Severe bradycardia during scalp nerve block in patient undergoing awake craniotomy

Sir,

Scalp nerve block is a commonly performed procedure for awake craniotomy. Though relatively safe, this procedure can sometimes produce severe hemodynamic disturbances. Here, we have highlighted such a complication and its possible explanation.

A 32-year-old patient was admitted to our hospital with complaints of left-sided headache and generalized seizures since five months. Magnetic resonance imaging revealed a left frontal mass. As the lesion was near eloquent areas (speech and motor) of the brain, the patient was scheduled for awake craniotomy (left frontal) under monitored anesthesia care (MAC). All of the laboratory investigations were within normal range. Routine monitors were attached. Intravenous fentanyl 50 mcg and propofol 30 mg were administered. On the left side, three nerves (supraorbital, supratrochlear, and zygomaticotemporal) were each blocked with 3 mL of local anesthetic mixture (5 mL of 0.25% bupivacaine with adrenaline 1: 200,000 and 5 mL of 2% lidocaine) solution. During local anesthetic infiltration over the left supratrochlear nerve, sudden bradycardia (heart rate <35 bpm) was noticed for 15 seconds followed by hypotension (blood pressure <80/46 mmHg). The surgeon was asked to stop the procedure immediately, and the hemodynamic changes reverted to normal. The patient was fully conscious during this episode; the rest of the procedure went uneventful.

Hemodynamic disturbances have been reported during local anesthetic infiltrations and usually linked to their toxic side effects or hypersensitivity reactions. In addition, the usual response is hypertension followed by reflex bradycardia. The other possible mechanism maybe vasovagal which can be provoked during any sharp noxious stimuli or emotional stress. However, there were no episodes of loss of consciousness and dizziness during these hemodynamic changes. Seizure episodes can also mimic these types of cardiovascular perturbations; however, there were no associated abnormal body movements. Moreover, this episode occurred only during infiltration of the supratrochlear nerve and was abolished after removal of the stimulus. The probable mechanism related to this event maybe linked to the trigeminal cardiac reflex (TCR) which can be provoked by the stimulation of any sensory branch of the fifth cranial nerve and usually manifests as a sudden decrease in heart rate coupled with hypotension. This reflex can be produced by mechanical, electrical, and even chemical stimuli. The rapid infiltration of local anesthetic solution might have caused local mechanical compression or stretch on the supratrochlear nerve, thus provoking this reflex. Opioid-induced sudden transient bradycardia is also unlikely, though opioids are one of the risk factors associated with TCR. Thus, it is likely that the use of fentanyl just before the scalp nerve block might have been an additive to this event. The sensitivity of different branches of the trigeminal nerve for inciting TCR could be an area of further research.

In conclusion, TCR can be a manifestation of scalp nerve block (trigeminal nerve territory) and may produce catastrophic consequences if not vigilantly monitored. The slow and incremental administration of local anesthetics may reduce the chances of such an event.

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Letters to Editor

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Are we responsible for the dizzy operating surgeon?

Sir,
A 50 kg, 25-year-old ASA I male patient, presented with hoarseness of voice. He was diagnosed to have vocal cord polyp and was posted for its laser excision. After attaching standard monitors in the operating room, anesthesia was induced with fentanyl, propofol, and tracheal intubation was facilitated by vecuronium with uncuffed (5 mm ID) laser orotracheal tube. Anesthesia was maintained with air/oxygen (FiO2 0.5) and isoflurane approximately MAC 1-1.2 Intraoperative boluses of fentanyl and vecuronium were administered as required. The surgery commenced and proceeded smoothly. However, after 20 min, while performing surgery on the vocal cords, the operating surgeon complained of feeling dizzy. He was not able to concentrate on the procedure and thus stopped the surgery. After resting for some time in the adjoining room, he felt fine and restarted the surgery. However, again complained of the same problem to us and stopped to operate. We then went to the surgeons end while trying to sort out the cause of dizziness. We smelled pungent odor near the face of the surgeon and thus suspected inhalational agent (isoflurane) to be a probable culprit. We immediately switched off the isoflurane vaporizer and changed over to propofol infusion. The surgeon resumed his surgery and could immediately make out the difference from previous episodes and there were no more ‘dizzy’ problems thereafter. Rest of the surgery was uneventful.

Surgeries around vocal cord and bronchoscopy procedures require the operating surgeons to be close to the face of the patient. In these situations, the anesthesia gases along with inhalational agents leak outside from around the tube. Constant inhalation of gases while near the face of the patient can make the surgeon feel considerably dizzy. The fact that the leaking of gases from around the uncuffed endotracheal tube causes contamination of operating room atmosphere is well-known.[1] However, what has never been described before in literature is that in these surgeries, close proximity of the operating surgeons face to the leaking gases, makes him dizzy enough to incapacitate him to even operate.

Though, cuffed laser orotracheal tubes are available to us, we required to use a smaller laser OTT in this patient to facilitate surgery for which only the uncuffed laser tube was available. Non availability of proper sized cuffed laser tubes could be a problem in many countries. After this incidence, we have indigenized a novel method to prevent leakage of gases to outside from uncuffed laser tubes. We cut the proximal end of the portex orotracheal tube till the distal end of the cuff along with the pilot balloon and sleeve it on the laser tube so that the cuff prevents leakage of gases to outside [Figures 1 and 2]. The cuff is thereafter filled with saline. We also suggest using propofol intermittent boluses or infusion, for surgeries in and around the vocal cord and in bronchoscopies, rather than using inhalation agents in situations, which cause significant leakage of gases to outside atmosphere.

These two simple measures make for less operating room contamination and keeps surgeons ‘fresh’ intra-operatively.