

## Blown Pupil at Sea

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An otherwise healthy 4-year-old male with no past medical history was noted one morning to have a dilated right pupil. He did not complain of headache, nausea, vomiting, vision changes, or pain. He had no difficulty with speech or swallowing. His behavior was normal.

The child lives aboard a 43' sailboat with his parents. They were 5 days departed from Bermuda, having endured winds up to 55 knots and heavy seas for the first few days. Winds were light and seas were calm the morning of the child's ocular changes. There was no reported head trauma.

The boat's captain and father of the family texted this author the photo (**Figure 1**), requesting guidance. Per text, the father reported normal extraocular motion and a non-tender neck, with no signs of ecchymosis over the child's head or neck. While there were text exchanges, there was no audio communication.

Given that the differential diagnosis of new onset anisocoria includes, but is not limited to, posterior communicating artery (PCOM) aneurysm, intracranial hemorrhage, brain tumor, Horner's syndrome, carotid artery dissection, and pharmacologic causes, how would you advise the parents?<sup>1,2</sup> At the time they were still 3 days out from their next landfall, beyond the reach of rescue services.

The role of digital health has been evolved rapidly with the advent of smart phones, wireless 5G networks, and AI. In ophthalmology it has been used both asynchronously and in real time.<sup>3</sup> The role of telehealth in austere environments is particularly intriguing, especially if evacuation is not available, as options for management of central nervous system causes of acute anisocoria are limited.<sup>4,5</sup> If increased intracranial pressure is the suspected cause, protecting the victim from secondary brain injury through prevention/treatment of hypotension, hypoxia, and hypothermia become important. Keeping the head elevated at 30 degrees can help minimize increases in intracranial pressure. Further interventions, especially by two nonmedical parents aboard a vessel at sea, would be challenging.

**Figure 1.** Acute anisocoria in a 4-year-old boy on a 43' sailboat shortly after a storm



In this case, given the apparent absence of trauma, the lack of vision changes, and an otherwise normal exam as per the father's report, non-CNS causes had to be considered, including topical pharmacologic sources.

Further history revealed that the family used scopolamine patches for control of sea sickness, and that the child had rubbed his eye after touching his own patch that morning. The anticholinergic effect of scopolamine caused the unilateral mydriasis. Two hours later, the dilation had resolved, and the pupils remained equal.

### References

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