocoria can be a sign of neurological deficit, necessitating numerous investigations [1]. This case report explores how expensive and time-consuming investigations can be avoided by thorough history taking and examination to differentiate serious from comparably benign aetiology.

## Case report

A 34-year-old female, working as a special needs care worker, presented to eye casualty with a three-hour history of asymmetrical pupil size, pulsating headaches, and fatigue. Past medical history included depression for which she took sertraline. There was no relevant past ocular or family history.

On examination, the left pupil was larger than the right. This difference was greatest in bright light settings, suggesting the abnormal pupil was the left. The right pupil was reactive to direct light and accommodation. The left pupil was unreactive to both direct light and accommodation, and there was no consensual light response. Distance visual acuity and colour vision were normal in both eyes, with no ptosis, diplopia or optic disc swelling. Cranial nerve examination was normal.

The acute history and fully unreactive left pupil excluded a diagnosis of physiological anisocoria. Horner's syndrome was excluded, as disruption of sympathetic nerve supply would give a constricted pupil, anisocoria greatest in bright light and ptosis [2]. Adie's pupil is a cause of unilateral mydriasis due to abnormalities of the parasympathetic supply from the ciliary ganglion to the iris and ciliary muscle. We investigated this by instilling dilute 0.125% pilocarpine to both eyes. A normal pupil will not constrict whereas an Adie's pupil will constrict due to denervation hypersensitivity. Neither pupil constricted, making a diagnosis of left Adie's unlikely [3]. Oculomotor nerve (CNIII) palsy is a potentially life-threatening cause of pupil dilation. There were no other features of this (no oculomotor abnormality or ptosis) and a dilated pupil due to CNIII palsy would constrict with 1% pilocarpine. We instilled this to both eyes but the left pupil remained dilated.

Pharmacological causes of pupil dilation include purposeful or inadvertent exposure to anticholinergic mydriatics. The dilated pupil in such cases would not constrict to 1% pilocarpine, as in our patient. Cycloplegic agents also prevent pupil constriction to accommodation, again relevant to our patient. On further enquiry, the patient revealed that as part of her carer role, she applies scopolamine patches directly to her patients to prevent nausea and vomiting, this occurs twice a week including the night before symptom onset. The examination findings supported the diagnosis of inadvertent scopolamine-induced unilateral mydriasis and excluded the more serious neurological causes of anisocoria.

No treatment or intervention was necessary, the patient was reassured and follow-up appointment was arranged three days later, where it was confirmed that the left pupil had returned to normal.

## Comment

Scopolamine is an anticholinergic that inhibits the parasympathetic nervous system and potential ocular side-effects include pupil dilation and cycloplegia [4].

Unilateral pupil mydriasis is a clinical sign which can be a diagnostic challenge and usually warrants further investigation. However, the patient recalled the handling of a scopolamine patch which was concluded to be the inadvertent cause of unilateral pupil mydriasis. The pilocarpine test also served as a useful diagnostic test.

Mydriasis is a common side-effect of scopolamine patches (used to reduce postoperative nausea and vomiting) and can be unilateral or bilateral. There have been reports of unilateral mydriasis, following either patient or nurse contact with scopolamine patches [5,6].

This case report further supports encouraging education around ocular side-effects when using anticholinergic medications. Caution should be exercised not to inadvertently rub eyes after administration. On presentation, clinicians should exclude simple causes of pupil mydriasis from the clinical history before requesting costly or invasive investigations such as neuroimaging [7].

## References

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## LEARNING POINTS

- Take a thorough history
- Exclude inadvertent causes of pupil mydriasis
- Use pilocarpine as a diagnostic test
- Reassurance that mydriasis will resolve spontaneously may be appropriate.

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