Response to the comments raised by the readers to our published article "An observational case-control study comparing the recovery profile in patients receiving additional dose of anticonvulsant vs. regular dose during supratentorial craniotomy."

To the Editor,

In response to the queries raised by the readers on our published article,[1] we would like to address the queries one by one,

1. Should BIS be used routinely to monitor depth of anaesthesia on patients taking phenytoin?
   Phenytoin produces varied effect on hepatic metabolism of anaesthetic drugs by inducing or inhibiting the various subtypes of cytochrome P450 (CYP). Studies have shown that phenytoin induces certain subtypes of CYP (CYP2C9 and CYP 2C19) and increases the requirement of propofol. On contrary to this, some have shown that it does not affect the dose of propofol for maintenance of anaesthesia as a result of a mixture of the induction and inhibition property of individual CYP subtypes, which may result in null effects on the metabolism of propofol.[2] Since various studies have shown the varied effect on anaesthetic drugs, and because of its sedative property, it is better to monitor BIS and titrate it to target 40–60.
2. What should be the optimal minimum alveolar concentration (MAC) in such patients if BIS is not monitored?
   It is difficult to say the optimal MAC in patients who are on anticonvulsants undergoing craniotomy, as it causes a variable effect on hepatic metabolism of anaesthetic drugs. Till date, no studies have looked at the optimal MAC for inhalational agents (Isoflurane, Sevoflurane or Desflurane) in patients who are on anticonvulsant and undergoing craniotomy. There are many patient factors also, which play a role in determining the optimal level. Future studies are needed in this regard.
3. What about anaesthetic plan of those patients who are on multiple antiepileptic drugs?
   A study by Ouchi[2] has shown that the requirement of propofol was very less in patients who are on multiple anticonvulsants undergoing dental surgery under total intravenous anaesthesia (TIVA). Despite the lower dose used, the awakening time was delayed which was similar to our study results. A study by Boztug has shown that BIS titrated anaesthesia aids in rapid recovery after craniotomy.[3] Therefore, it is better to have bispectral index (BIS)/Entropy titrated anaesthetic administration for a better outcome on patients who are on multiple anticonvulsants.
4. How long should one wait for the patients to get completely oriented before investigating potential causes?
   In our centre, once the patients start to open their eyes or move purposefully while calling their names, the endotracheal tube (ETT) will be taken out. We do not wait for the patient to become fully awake, conscious and oriented [Glasgow coma scale (GCS) of 15/15] for extubation. After extubation, patient's GCS is assessed frequently. If there is no improvement in GCS (GCS remain the same) for 3 h or worsening of GCS by 2 points at any time point from the baseline GCS at extubation, or haemodynamic changes (new-onset bradycardia or hypertension), a CT-head is done to rule out a surgical cause.
5. Does it warrant an additional dose of phenytoin administration?
   Though studies have shown that there is a decline in plasma anticonvulsant level with fluid administration, there was no association between the occurrence of seizure and the plasma anticonvulsant level.[1,4] Hence, it may not be necessary to administer an additional dose of phenytoin as per American Academy of Neurology guidelines.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Ramamani Mariappan, Krishnaprabhu Raju

Department of Neurological Sciences, Christian Medical College, Vellore, Tamil Nadu, India

Address for correspondence:
Dr. Ramamani Mariappan,
Department of Neuroanaesthesia, Christian Medical College, Vellore, Tamil Nadu, India.
E-mail: ramamani@cmcvellore.ac.in

Submitted: 22-Apr-2020
Revised: 22-Apr-2020
Accepted: 22-Apr-2020
Published: 01-Jun-2020

REFERENCES

1. Mathew RR, Raju K, Nair BR, Mariappan R. An observational case-control study comparing the recovery profile in patients receiving additional dose of anticonvulsant vs. regular dose during supratentorial craniotomy. Indian J Anaesth 2020;64:222-9.
2. Ouchi, K. The number and kind of antiepileptics affect propofol dose requirement for anesthesia: Observational study. Odontology 2020;108:102-8.
3. Boztuğ N, Bigat Z, Akyuz M, Demir S, Ertok E. Does using the bispectral index (BIS) during craniotomy affect the quality of recovery? J Neurosurg Anesthesiol 2006;18:1-4.
4. Radhakrishnan M, Devaraj ND, Rao UGS, Subhash MN. Additional phenytoin is frequently needed in patients undergoing craniotomy for supratentorial tumour: Eur J Anaesthesiol 2008;25:601-3.

Access this article online	
Quick response code	Website: www.ijaweb.org
	DOI: 10.4103/ija.IJA_442_20

How to cite this article: Mariappan R, Raju K. Response to the comments raised by the readers to our published article "An observational case-control study comparing the recovery profile in patients receiving additional dose of anticonvulsant vs. regular dose during supratentorial craniotomy." Indian J Anaesth 2020;64:546–7.