Indocyanine green dye available in India is good for microscope integrated near infrared video angiography

Sir,

Microscope integrated near infrared indocyanine green videoangiography (ICGVA) in aneurysm surgery was introduced by Rabbe *et al*. in 2005.[1] Subsequent findings of other workers in the field has confirmed ICGVA as a simple, non-invasive, easily repeatable, real-time and useful intraoperative investigation in aneurysm surgery.[2–4] ICGVA in aneurysm surgery was first performed in India by us.[5] There was tremendous interest and many neurosurgeons have contacted us with queries. The following information will be of use to neurosurgeons performing vascular neurosurgery in India and using ICGVA.

Although ICG dye (Patheon Italia, Monza, Milan), used in the west, is not approved by Food and Drugs Administration (FDA), India, one has to take special permission from FDA, which we did, a process that takes months. The permission is given for a period of 6 months and hence has to be renewed periodically. Moreover, the imported dye is expensive (Rs. 5620/-). Ophthalmologists also use the dye for retinal angiography to visualize the choroid, in cataract surgery for staining the anterior lens capsule and in vitreoretinal surgery to enhance macular surface visualization.[6] This dye is available in India (Aurogreen®, Aurolab, Madurai, Tamil Nadu) at a much lower cost (Rs. 1550/-). However, our microscope vendors informed us that the dye available in India is not compatible and we need to import the dye. Once, we ran out of the imported ICG dye between two FDA permissions, and we performed ICGVA using Aurogreen available in India in two cases. To our surprise, the images were identical and there was no difference in the quality of the images when the imported dye and Aurogreen were compared. We plan to change over to the dye available in India once our present imported stock is consumed.

Case illustration: A 58-year-old lady presented with left retro-orbital pain and diplopia on looking to the left of 10 days duration. On examination, she had a left VIth nerve paresis. There was no other neurological deficit. Preoperative computed tomography angiography (CTA) showed bilateral cavernous internal carotid artery (ICA) large fusiform aneurysms (diameter: left 1.7 cm, right 1.5 cm) and bilateral caroticoopthalmic segment sacular aneurysms (diameter: left 9 mm, right 4 mm) [Figure 1a]. The patient underwent left frontotemporal craniotomy, clipping of left caroticoopthalmic segment aneurysm with external carotid artery (ECA) to left middle cerebral artery (M2 segment) radial artery graft bypass. ICGVA done using Aurogreen clearly defined complete obliteration of the clipped aneurysm and preserved patency of adjacent vessels and perforators [Figure 1b] as also the patency of the bypass [Figure 1c]. Based on these findings, the cervical ICA was then ligated. These findings were confirmed on postoperative CT angiography [Figures 1d and e].

We are aware of many centers which now have the infrastructure capability (microscope) for performing ICGVA but have not yet started because of the difficulty of dye procurement. This information will change the

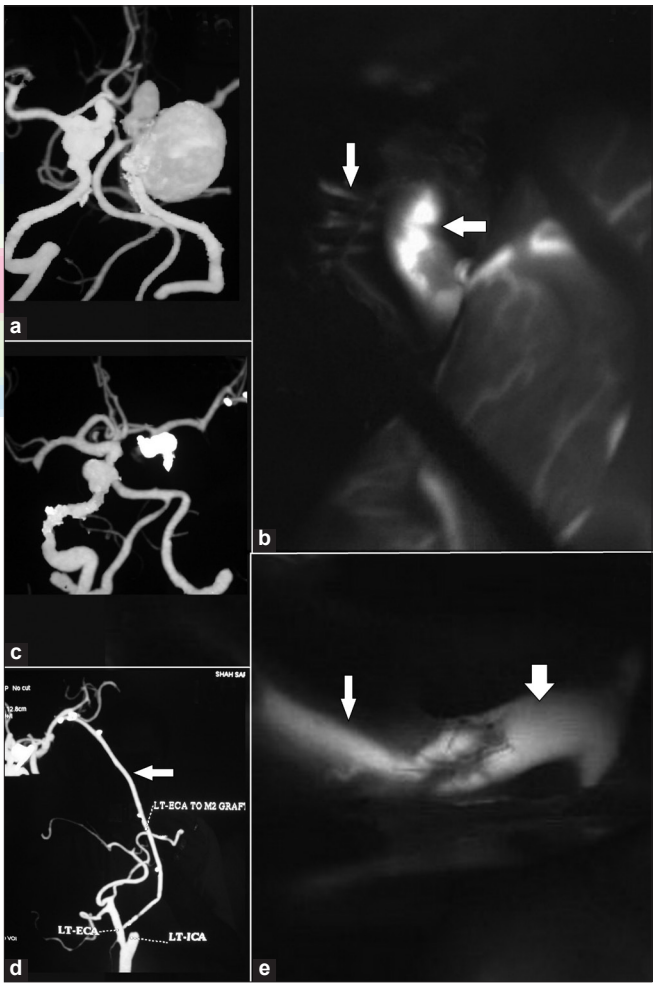

Figure 1: (a) CT angiography showing bilateral cavernous ICA aneurysms and bilateral caroticoopthalmic segment aneurysms. (b) Postclipping ICGVA showing complete obliteration of the fundus of the aneurysm (vertical arrow) and preserved lumen and patency of the internal carotid artery (horizontal arrow). (c) ICGVA showing patent radial artery graft (thin arrow) and the M2 segment of the middle cerebral artery (stout arrow). (d) Postoperative CT angiography confirming the ICGVA findings. (e) Postoperative CT angiography showing patent radial artery graft (arrow)

situation for the better and ultimately many of our patients will be better served.

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References

1. Raabe A, Nakaji P, Beck J, Kim LJ, Hsu FP, Kamerman JD, *et al*. Prospective evaluation of surgical microscope-integrated intraoperative near-infrared indocyanine green videoangiography during aneurysm surgery. Neurosurgery 2005;103:982-9.
2. Dashti R, Laakso A, Niemelä M, Porras M, Hernesniemi J. Microscope integrated near-infrared indocyanine green videoangiography during surgery for intracranial aneurysms: The Helsinki experience. Surg Neurol 2009;71:543-50.
3. Li J, Lan Z, He M, You C. Assessment of microscope-integrated indocyanine green angiography during intracranial aneurysm surgery: A retrospective study of 120 patients. Neurol India 2009;57:453-9.
4. Mohanty A. Near-infrared indocyanine green video angiography in aneurysm surgery. Neurol India 2009;57:366-7.
5. Misra BK. Breakthrough technology in aneurysm surgery: First experience of ICG in India. In Abstracts of the 58th Annual Conference of the Neurological Society of India, Lucknow, India, December 17 – 20, 2009. p. 24.
6. Stanga PE, Lim JI, Hamilton P. Indocyanine green angiography in chorioretinal diseases: Indications and interpretation: An evidence-based update. Ophthalmology 2003;110:15-21.

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