

Anisocoria in patients with hyperhidrosis: A case series for the primary care physician

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ABSTRACT

The differential diagnosis for anisocoria is broad and ranges from benign to life-threatening causes. Often, patients with new onset anisocoria present to their primary care physician, an urgent care center, or an emergency room. As such, it is important for non-ophthalmologist physicians to be familiar with its common causes. We present two cases of pharmacologic anisocoria from *Qbrexza* (glycopyrronium), a wipe used in the treatment of hyperhidrosis. Identifying this medication as a cause of anisocoria in patients with hyperhidrosis can reduce costs and unnecessary testing. Furthermore, physician education about safer usage can be provided.

Keywords: Anisocoria, anticholinergic, hyperhidrosis, mydriasis, side effect

Introduction

The presentation of anisocoria, defined as unequal pupil sizes, raises concern for serious ophthalmologic or neurologic disease. The initial workup for anisocoria includes a focused history and physical changes, which often will elicit a non-emergent and benign cause for the anisocoria.^[1] However, obtaining a focused history involves knowledge of possible causative agents. We present two cases of pharmacologic anisocoria from *Qbrexza* (glycopyrronium) wipes, which may represent an underappreciated culprit agent. We aim to educate physicians who are more likely to encounter anisocoria, such as primary care, urgent care, and emergency department physicians.

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Case History

The first case is of a 21-year-old female who presented to an out-patient ophthalmology office complaining of a dilated right pupil, blurred vision, and photophobia of the dilated eye that she noticed upon waking. With no significant ocular or neurologic history, the patient and her mother were greatly concerned and contemplated seeking care at the emergency room but ultimately decided against this. The patient denied having contact with chemicals but mentioned she used hand wipes for her palms and had *Qbrexza* documented in her medication list. Additionally, the patient was a contact lens wearer and took her contacts out the previous night before bed. Upon examination in the office, she was found to have unilateral mydriasis in both dim and bright ambient lighting, with the right pupil measuring 8 mm and unreactive to light. The left pupil was 3 mm and reactive to light. Her corrected distance visual acuity measured 20/30 -2 in the right eye (pinhole: 20/25 -2) and 20/30 in the left eye (pinhole: 20/20). Extra-ocular motility was normal. External slit lamp examination was normal. Dilated fundus exam of the right eye via slit lamp and 78D lens was normal. No focal neurological signs were present.

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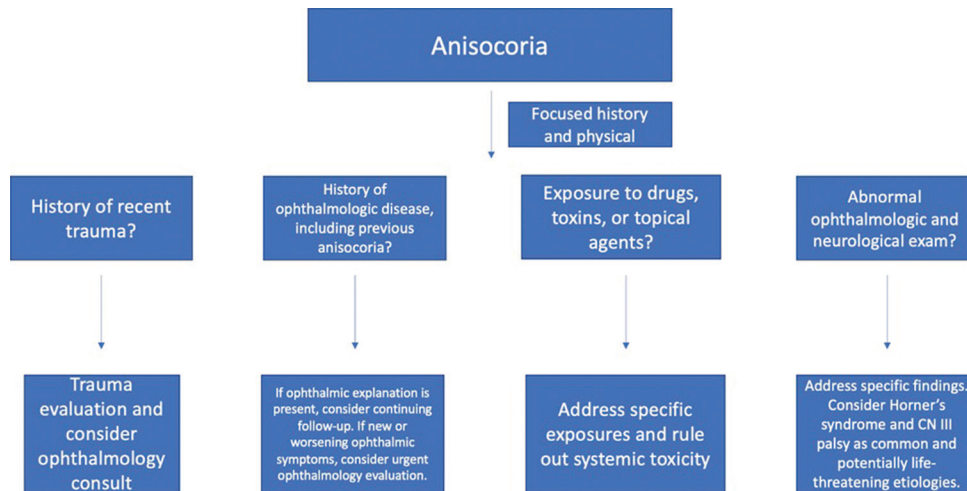


Figure 1: Considerations for the next step in evaluation of anisocoria based on a targeted history and physical

The second case concerns a 16-year-old male who presented to the office with reported alternating anisocoria. One day before presentation, the patient reported a dilated left pupil. The next morning, he woke up with a normal and reactive left pupil but a dilated right pupil. The patient complained of light sensitivity in the dilated eye and a subsequent headache. He denied taking any oral medication and denied experiencing ocular trauma. However, he noted he recently began using *Qbrexza* antiperspirant wipes. The patient had seen an optometrist 2 weeks prior to his visit to our office, where he had an unremarkable routine eye exam. His uncorrected distance visual acuity at the time of his visit to our office measured 20/20 -1 in both eyes, and near vision measured J1+. His pupillary exam revealed a non-reactive dilated right pupil measuring 8 mm in dim and bright ambient lighting. The left pupil was reactive to light and measured 4 mm. Extra-ocular motility was normal. Bilateral external exams and dilated fundus exams were normal. Cycloplegic refraction was performed, where the patient was corrected to 20/20 in both eyes and felt his visual acuity was clearer than his uncorrected vision.

Given the supporting history and use of glycopyrronium topical wipes and the absence of other focal neurological deficits, a diagnosis of pharmacologic anisocoria was determined for both cases. Emphasis was placed on adherence to *Qbrexza* instructions regarding hand washing following wipe use and avoidance of contact with eyes and the peri-ocular area.

Discussion

The differential diagnosis for anisocoria is broad and includes potentially serious ophthalmologic, central nervous system, and peripheral nervous system diseases.^[2] In any patient presenting with anisocoria, a thorough review of systems should be performed to screen for these diseases. Equally as important, a medication and chemical exposure history is imperative as pharmacologic anisocoria is a leading cause of

anisocoria. A thorough history will almost always elucidate a non-life-threatening and relatively benign reason for the anisocoria in the absence of other focal neurologic symptoms. This is a crucial pearl for primary care, urgent care, and emergency department physicians, who will often be the first physician to encounter these patients. In brief, the approach to anisocoria for the non-ophthalmologist is summarized in Figure 1, which emphasizes the importance of history in the first steps.

One of our patients presented first to his general pediatrician, who made an urgent referral to ophthalmology. The other patient called the office, contemplating going to the emergency department, which, after brief screening questions, deemed her fit for evaluation in an out-patient ophthalmology clinic. These two patients and other case reports in the literature exhibit the vast array of physicians to whom patients with anisocoria will initially present.^[3] We stress that the diagnosis of pharmacologic anisocoria is a clinical one, and neuroimaging in the absence of specific neurologic deficits may lead to incidental findings and unnecessary costs and radiation exposure.^[4]

Furthermore, while chemical and pharmacologic anisocoria is a common presentation, *Qbrexza* wipes have only been approved for use for hyperhidrosis since June 1, 2018 and are among the first-line therapies. Historically, the first-line treatments for hyperhidrosis have also included low-dose metal salts such as aluminum and iontophoresis, two therapies that do not cause anisocoria.^[5] The recent nature of this FDA approval may represent a gap in physician knowledge that *Qbrexza* (glycopyrronium) is an anticholinergic agent and thus may present with related side effects. Furthermore, while we focus on anisocoria as the presenting symptom, patients may develop systemic anticholinergic signs due to mucous membrane absorption. Typical symptoms would include dry mouth, urinary retention, and headache. Finally, according to the manufacturer, we recommend hand washing or glove use when applying the medication to avoid recurrent cases.

List of abbreviations

Abbreviation	Definition
J1+	Near vision equivalent of 20/20

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Conflicts of interest

There are no conflicts of interest.

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