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Case Report

Anaesthetic management in a patient with cervical dystonia undergoing pallidotomy

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ABSTRACT

Stereotactic neurosurgery poses number of anaesthetic challenges. Awake craniotomy involves proper patient selection and co-ordination by the multi-disciplinary team. We report a case with isolated cervical dystonia posted for pallidotomy performed under Monitored Anaesthesia Care.

Key messages: Awake craniotomy poses a unique challenge by itself. We had to face an additional challenge of difficult airway.

1. Introduction

Cervical dystonia also known as spasmodic torticollis involves involuntary movements of the head. It usually affects the muscles of neck and shoulders. A subset of patients with cervical dystonia may have an associated head tremor. Head tremor may have large amplitude, jerky, and irregular; or smaller amplitude, more regular tremor that resembles essential tremor. Few patients can complain of pain associated with the dystonia. The electrophysiologic recordings from globus pallidus pars interna (GPI) neurons shows abnormal activity.[1]

There are specific challenges and considerations in the anaesthetic management of patients undergoing insertion of electrodes for deep brain stimulation. In addition to the routine preoperative evaluation and preparation, these patients require additional considerations because they may present with many comorbidities related to the disease processes.[2]

2. Case History

His baseline haemodynamic parameters showed the pulse rate of 94 beats/min, regular, non-invasive blood pressure (NIBP) 110/70 mm of mercury,and oxygen saturation of 99%. Central nervous system examination revealed essential head tremors. Other systems were normal.

In the operation theatre, intravenous line was secured with 18 gauge cannula connected to Ringer Lactate. Anaesthesia workstation, resuscitation equipments and difficult airway cart were kept ready. Electrocardiogram, pulse oximeter, NIBP, end tidal carbon dioxide concentration were monitored. The supraorbital, supratrochlear, auriculotemporal, zygomatico-temporal, greater occipital, lesser occipital and greater auricular nerves were blocked using 20 ml of 0.25% bupivacaine. Patient was premedicated with Inj fentanyl 100 mcg IV and oxygenation was continued via nasal canula with oxygen at 6 litre/minute throughout the procedure. Injection dexmedetomidine was given as 1 mcg/kg slow loading dose IV followed by 0.5mcg/kg/hr infusion. Propofol infusion was given at 0.1-0.15 mg/kg/min. Then the stereotactic frame was applied, and patient was taken to radiology suite for computed tomography in order to locate the

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exact position of globus pallidus (Figure 1). Back in the operation theater, micro-electrode recording (MER) along with stereotactically obtained imaging input was utilised for electrode implantation in globus palladium interna for deep brain stimulation. Intra-operative period was smooth throughout with Ramsay sedation score of two and good patient compliance. He could tolerate the procedure well.

Post-operatively, he could able to flex the neck up to 20-30 degrees with chin touching the chest without any involuntary movements (Figure 2 B).

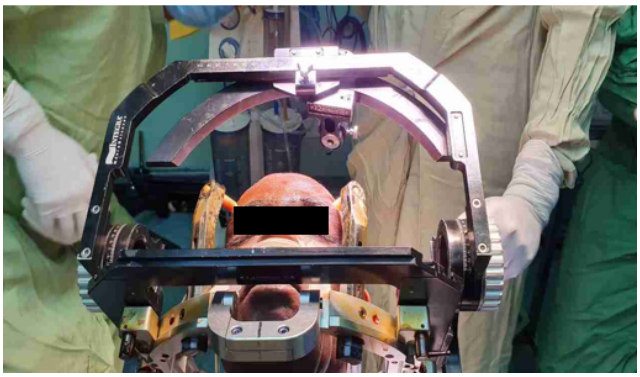

Fig. 1: Patient with stereotactic frame applied in operation theatre under scalp block

Fig. 2: A: Preoperative head posture of the patient, where patient is not able to flex the neck; **B:** Patient able to flex upto 20-30 degress with chin touching the chest without any involuntary movements

3. Discussion

Awake craniotomy poses unique challenges to anaesthetists which includes unprotected airway and limited access to the patient due to positioning. Therefore, appropriate patient selection and anaesthetic technique is of utmost importance. The anaesthetic technique used must provide adequate sedation and analgesia and adequate control of respiratory and haemodynamic parameters. It should also provide an awake and cooperative patient with minimal interference with electrophysiologic brain mapping and neurologic testing.[3] The combined local anesthetic and intravenous sedation technique has a high potential for complications related to an unprotected airway, including obstruction and desaturation as reported in the literature. This technique is used by some authors, with increasing use of propofol infusion and opioids together.

Propofol might decrease subthalamic neuronal activity and can interfere with MER at higher doses (50 mcg/kg/min).[4] The advantage of propofol is rapid onset of anaesthesia and faster recovery. Use of benzodiazepenes is discouraged.[5]

Dexmedetomidine, a selective alpha-2 adrenoreceptor agonist, is being increasingly used to provide sedation and analgesia for awake craniotomy. Advantage being that it does not cause respiratory depression, as is possible with other sedative anaesthetic agents. It, reduces intraoperative and postoperative anesthetic requirements, however hypotension and bradycardia are its possible side-effects.

Scalp block provides excellent regional anaesthesia for scalp incision and pin insertion and helps to maintain good hemodynamic stability. Patient comfort and hemodynamic stability during painful procedures must be ensured, as they are the important components of MAC.[6]

Apart from all the challenges of awake craniotomy, we had to encounter this patient with anticipated difficult airway. Although difficult airway might be a relative contra-indication for MAC, we proceeded with this technique with back up facilities in place. The combination of dexmedetomiedine and propofol worked out well by reducing their individual doses. There was no requirement of additional analgesics as well and no interference with MER recording.

4. Conclusion

Good coverage of scalp blockade, specific sedation protocols and back-up plan of airway management remains the cornerstone of awake craniotomy. Dexmedetomidine and propofol can be effectively used for intraoperative sedation.

5. Source of Funding

None.

6. Conflict of Interest

The authors declare no conflict of interest.

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