

# Combination of sixth nerve palsy and Horner's syndrome from carotid cavernous sinus fistulas

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## Introduction

- The combination of sixth nerve palsy (6NP) and Horner's syndrome (HS) localizes the disease process to the ipsilateral cavernous sinus. [1-5]
- Carotid cavernous sinus fistulas (CCF) are one of the leading causes of co-existing 6NP and HS. [1,4]
- There is a lack of literature reporting the rate of this phenomenon in CCFs, whether 6NP and HS occur simultaneously or sequentially, and what the long term prognosis is for the presenting symptoms.

## Objective

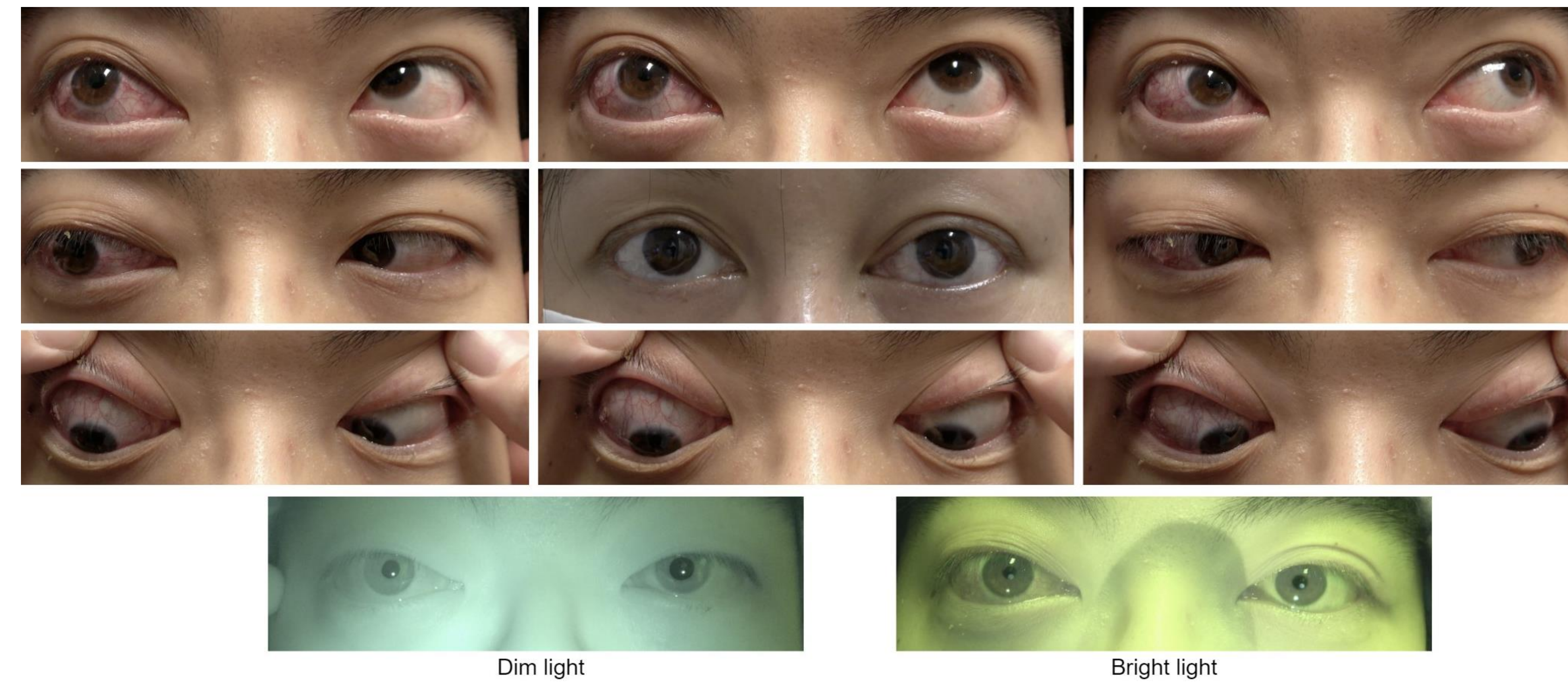
To describe three patients with a combination of 6NP and HS secondary to a CCF, representing 16.7% (3/18) of all CCFs seen during the study period.

## Methods

- Approval was obtained by the U of T Research Ethics Board.
- Written consent for study inclusion was obtained from each patient.
- Patients referred to a tertiary neuro-ophthalmology service between July 2018 and January 2021 for the workup of a query CCF were screened for inclusion.
- Inclusion criteria:**
  - Preserved visual acuity
  - Preserved color vision
  - Occurrence of ipsilateral 6NP and HS during clinical course
  - Unilateral presentation
  - Diagnosis of CCF confirmed with angiography
- Patient demographics, investigations and treatment courses, and final outcome at follow up visits were retrieved in a chart review for analysis.

## Case 1

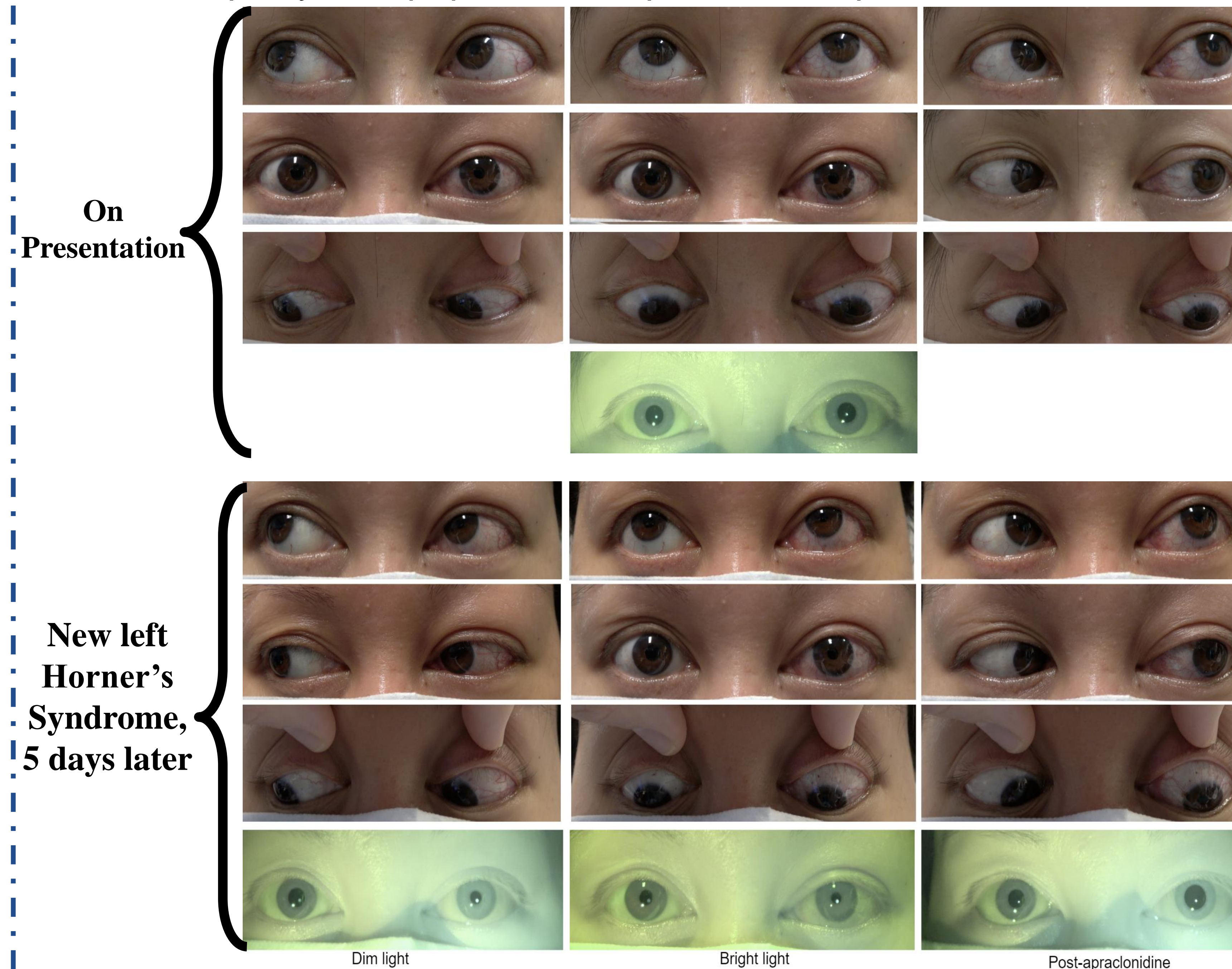
- 34-year-old man presenting with simultaneous right 6<sup>th</sup> nerve palsy and right Horner's syndrome. He also had elevated IOP OD.



- CT Angiogram: Right cavernous sinus dural arteriovenous fistula
- Treatment: Coiling via superior ophthalmic vein with right frontotemporal craniotomy due to difficulty accessing facial vein
- Outcome: Resolution of right 6NP, after 1 month. Right Horner's Syndrome persisted at 8 month follow-up.

## Case 2

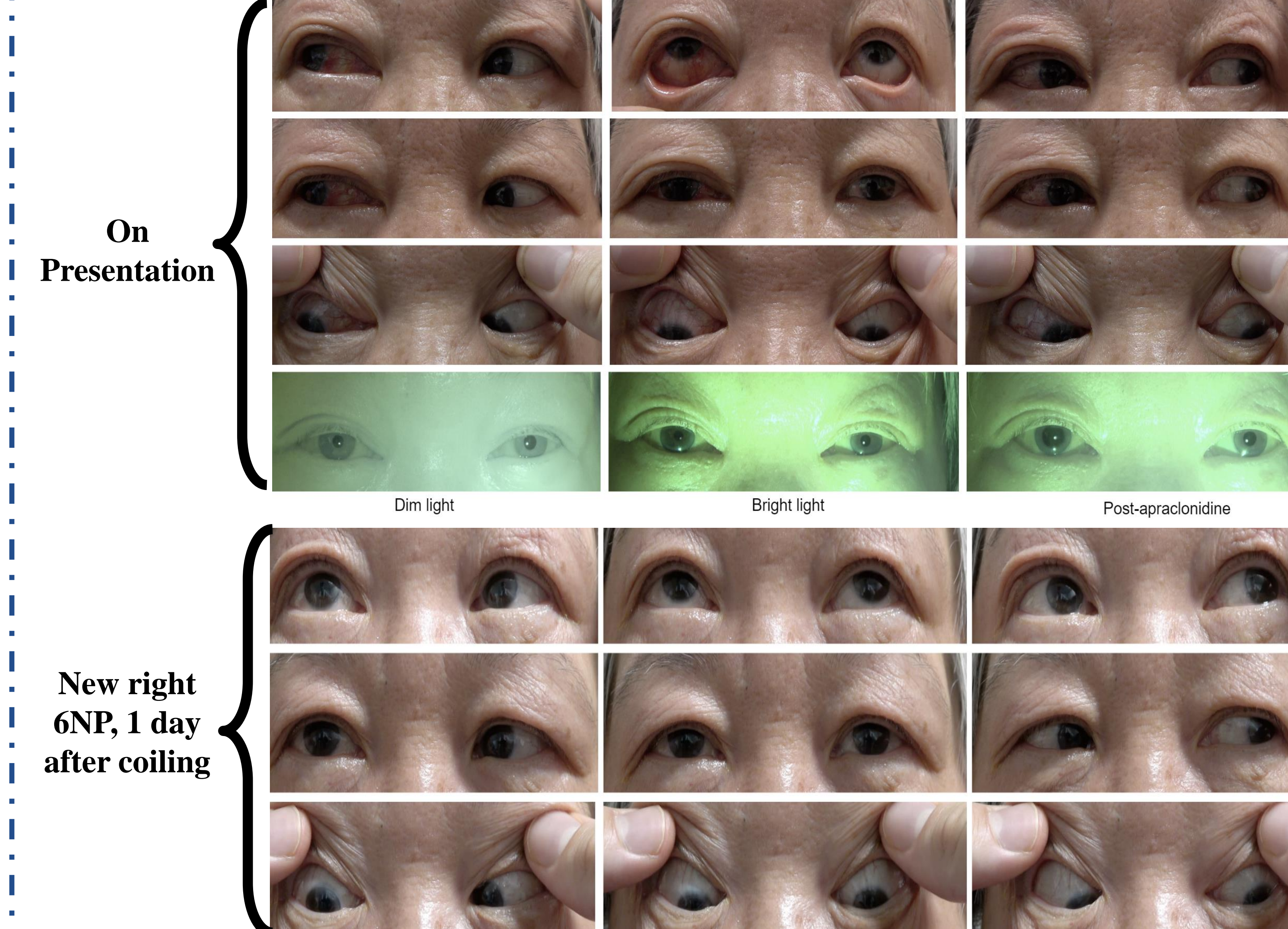
- 44-year-old woman presenting with left pulsatile tinnitus and new left 6<sup>th</sup> nerve palsy. Her pupils were equal sizes at presentation.



- CT Angiogram: Left direct carotid cavernous sinus fistula
- Outcome: After successful endovascular coiling, resolution of left 6NP after 2 weeks. Left Horner's Syndrome persisted at 6 month follow-up.

## Case 3

- 72-year-old woman presenting with new red right eye and ipsilateral Horner's syndrome with BCVA 20/25 OD, 20/20 OS.



- CT Angiogram: Right cavernous dural arteriovenous fistula
- Outcome: Successful endovascular coiling. Diplopia and 6NP improved over time and fully resolved 6 months later.

## Discussion

- Combination of ipsilateral 6NP and HS can be seen in the setting of CCFs
- They may occur simultaneously or sequentially. Either 6NP or HS can initially be seen in isolation.
- Although the 6NP has an excellent long term prognosis, the HS is likely to persist.

## References

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