

Giant colloid cyst of the brain masquerading as vasovagal syncope



Mohsin Khan, MD, Syed A. Gardezi, MD, Vikram Nangia, MD, FHRS,
Arshad Jahangir, MD, FHRS, A. Jamil Tajik, MD

From Aurora Cardiovascular Services, Aurora Sinai/Aurora St. Luke's Medical Centers, University of Wisconsin School of Medicine and Public Health, Milwaukee, Wisconsin.

Introduction

Vasovagal syncope is very common in the general population.¹ Studies estimate that by 60 years of age, 42% of women and 32% of men will have had at least 1 vasovagal episode.² A careful review of the patient's history and witness account are essential in the diagnosis, as is eliciting the predisposing factors. Vasovagal syncope generally is considered benign, resulting from an exaggerated neurocardiogenic reflex, but rarely it may be associated with pathologic conditions. Colloid cysts are rare congenital neoplasms commonly located in the third ventricle.³ Syncope associated with colloid cysts is extremely rare, although sudden death has been reported.³ We report a case, confirmed with tilt table testing, of vasovagal syncope in the setting of a large colloid cyst in the third ventricle. After successful resection of the colloid cyst, the patient's symptoms resolved completely and tilt table testing became negative.

Case report

A 40-year-old woman with no significant past medical history presented with multiple fainting spells over the past 3 years. She saw a black flash before losing consciousness for 2–3 minutes and then spontaneously recovering. There was no evidence of seizure activity, nor were bowel or bladder incontinence noted. Upon waking, she felt fatigued and took some time to come to her usual self. Cardiac workup, including an electrocardiogram and an echocardiogram, was normal. A head-up tilt table test was performed. The patient was tilted to a 70-degree angle. Over the next 10 minutes, her blood pressure remained stable. An isoproterenol infusion was started, which caused a gradual increase in heart rate and blood pressure. At 22 minutes, she developed frank syncope with an abrupt 45 mm Hg decrease in systolic blood pressure (Figure 1). She was returned to the supine

KEY TEACHING POINTS

- Vasovagal syncope can be associated with intracranial pathologic conditions.
- Colloid cyst is a rare cause of vasovagal syncope.
- The mechanism involves compression of adjacent hypothalamic structures owing to close proximity to the third ventricle wall.
- A high index of suspicion is required to achieve the correct diagnosis.

position, and her symptoms resolved and blood pressure normalized. Fluid and salt intake was encouraged, and metoprolol succinate was started. Given the prolonged duration of syncope, visual symptoms, and confusion, a computed tomography scan of the brain was performed. This showed a large $3.7 \times 3.0 \times 3.8$ -cm hyperattenuating round mass in the third ventricle with moderate hydrocephalus (Figure 1B). Magnetic resonance imaging of the brain confirmed these findings (Figure 1C). She underwent resection of the mass; pathology was consistent with colloid cyst (Figure 2A). Her symptoms resolved completely after the surgery. The repeat tilt table study was negative, despite isoproterenol infusion, with elevated heart rate and blood pressure that remained stable throughout the study (Figure 2B). The patient has had no further syncopal episodes on follow-up over the last 2 years.

Discussion

Colloid cysts are benign, slow-growing tumors that comprise 0.5%–1.5% of intracranial tumors. Third-ventricle colloid cysts typically produce nonlocalizing signs associated with increased intracranial pressure. Syncope is an extremely rare presentation of colloidal cysts.⁴

Our patient had positive tilt table testing diagnostic for vasovagal syncope. Compression of the adjacent hypothalamic structures owing to close proximity to the wall of the

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Address reprint requests and correspondence: Dr A. Jamil Tajik, Director, Cardiac Specialty Center, Aurora St. Luke's Medical Center, 2801 W Kinnickinnic River Parkway, Ste 880, Milwaukee, WI 53215. E-mail address: publishing14@aurora.org.

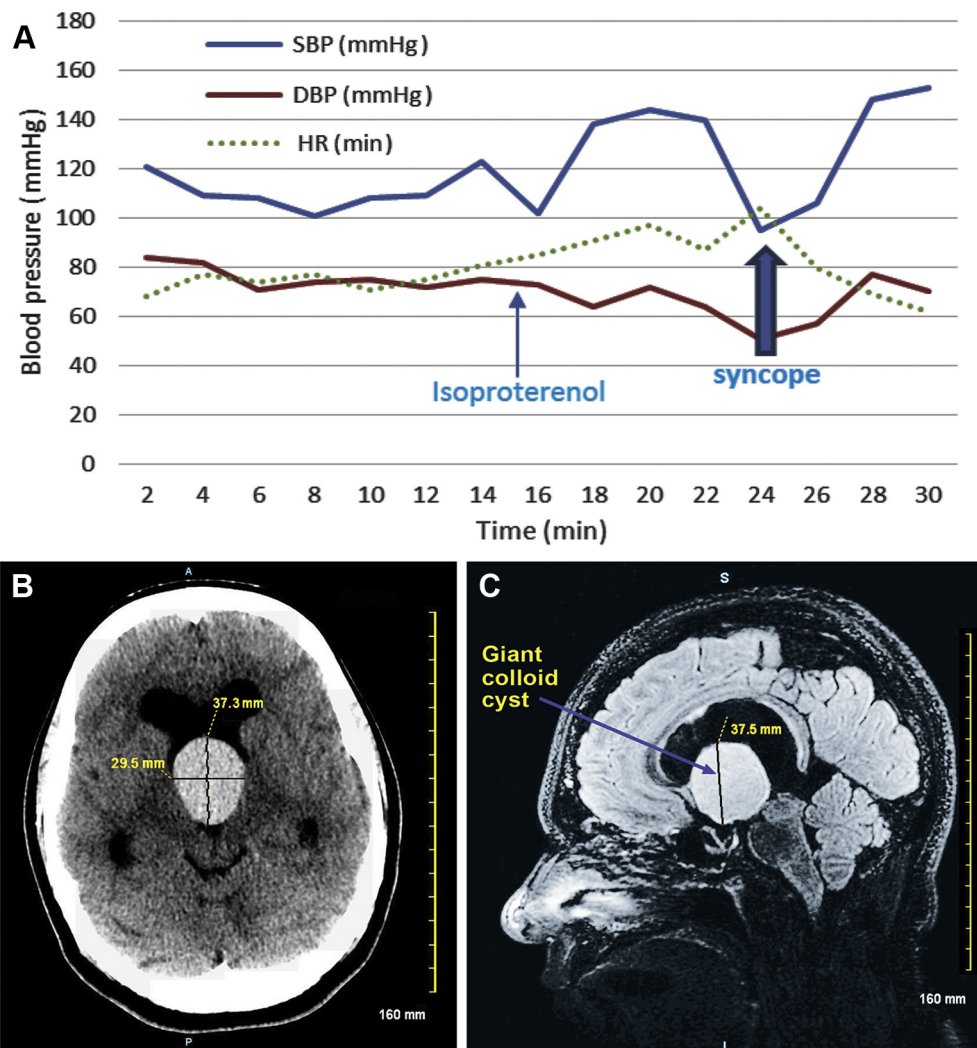


Figure 1 Preresection results. **A:** Vasovagal syncope is seen during drug-free tilt table testing. The heart rate and blood pressure remained stable for the 15-minute tilt. In response to isoproterenol, the patient's blood pressure fell abruptly, with minimal heart rate increase, and the patient developed syncope. **B:** Computed tomography of the brain shows a large $3.7 \times 3.0 \times 3.8$ -cm hyperattenuating round mass in the area of the third ventricle with moderate hydrocephalus. **C:** Magnetic resonance imaging of the brain shows the mass in the third ventricle. DBP = diastolic blood pressure; HR = heart rate; SBP = systolic blood pressure.

third ventricle can explain these findings. The hypothalamus plays an important role in regulation of blood pressure responses to postural changes. On standing, gravitational forces cause venous pooling that reduces right-sided filling pressures and results in decreased firing of arterial baroreceptors located in the aortic arch and carotid sinus. These afferent signals are processed in different parts of the brain, including the hypothalamus and cerebellum. As a result, increased sympathetic activity and decreased parasympathetic output cause increased peripheral resistance, raising inotropic and chronotropic activity to maintain blood pressure in the upright posture. Disruption of hypothalamus nuclei could result in inappropriate sympathetic and parasympathetic responses that can potentially manifest as vasovagal syncope.⁵

The current American College of Cardiology/American Heart Association/Heart Rhythm Society (ACC/AHA/HRS)

guideline for the evaluation and management of patients with syncope⁶ recommends against the use of magnetic resonance imaging or computed tomography of the head in the routine evaluation of patients with syncope in the absence of focal neurologic deficits or head trauma associated with syncope. However, in patients with unusual symptoms, intracranial imaging could be useful, and the decision needs to be individualized based on initial assessment of symptoms or neurologic signs.

Conclusion

Colloid cysts of the third ventricle are a rare cause of vasovagal syncope and sudden death. A high index of suspicion is required to achieve the correct diagnosis and intervene before serious consequences occur.

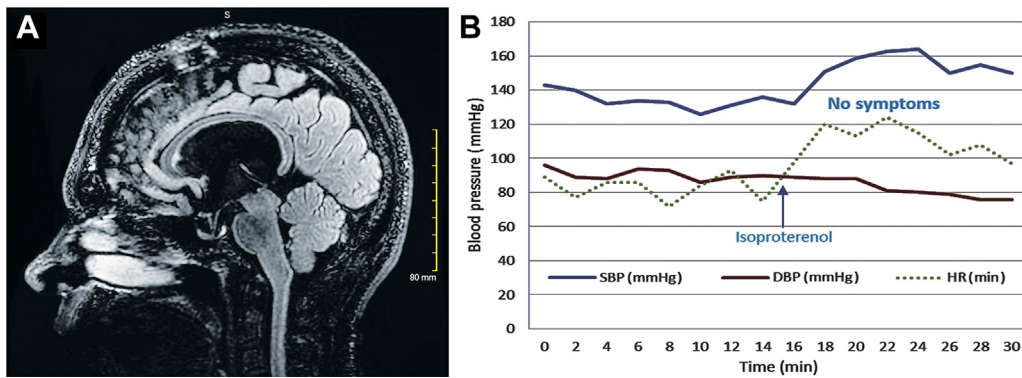


Figure 2 Postresection results. **A:** Magnetic resonance imaging shows the brain after resection of the colloid cyst. **B:** No drop in blood pressure is seen on repeat tilt table testing post resection. DBP = diastolic blood pressure; HR = heart rate; SBP = systolic blood pressure.

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