

Bedside test for anisocoria: Not a small matter

Sir,

The article by Chaudhry *et al.* is indeed interesting.^[1] An abnormal dilated pupil in a critically ill patient could be alarming to the treating physician, even though anisocoria is not a dangerous adverse effect of ipratropium bromide, the condition may be misinterpreted as a severe neurologic emergency, since the patient is often sedated, paralyzed or has an altered mental status.^[2] Though neuroimaging remains the most effective method to rule out the structural causes of acute anisocoria, we would like to suggest a simple bedside test to differentiate it from local cause. At the bedside, instillation of pilocarpine eye drops can be used to differentiate the anticholinergic drug effects from other causes of an abnormally dilated pupil as it is a directly acting parasympathomimetic agent, which duplicates the actions of acetylcholine and cause constriction of the pupil by stimulating the sphincter pupillae and altering accommodation by contracting the ciliary muscles.^[3] With a lower concentration of 0.125% pilocarpine, a tonic pupil will constrict significantly more than the unaffected pupil because of the denervation supersensitivity. In case of ipratropium bromide induced mydriasis, the affected eye will be unresponsive to the ocular instillation of 1% pilocarpine, while the unaffected eye will constrict. On the contrary, pupillary dilation due to third nerve compression the pupil will still constrict with pilocarpine, since the sphincter muscle is still intact and responsive to cholinergic stimulation.^[4] However, pilocarpine may also cause miosis, ciliary spasm, blurred vision, and photophobia. Unilateral mydriasis in an unconscious

patient is an important clinical sign and differential diagnosis must be quickly performed in order to rule out structural and pharmacological causes.^[5] Size of the pupil and its reaction to light at the bedside aid to assess the status and a pilocarpine eye-drop test helps to avoid unnecessary tests or decide further course of action.

**Subramanian Senthilkumar, Namasivayam
Balamurugan¹, Ritesh G. Menezes², Ponniah
Thirumalaikolundusubramanian³**

Department of Emergency and Critical Care Medicine, Sri Gokulam Hospitals and Research Institute, ¹Department of Neurosciences, Manipal Hospital, Salem, Tamil Nadu, India, ²Department of Pathology, Forensic Medicine Division, College of Medicine, King Fahd Hospital of the University, University of Dammam, Dammam, Saudi Arabia (KSA), ³Department of Internal Medicine, Chennai Medical College and Research Center, Irungalur, Tiruchirappalli, India

Correspondence:

Prof. Ritesh G. Menezes,
Department of Pathology, Forensic Medicine Division, College of Medicine,
King Fahd Hospital of the University, University of Dammam,
Dammam, Saudi Arabia (KSA).
E-mail: mangalore971@yahoo.co.in

References

1. Chaudhry P, Friedman DI, Yu W. Unilateral pupillary mydriasis from nebulized ipratropium bromide: A false sign of brain herniation in the intensive care unit. *Indian J Crit Care Med* 2014;18:176-7.
2. Senthilkumar S, Balamurugan N, Suresh P, Thirumalaikolundusubramanian P. Transient anisocoria: A pesky palpitation. *J Neurosci Rural Pract* 2011;2:210-1.
3. Barilan A, Nachman-Rubinstein R, Oron Y, Geyer O. Muscarinic blockers potentiate beta-adrenergic relaxation of bovine iris sphincter. *Graefes Arch Clin Exp Ophthalmol* 2003;241:226-31.
4. Eustace N, Gardiner C, Eustace P, Marsh B. Nebulised ipratropium causing a unilateral fixed dilated pupil in the critically ill patient: A report of two cases. *Crit Care Resusc* 2004;6:268-70.
5. Santana-Cabrera L, Fernández-Tagarro EJ, Del Amo-Nolasco B, Jaén-Sánchez N, Cáceres-Agra JJ. Unilateral mydriasis secondary to ipratropium bromide in a critically ill patient. *J Emerg Trauma Shock* 2012;5:199-200.

| Access this article online | |
|--|---|
| Quick Response Code:  | Website: www.ijccm.org |
| | DOI: 10.4103/0972-5229.136084 |