



Anisocoria Caused by Datura Stramonium: A Case Report

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ABSTRACT

Plants found in nature have been consumed for centuries for nutrition as well as for treatment, but some of these plants have toxic properties. One of them is Datura Stramonium, also known as Angel's Trumpets plant. L-hyoscyamine, atropine, and scopolamine in the structure of this plant are responsible for the anticholinergic effects. Various symptoms may occur by touching this plant or consuming it through oral route. In this article, patient who had hand-eye contact after touching the Datura Stramonium plant and admitted to the emergency department with the complaint of unilateral pupil dilation in his right eye is presented.

Keywords: Anisocoria, Gardener's Pupilla, Angel's Trumpet Plant, Datura Stramonium, Mydriasis.

INTRODUCTION

Plants have been used for both nutritional and therapeutic purposes since humanity existed. Depending on the substances they contain, plants can have a variety of effects on the human body.

Datura Stramonium (DS), also known as the "Angel's Trumpet plant," can create anticholinergic effects due to L-hyoscyamine, atropine, and scopolamine, which form as a result of L-hyoscyamine racemisation. In oral use, it can cause serious, life-threatening systemic effects, as well as ocular effects when it comes into contact with the eye (1).

In this article, a case of anisocoria who had hand-eye contact with DS and subsequently developed

mydriasis in the right eye is presented.

CASE REPORT

A 38-year-old male patient was admitted to the emergency department (ED) with a complaint of unilateral pupil dilation in his right eye. (Figure-1) He stated that there was no accompanying headache, eye pain, blurred vision, or double vision, no known ophthalmological problem; no previous trauma, and no eye drops he used. He stated that this situation occurred after working in the garden. It was thought that the reason for this situation could be a plant, seed, or pollen contact.

In the physical examination performed in the ED, the pupil of the right eye was dilated and

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did not respond to light reflexes. The neurological examination was normal. The patient was oriented and cooperative; his mental status was normal; motor,

sensory, reflex, and cerebellar tests were symmetrical; his gait was stable. Other physical examination findings were normal.



Figure1. Pupil dilation in his right eye.

The patient was consulted in ophthalmology. In the examination performed by the ophthalmologists, visual acuity was complete in both eyes; in the anterior segment examination, there was no finding other than mydriasis in the right eye; the fundus examination was normal in the left and right eye, eye movements were normal in the left and right eye, orthophoric in the primary position, and tonometry was within normal limits. It was stated that after the instillation of pilocarpine 2% ophthalmic solution in the patient's eyes, constriction was observed in the pupil of the left eye, and no response was obtained in the right eye. This situation was interpreted as pharmacological mydriasis.

The patient was asked to take a photograph of the plant he came into contact with within his garden, and after the literature search, it was found that this plant was DS (Figure-2), which can cause "Gardener's Pupilla" (2). He was called for a follow-up five days later. During the follow-up examination, the right eye pupil returned to normal.



Figure2. Datura Stramonium (Angel's Trumpets plant)

Advanced imaging methods were not used because the patient had no pathological neurological findings other than anisocoria and pharmacological mydriasis was considered a result of the tests performed.

DISCUSSION

Anisocoria should be evaluated systematically as it may point out the presence of a serious, potentially life-threatening clinical situation such as cerebrovascular diseases, aneurysms, or metastasis (3). The medical history, trauma status, and exposure history of the patient with anisocoria should be evaluated, and differential diagnoses should be identified in light of the data obtained after a detailed physical

examination.

Unilateral mydriasis after plant contact has been defined as “Gardener’s Pupilla” in the literature. (2). The substances that cause “Gardener’s Pupilla”, found in whole parts of the DS plant and responsible for the anticholinergic effects, are tropane alkaloids. The DS plant, which can be found abundantly in Türkiye, can be used by the populace for many diseases such as eczema, bronchitis, acne, and asthma due to its anticholinergic effects (4, 5).

Tropane alkaloids in DS inhibit the effect of acetylcholine by binding to their receptors, with competitive antagonism by acting on muscarinic acetylcholine receptors. (6) Different G protein-associated muscarinic receptors have been described in the human body. The iris sphincter and ciliary body contain 60-70% muscarinic receptors; M3 is the most abundant subtype, and alkaloids directly stimulate this receptor. (7) Tropane alkaloids are mainly absorbed into the humoral aqueous humor through the conjunctiva and cornea. The width of the iris is controlled by both the circular and radial muscles. The mechanism of mydriasis is caused by tropane alkaloids; the inability of the circular pupillary sphincter muscle to contract as a result of inhibition of acetylcholine stimulation and dilation of the pupil as a result of the balance shifting towards radial pupillary dilator muscle contraction. These alkaloids can also cause cycloplegic effects by paralyzing the ciliary muscles (6).

Yilmaz et al. reported that a 20-year-old male patient presented with complaints of blurred vision and

sensitivity to light after contact with the Datura plant, and isolated left eye pupillary dilation was detected in the examination. They reported that pilocarpine 2% ophthalmic solution applied to the eyes was interpreted as pharmacological mydriasis as a result of no response in the mydriatic pupil (7). Macchiaiolo et al. presented a case of acute anisocoria in a 12-year-old boy in their study. In this case report, they found that the patient’s anisocoria occurred after hand-eye contact while in the garden and that this condition was plant-based. No pathology was detected in advanced examinations such as Cranial Magnetic Resonance Imaging (MRI) (8). Firestone et al. reported that the unilateral isolated mydriasis observed in their cases with similar characteristics was of plant origin and that it could be diagnosed by anamnesis and the pilocarpine test without time-consuming and expensive procedures (3). These studies have similar features to our case.

There may be ocular exposure to the DS plant, as well as life-threatening systemic effects as a result of oral exposure. Taştekin et al. in their study presented two intoxication cases that were admitted to the ED with anticholinergic symptoms and followed up in the ICU (intensive care unit), after which it was understood that they ate the DS plant. In these cases, it is reported that the pupils are mydriatic as well as having anticholinergic systemic effects such as mucosal dryness (9).

CONCLUSION

The ocular and systemic effects of the DS plant, which is abundant in Türkiye, should be known by clinicians and should be considered in the differential diagnosis. Detailed anamnesis, literature research, and simple tests can protect the patient and the health system from time-consuming and expensive procedures.

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Authors Contributions: EE proposed the study and wrote the paper. All authors contributed to the design and interpretation of the study and to further drafts.

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