American Journal of Ophthalmology Case Reports 25 (2022) 101399

Contents lists available at ScienceDirect

American Journal of Ophthalmology Case Reports

journal homepage: www.ajocasereports.com/

A buoyant mass in the brain: Intraventricular migration of silicone oil

Lucie Y. Guo [a], Ryan M. Jamiolkowski [b], Muhammad Hassan [a], Theodore Leng [a,*]

[a] Department of Ophthalmology, Byers Eye Institute, Stanford University School of Medicine, Palo Alto, CA, USA
[b] Department of Neurosurgery, Stanford University School of Medicine, Palo Alto, CA, USA

ARTICLE INFO

Keywords:
Silicone oil
Proliferative diabetic retinopathy
Tractional retinal detachment
Neovascular glaucoma
Intraventricular hemorrhage

1. Case report

A 41-year-old male with type 1 diabetes, end-stage renal disease, and proliferative diabetic retinopathy developed tractional retinal detachment in his left eye and underwent silicone oil tamponade. He was lost to follow-up, then presented 2 months later with left eye pain, an intraocular pressure of 80 mmHg, and underwent urgent Ahmed tube shunt placement. His left eye later became no light perception (NLP).

The next year, he suffered a myocardial infarction and required a cardiac stent with dual antiplatelet agents. Five years later, he developed abdominal pain after missing dialysis due to loss of vascular access. In the ED, his blood pressure was 260/160, prompting neuroimaging during workup of hypertensive emergency. Supine non-contrast head CT revealed a hyperdense substance in the frontal horn of his left lateral ventricle, which prompted further workup to rule out intraventricular hemorrhage. His antiplatelet agents were held, and neurosurgery was consulted. However, the lesion had a convex fluid-fluid interface and was buoyant (Fig. 1A), indicating lower specific gravity than cerebrospinal fluid. Additionally, there was a hyperdensity along the left optic nerve (Fig. 1B), suggesting an intraocular origin. Repeat CT in the prone position demonstrated that the hyperdensity floated upwards to the occipital horn of the left lateral ventricle (Fig. 1C), cinching the diagnosis of intracranially migrated silicone oil.

2. Discussion

Intracranial migration of silicone oil is a rare complication in the setting of optic nerve anomaly[1] or lamina cribrosa damage.[2] Almost all reported cases have been asymptomatic and did not require intervention; several cases of headache have been reported, with one requiring a ventriculoperitoneal shunt.[3] Our patient had no headache or neurologic symptoms and did not require neurosurgical intervention. Once the supine-prone CT sequence ruled out intraventricular hemorrhage, antiplatelet agents were resumed. During his admission, vascular access was restored, dialysis was re-initiated, and his hypertension resolved.

There are currently no recommendations for modifying the use of silicone oil solely on the exceedingly low risk of intracranial migration. High intraocular pressure is likely insufficient to cause retrolaminar migration of silicone oil by hydraulic pressure alone,[4] but it may be reasonable to control intraocular pressure in eyes with silicone oil to prevent further glaucomatous injury to the lamina cribrosa and optic nerve. In the acute setting, distinguishing intraventricular silicone oil from hemorrhage (i.e., by supine-prone CT) can avoid unnecessary reversal of antiplatelet or anticoagulation medications, ICU admission, or neurosurgical procedures.

Funding

Research to Prevent Blindness and NIH grant P30-EY026877.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

* Corresponding author. Byers Eye Institute at Stanford, Stanford University School of Medicine, 2452 Watson Court, Palo Alto, CA, 94303, USA.
E-mail address: tedleng@stanford.edu (T. Leng).

https://doi.org/10.1016/j.ajoc.2022.101399
Received 6 July 2021; Received in revised form 28 January 2022; Accepted 1 February 2022
Available online 3 February 2022

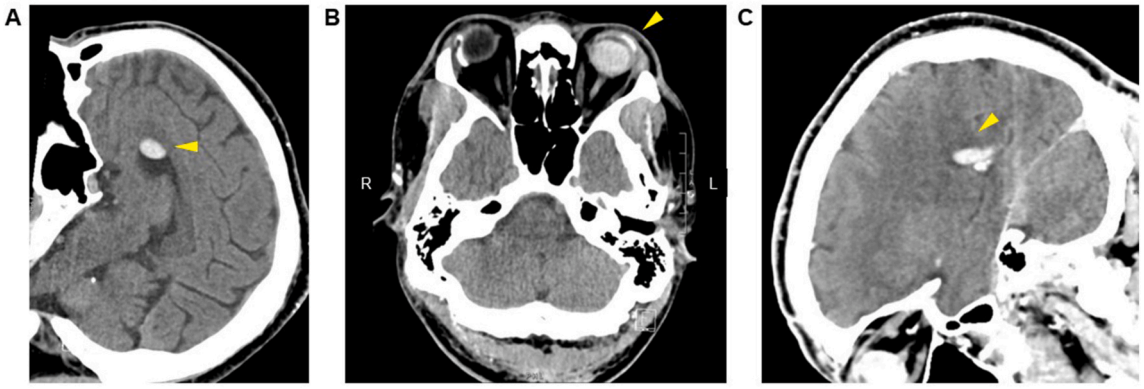

Fig. 1. Intraventricular silicone oil
(A) Sagittal and (B) axial CT scans in the supine position, showing hyperdensity in the left globe and along the left optic nerve, and a buoyant convexity of silicone oil in the frontal horn of the left lateral ventricle. (C) Repeat prone CT reveals redistribution of the hyperdensity to the occipital horn of the left lateral ventricle, due to the low specific gravity of silicone oil. The yellow arrow in each panel indicates hyperdense silicone oil.

Acknowledgements

None.

References

1. Kuhn F, Kover F, Szabo I, Mester V. Intracranial migration of silicone oil from an eye with optic pit. *Graefe's Arch Clin Exp Ophthalmol.* 2006;244:1360–1362.
2. Lam SC, Chan AYY, Yuen HKL. Extraocular silicone oil migration to orbit and retrolaminar region: case report and systematic review. *Graefe's Arch Clin Exp Ophthalmol.* 2020;258:2799–2807.
3. Hruby PM, Poley PR, Terp PA, Thorell WE, Margalit E. Headaches secondary to intraventricular silicone oil successfully managed with ventriculoperitoneal shunt. *Retin Cases Brief Rep.* 2013;7:288–290.
4. Knecht P, et al. Is silicone oil optic neuropathy caused by high intraocular pressure alone? A semi-biological model. *Br J Ophthalmol.* 2007;91:1293–1295.