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Case Report Open Access

Anisocoria due to *Datura inoxia*

Ozgur Sogut[1]*, Mehmet Ozgur Erdogan[2], Mehmet Yiğit[1] and Levent Albayrak[3]

[1]*Department of Emergency Medicine, School of Medicine, Bezmialem Vakif University, Istanbul, Turkey*
[2]*Department of Emergency Medicine, Haydarpasa Research and Training Hospital, Istanbul, Turkey*
[3]*Department of Emergency Medicine, School of Medicine, Harran University, Sanliurfa, Turkey*

Abstract

We report a case of unilateral fixed dilated pupil induced by a *Datura inoxia* plant product. This report focus on a rare side effect due to *Datura inoxia*. These plant products may be the cause of fixed and unilateral dilated pupil.

Keywords: Anisocoria; *Datura plant*; Dilated pupil; Gardener's pupil

Introduction

Unilateral unresponsive pupil dilation results from various neurological and ocular disorders [1]. Third nerve palsy, Adie's pupil, traumatic mydriasis, and pharmacologic mydriasisare the ocular disorders resulting in unilateral mydriasis. Unilateral mydriasis without sistemic disorder is a topical side effect of *Datura inoxia* and *Brugmasia* plants [1,2]. *Datura* toxicity related symptoms ocur within sixty minutes after ingestion and usually last 24 to 48 hours [2]. We report a case of a pharmacological mydriasis caused by exposure to *Datura inoxia* plant products. This pharmacological mydriasis is defined as "Gardener's pupil". Mydriatic effect is caused by toxic plants including anticholinergic substances such as scopolamine, hyscyamine and atropine [3].

Case Description

A 17-year-old girl was admitted to emergency department with an acute onset of anisocoria and blurred vision.There was no accompanying neurological or systemic symptoms. Ocular movements of the patient were normal but her left pupil was dilated. Pupil was unresponsive to direct and indirect pupillary light reflexes (Figure 1). Her past medical history was unremarkable. Physical examination was normal. Installation of topical pilocarpine 2% for pharmacological testing induced normal constriction of the right pupil but had no impacton the left pupil. This test supported that left mydriasis was due to a pharmacological effect. On further anamnestic evaluation, patient revealed that she worked in the garden, and a leaf of a *Datura* plant had accidentally gotten into her eye with the effect of wind. On the 24. hour, mydriasis was thoroughly reduced and pupil size gradually returned to normal at the second day with no treatment (Figure 2).

Discussion

A wide range of plant products may have various side effects. These side effects may be local or systemic effects related with the type and effect of the toxins. Particulary, anisocoria and blurred vision may be startling [3].

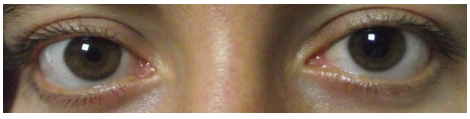

Figure 1: Evident left mydriasis.

Figure 2: Eye examination on the second day of admission.

All datura plants with trumpet-shaped flowers include tropane alkaloids. These plants grow in disturbed soil and waste areas throughout the Americas, Eurasia, and Africa [4]. *Datura inoxia* includes two main toxic alkaloids, l-atropine and l-scopolamine. A well-known effect of these alkaloids is parasympatholytic effects due tomuscarinic blockade [4,5]. *Datura* intoxication related symptoms may continue for days, depending on dosage and method of exposure [6]. Acute poisoning may present with various symptoms of anticholinergic syndrome [7]. Symptoms of acute poisoning included dryness of the mouth and extreme thirst, dryness of the skin, pupil dilation and impaired vision, urinary retention, decreased gut motility, rapid heartbeat, confusion, agitation, restlessness, hallucinations, seizures and coma [6,7].

The tropane alkaloids are well absorbed through cornea and induce mydriasison the affected eye by blocking contraction of the circular pupillary sphincter muscle [1]. Cycloplegia commonly accompanies mydriasis. These alkaloids also lead to cycloplegia by paralyzing the ciliary muscles, often accompanies unilateral mydriasis. The expected ocular findings are mydriasis, cycloplegia and blurred vision. Ocular toxicity occurs through inadvertent topical administrationwith no systemic disorder such as in the present case [2]. Systemic side effects commonly occur with oral ingestionof these plants [1,2].

Mydriasis of the pupil may be caused by trauma, third nerve palsy, Adie's pupil and pharmacologic agents [8]. Accidental mydriasis from exposure to plant extracts is reported in recent studies [1,3,8]. The differential diagnosis of paralytic and pharmacologic mydriasis can be made with instillation of pilocarpine 2% eye drops test. Despite mydriasis do not respond to pilocarpine 2% in pharmacological or oculomotor palsy (third nerve palsy), it responds to eye drop test in paralytic mydriasis, due to denervation sensitivity [1]. In the present case, we ruled out third nerve palsy as the patient had no neurologic symptoms. Hence, a cerebral magnetic resonance imaging was not performed in this case to exclude a compressive origin of third nerve palsy. Also mydriasis induced by trauma does not respond to drops, but in the present case there was no evidence of trauma [1,8]. In the

***Corresponding author:** Ozgur Sogut, Department of Emergency Medicine, Faculty of Medicine, Bezmialem Vakif University, Vatan Str, Fatih, 34093, Istanbul, Turkey, Tel: +90 (212) 312 84 56/24 06; E-mail: osogut@bezmialem.edu.tr

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present case, the improvement in anisocoria over time and medical history helped to diagnose pharmacologic mydriasis by revealing the exposure to adecorative plant, called *Datura inoxia*. As these plants are very common in gardens, their local effects has to be well known by physicians for preventing the patient from unnecessary diagnostic evaluations.

Conclusion

We present this case to underline the importance of accurate medical history conducting when investigating unilateral fixed dilated pupil. Suspicion of an accidental intoxication should be considered if the unilateral mydriasis is detected in patients without evidence of other neurological symptoms. A well conducted history and a simple topical pilocarpine test excludes the necessity of redundant expensive neuro-imaging techniques.

Consent

Written informed consent was obtained from the patient for publication of this case report and for the use of image in this case report.

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