CASE REPORT

Heroin-Induced Exodeviation Masking a Baseline Decompensated Esophoria

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ABSTRACT

Heroin and other opiate intake have been shown to have various effects on the brain, including the documentation of a small number of cases of strabismus from intake and withdrawal. Prior reports of heroin have focused on its tendency to cause diplopia, especially esodeviation upon withdrawal. The authors describe a 25-year-old woman who developed double vision from a decompensated esophoria where heroin use induced an exodeviation that transiently improved her diplopia. Measurements after acute heroin use confirmed by urinalysis revealed an improvement in her decompensated esophoria, reducing the previously documented esodeviation by more than half.

ARTICLE HISTORY

Received 19 October 2016
Revised 2 November 2016
Accepted 2 November 2016

KEYWORDS

Diplopia; esotropia; exotropia; heroin

Introduction

Heroin has been previously reported to cause variable intermittent strabismus, with the majority of cases documenting an induction of acute-onset comitant esotropia from heroin withdrawal, which typically occurs 3 to 8 days after heroin cessation.^{1–10}

There are also rare reports of acute heroin ingestion causing exotropia.^{8,10} We report a patient presenting with a decompensated esophoria who had transient improvement in her diplopia from heroin-induced exodeviation.

Case presentation

A 25-year-old female was referred for evaluation of horizontal diplopia. The patient stated that she had been having horizontal binocular diplopia for 3 months prior to presentation, which began as intermittent and worsened over time. Initially, she reported the ability to see a single object at a distance with focused effort. Over the month before presentation, she was no longer able to fuse an object at distance. She reports no diplopia at near. Prior to 3 months ago, she had been having rare intermittent diplopia over the course of 1 year but none prior to that.

Her past medical history was pertinent for illicit drug use (heroin and occasional marijuana) for the past year. Her last heroin use was 2 days before

presentation, and she did not feel she was in withdrawal at the time of examination. Her last use of marijuana was 2½ months prior. Her ocular history included glasses in sixth grade but no history of strabismus or patching. There was no family history of patching or strabismus.

Examination revealed visual acuities of 20/20 OU with a refraction of $-4.00 + 1.00 \times 90$ OU. Her extraocular movements were full. She had a comitant 30–35 $^{\Delta}$ esotropia at distance and 20 $^{\Delta}$ esophoria at near. Her stereopsis was normal with 40 seconds of arc. There was no miosis to suggest accommodative spasm. Dilated examination showed no abnormalities, including no papilloedema. The remainder of the medical and neurologic examination was within normal limits. Magnetic resonance imaging (MRI) of the brain with gadolinium showed no abnormalities. Her deviation was consistent with a decompensated esophoria with elements of primary divergence insufficiency.

The patient was seen again 30 days later for follow-up and reported constant distance diplopia that was unchanged until resolution of the diplopia on the day of follow-up. The patient reported heroin just prior to the resolution of the diplopia, which included use the night before and early in the morning the day of follow-up. At the follow-up visit, examination revealed a comitant 12 $^{\Delta}$

esophoria at distance and 2^Δ esophoria at near. The reported heroin use was confirmed with a positive heroin urinalysis level of 48 ng/mL. In retrospect, the patient recalled that her diplopia always resolved for hours to up to a day or two with the use of heroin.

Discussion

Heroin has been previously reported to cause variable intermittent strabismus. The majority of the cases are of an induction of acute-onset comitant esotropia from heroin withdrawal, which typically occurs 3 to 8 days after heroin cessation.^{1–10} The effects of heroin withdrawal were systematically evaluated by Firth et al.⁴ where they examined 66 patients undergoing heroin detoxification and found 16 patients had esotropia and 5 had intermittent esotropia after 5 days of detoxification, which was not present prior to detoxification.¹ Studies of strabismus during acute heroin intake are less prevalent, but acute use of heroin has been reported to cause comitant exotropia without underlying neurologic or ocular pathology in a few cases.^{8,10}

Our patient demonstrated a baseline decompensated esophoria with elements of primary divergence insufficiency. At the time of initial presentation, she was 2 days away from heroin use and, therefore, was neither under the acute influence of heroin use nor in heroin withdrawal. Thus, her baseline was a comitant 30–35^Δ at distance. On the second presentation, with urinalysis-confirmed acute heroin intake, her esodeviation was more than halved, leaving her with an esophoria, and she reported seeing single even in the distance. This can be explained by a heroin-induced exotropia reducing her underlying esotropia, which temporarily resolved her baseline diplopia. During withdrawal, although not observed in clinic, we suspect her esotropia would be larger, with the withdrawal-induced esotropia compounding her baseline esotropia to create a greater deviation.

This case highlights the potential for heroin to induce changes in the alignment of the eyes.

Although heroin has been reported as the cause of diplopia, this is the first reported case in which the diplopia from a decompensated esophoria was temporarily masked with the acute use of heroin.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Funding

This work was supported in part by an unrestricted grant to the Department of Ophthalmology by Research to Prevent Blindness, Inc., New York, New York, USA.

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