Water drinking test and angle closure glaucoma

Dear Editor,

Kumar et al.\(^3\) in their article titled “severe visual loss following water load for transabdominal ultrasound” have described a patient, who is a known ocular hypertensive, developing raised intraocular pressure (IOP) following waterloading. Authors have mentioned the possibility of visual loss in such patients and highlighted the importance of slow ingestion of 500 ml of water, mandatory 90 min postprocedural observation period and prompt referral to ophthalmologist if patient develops visual complaints. We appreciate the author’s effort and research work.

By stressing outflow facility, the water drinking test (WDT)\(^2\) might reveal elevations in IOP that are ordinarily experienced during 24-h period. Recent work on WDT points to its potential as a predictor of peak IOP, and thus IOP fluctuations. Physiology of WDT is not fully understood. Autonomic nervous stimulation and/or increased episcleral venous pressure (EVP) remain possible mechanisms. Systemic hypertension occurs following water drinking in autonomic failure, in quadriplegia, after cardiac transplantation and to a lesser extent in older healthy individuals. Sympathetic stimulation is thought to produce this response and may also modify IOP via yet-to-be-determined mechanisms. Alternatively WDT elevates EVP and causes a transient period of negative aqueous outflow. This is likely the result of reduced outflow facility from a decreased pressure gradient across the trabecular meshwork, but other mechanism have been suggested. EVP may be implicated in both IOP instability and glaucoma progression as it is elevated in both open angle glaucoma and normal tension glaucoma patients. The WDT might unmask pathologic EVP effects.

Arora et al.\(^3\) observed a significant increase in choroidal thickness (CT)\(^3\) and a decrease in anterior chamber depth after WDT in angle closure eyes but not in open angle eyes. Even though, IOP increase, after WDT was not fully explained by CT increase, based on their observation they have suggested the dynamic behavior of the choroid, may play a role in angle closure process. In conclusion, WDT may cause raised IOP by angle closure mechanism in susceptible eyes.

N Venugopalan

Neuro-ophthalmology Clinic, AG Eye Hospital, Trichy, Tamil Nadu, India

Correspondence to: Dr. N Venugopalan, Flat No.: 19, Mathuram Apartment, Officer’s Colony, Puthur, Trichy, Tamil Nadu, India. E-mail: natavenu@yahoo.com

References

1. Kumar H, Dewan T, Vashisht S, Prasad A. Severe visual loss following waterload for transabdominal ultrasound. Indian J Ophthalmol 2013;61:612.
2. Goldberg I, Clement CI. The water drinking test. Am J Ophthalmol 2010;150:447-9.
3. Arora KS, Jefferys JL, Maul EA, Quigley HA. Choroidal thickness change after water drinking is greater in angle closure than in open angle eyes. Invest Ophthalmol Vis Sci 2012;53:6393-402.