

## Local Anesthetic-induced Complete Atrioventricular Block During Awake Craniotomy

### To JNA Readers:

Awake craniotomy is the preferred anesthetic approach for neurosurgical procedures that require intraoperative monitoring of speech and motor functions.<sup>1-3</sup> We originally report 1 case of intraoperative complete atrioventricular block treated successfully with bolus infusion of intralipid emulsion in a patient undergoing surgical resection of a brain tumor adjacent to the primary language area.

A 53-year-old man, with no history of cardiovascular disease (arterial hypertension, arrhythmias, heart failure), was referred to our hospital with an magnetic resonance imaging-confirmed diagnosis of supratentorial brain lesion adjacent to the primary language area. The patient underwent awake craniotomy; local anesthesia was accomplished with 40 mL of 7.5% ropivacaine for selective block of sensory branches of the trigeminal nerve, pin-sites of Mayfield headframe, and the surgical wound incision line. Propofol was injected at 0.5 mg/kg in 2 boli immediately before bladder catheter placement and Mayfield headframe positioning and infused during the opening phase at 0.1 to 0.5 mg/kg/h. Fentanyl was injected before Mayfield headframe positioning (100 mcg) and before skin incision (100 mcg). Spontaneous ventilation with 50% O<sub>2</sub> effectively maintained a normal blood oxygen content and normocapnia. Immediately before dura opening, the surgeon irrigated the surgical field with 20 mL of 2% lidocaine and infiltrated the dura with 5 mL of lidocaine 2%. Shortly after (~30 s), the patient developed a complete atrioventricular (AV) block with spontaneous idioven-

tricular rhythm with a heart rate as low as 28 bpm associated with arterial hypotension (mean arterial pressure 40 mm Hg) not responsive to atropine injection (0.5 mg). Local anesthetic toxicity was suspected and a 100 mL bolus of intralipid 20% emulsion was infused rapidly (< 5 min). The AV block resolved rapidly, and a bolus dose of phenylephrine (10 mg) was injected to restore baseline heart rate (mean 76 bpm) and mean arterial pressure (65 mm Hg). A second bolus infusion of intralipid 20% was infused in 20 minutes to prevent local anesthetic redistribution. Surgical excision of the lesion was completed, preserving an adequate margin around the language area, and the patient had an uneventful post-operative course.

In this report, we describe a transient intraoperative complete AV block, as possible complication of dura irrigation and infiltration with lidocaine, which led to hemodynamic instability and was relieved by intralipid 20% rapid bolus infusion 100 mL (< 5 min) followed by subsequent 100 mL slow infusion (20 min). Ropivacaine is known to have a lower cardiac toxic effect compared with other local anesthetics.<sup>4</sup> However, in our patient, the subsequent administration of lidocaine may have produced an additive effect causing complete heart block. As reported in the literature, this local anesthetic-induced cardiac arrest responded to the administration of intralipid 20%.<sup>5</sup> Infiltration of the dura with a local anesthetic is commonly performed; nevertheless, anesthesiologists and neurosurgeons should be aware of the potential risks related to local anesthetics' toxicity (cardiac and neuronal). In our experience, an alternative technique using an intravenous bolus injection of 0.25 mg/kg propofol, generally used to provide sedation during the opening phase of craniotomy,<sup>1</sup> effectively prevents the pain of dural incision and has a short-lasting effect on sedation (< 5 min).

Federico Bilotta, MD, PhD  
Luca Titi, MD  
Giovanni Rosa, MD

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Department of Anesthesiology  
Critical Care and Pain Medicine  
Section of Neuroanesthesia and  
Neurocritical Care  
"Sapienza" University of Rome  
Rome, Italy

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## Transient Cardiac Asystole During Embolization of a Carotico-cavernous Fistula

### To JNA Readers:

Anesthesiologists encounter new and previously undescribed complications during neuroradiologic interventions. We describe a sudden transient cardiac asystole during embolization of a carotico-cavernous fistula (CCF) and review the relevant literature.

A 48-year-old woman presented with painful protrusion of the right eye for 18 months. She had proptosis, abduction palsy, and hypoesthesia of trigeminal nerve (TN) distribution. Magnetic resonance imaging showed a widened right cavernous sinus and a dilated superior ophthalmic vein.

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