Case Report

Scalp block with dexmedetomidine sedation for burr hole evacuation in chronic SDH: A case report

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We present a case report of 70-year-old male being operated for burr hole evacuation of chronic subdural hematoma under scalp block with dexmedetomidine sedation. The patient was successfully operated without the need for any additional alternative technique or airway management. It is a superior alternative to general anesthesia and local anesthesia without sedation because it is significantly excellent intra and post-operative analgesia, better hemodynamic, less post-operative complication, and length of hospital stay.

KEY WORDS: Dexmedetomidine, elderly, scalp block, subdural hematoma

INTRODUCTION

In neurosurgical practice, chronic subdural hematomas (CSDH) are a relatively frequent clinical entity.[1]

With related comorbidities and a higher prevalence of CSDH,[2-5] aged people are more likely to experience perioperative problems, particularly when having general anesthesia.[2-4,6] However, if the operation is carried out under local anaesthesia (LA) without sedation, the patient may feel uneasy and uncomfortable while having the treatment. An alternative to general anesthesia (GA) and LA that can prevent the problems with GA and the pain with LA is scalp block with dexmedetomidine sedation under monitored anesthesia care (MAC). Medicines such as propofol, opioids, and midazolam have been utilized for sedation with scalp block but respiratory depression is a common adverse effect of these medications.[7,8] dexmedetomidine is an a2 agonist with a central action that is thought to offer "cooperative sedation," anxiolysis, and analgesia without depressing breathing. By controlling the release of catecholamines from the central and autonomic nervous systems, it also preserves hemodynamic stability during surgical procedures.[9-11]

Dexmedetomidine sedation was deemed successful if the burr hole and evacuation of CSDH could be performed without the need for any additional alternative anesthetic techniques or airway treatments. Dexmedetomidine provides better perioperative hemodynamic stability, less surgical complications, and hospital length of stay.

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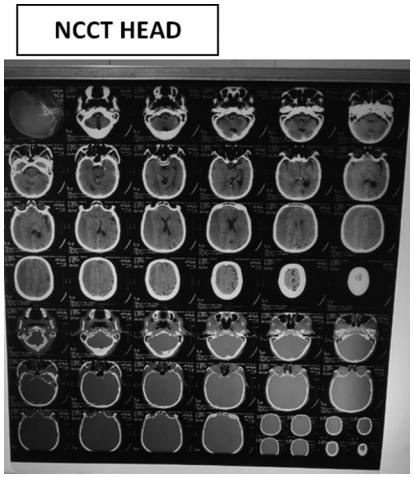
CASE REPORT

A 70-year-old male patient with sustained history of fall came in neurosurgery casualty with complaint of altered sensorium

and generalized weakness with loss of power in left upper and lower limb with visible flickering movement, loss of appetite for 4 days and GCS $E_2V_2M_4$ (8/15). Patient had history of pulmonary tuberculosis in 2019 for which he took full course of antitubercular therapy. There was no history of vomiting, seizures, ear and nose bleeding, breathlessness, palpitations, and tremors. Patient was thin built with weight of 45 kg. Non-contrast computed tomography Head was suggestive of bilateral subacute subdural hematoma with the right fronto-parieto-temporal convexity with maximum thickness measuring approximately 30 mm and left frontal hematoma with maximum thickness measuring approximately 15 mm and midline shift of approximately 9.8 mm toward left side and dilated and effaced right lateral ventricle.

After radiological imaging and a thorough pre-anesthetic check-up, patient was planned for right sided burr hole and evacuation of the subdural hematomas (SDH).

All the routine blood investigations were normal except for serum urea and creatinine of 237 mg/dL and 1.9 mg/dL, respectively. Airway examination revealed MPG Grade 2, mouth opening of three fingers, and adequate neck movements. All systemic examination was normal except for respiratory system which had bilateral rhonchi on auscultation. In chest X-ray, there was prominent bronchovascular markings and electrocardiography (ECG) was within normal limits.



Management

In the preoperative room, intravenous access with 18 gauze cannula was secured on flexure aspect of right forearm and 0.9% normal saline was started as the maintenance fluid. Gastric aspiration prophylaxis in the form of injection Ranitidine 50 mg and injection metoclopramide 10 mg was given and nebulization was done with Ipratropium bromide and Salbutamol. Injection Hydrocortisone 100 mg was also given. The patient was then shifted to OT and monitors (pulse oximetery, non-invasive blood pressure and ECG) were attached and oxygen saturation was maintained with Hudson's mask with oxygen at 6 l/min.

Right-sided burr hole was planned under regional anesthesia using scalp block with conscious sedation in the form of dexmedetomidine. Vitals were noted. Under all aseptic precautions, scalp block was performed using landmark technique with Injection 0.5% bupivacaine 12 mL and 2% lignocaine with adrenaline 6 mL. The incision line was infiltrated with 2% lidocaine by the surgeon. Loading dose of dexmedetomidine 45 mcg (1 mcg/kg) was given and maintenance dose infusion 0.4 mcg/kg/min (0.2–0.7 mcg/kg/min) was started to achieve sedation throughout the case. Along with this antiepileptic cover with Injection Levetiracetam 1 g iv was given. Maintenance fluid was given according to requirement. Surgery was completed in 50 min. Total input was 1600 mL, urine output was 200 mL, and blood loss was 150 mL.

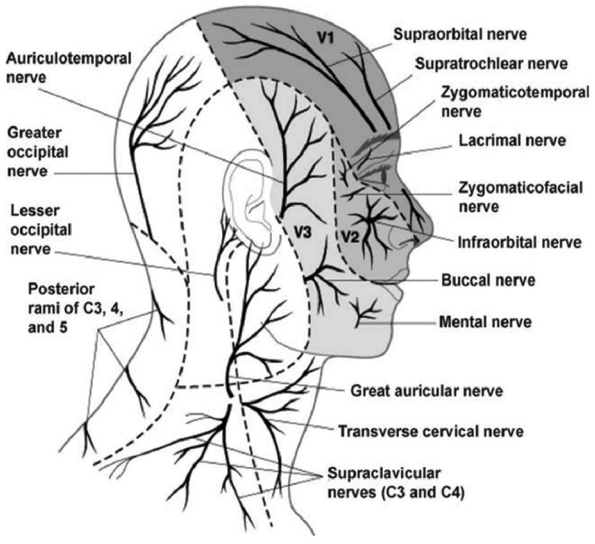
Patient was shifted in HDU with stable vitals. Post Op vitals-BP-128/80 mmHg, heart rate-90 bpm, respiratory rate-18/min, SpO_2- 100% with O_2 @ 6L/min through Hudson Mask.

Patient was managed in ward for further 5 days and got discharged with improved weakness and GCS of E4V5M6 (15/15).

DISCUSSION

- In Modern Scalp Block-Six nerves have been blocked:

1. Supraorbital Nerve-It is possible to block supraorbital nerve as it leaves the orbit. The needle is inserted along the upper orbital border, perpendicular to the skin, about 1 cm medial to the supraorbital foramen after the supraorbital notch is felt with the finger
2. Supratrochlear Nerve-Coming from the superomedial angle, and running up the forehead parallel to the supraorbital nerve a finger's breadth medial to it, the supratrochlear nerve can either be blocked as it emerges above the eyebrow or can be implicated by medial extension of supraorbital block
3. Zygomaticotemporal nerve-The zygomaticotemporal nerve is blocked by infiltration from the supraorbital margin to the posterior part of the zygomatic arch
4. Auriculotemporal Nerve -Infiltration over the zygomatic process combined with an injection 1–1.5 cm anterior to the ear at the level of the tragus can block the auriculotemporal nerve. Prior to the blocking, the course of the superficial temporal artery, which is anterior to the auriculotemporal nerve at the level of tragus, should always be known.



5. Greater Occipital Nerve- Approximately 2.5 cm lateral to the nuchal median line, midway between the occipital protuberance, and the mastoid process, infiltration can be used to block the greater occipital nerve. The best landmark is the occipital artery, which can be palpated. After careful aspiration, inject medially. There should be no intra-arterial injection because of this
6. Lesser Occipital Nerve-Infiltration along the superior nuchal line, 2.5 cm laterally to the greater occipital nerve block, can block the lesser occipital nerve
    - Different amounts of ropivacaine, levobupivacaine, and bupivacaine have been used in a head block, both with and without epinephrine. Epinephrine is typically added at a ratio of 1:200 000 to increase duration, reduce localized bleeding, and increase the overall quantity of local anesthetic that can be used
    - The objectives include preserving airway patency, enhancing brain perfusion, reducing surgical discomfort, enabling quick postoperative recovery, and evaluating neurologic function
    - These objectives have been accomplished using a variety of anesthetic medications, such as propofol, remifentanil, fentanyl, and dexmedetomidine. Dexmedetomidine's use for awake craniotomy operation was first documented in 2001
    - Dexmedetomidine is a great anesthetic option for this type of operation due to its anxiolytic, sedative, and anesthetic qualities, as well as sedation that mimics natural sleep without impairing cognition. In addition, it has a shortened arousal period and a drop in cerebral blood flow to meet the decreased cerebral metabolic needs during anesthesia and sedation
    - Dexmedetomidine has the ability to lower catecholamine levels, reduce sympathetic outflow, and have an extra vagal mimetic impact. Dexmedetomidine's analgesic effects lessen sympathetic activation, which also lowers mean arterial pressure
    - The real problems with dexmedetomidine are its effects on hemodynamic, as the medication frequently causes bradycardia and hypotension
    - Usually, the burr hole evacuation of SDHs, are carried out in elderly subgroup of patients. The procedure being short (<45 min) and the patient being an elderly person, LA along with MAC, and minimal sedation is usually preferred by both the anesthetist and surgeon.

CONCLUSION

Elderly patients typically have a higher risk of developing a systemic disease while under general anesthesia. The burr hole and evacuation of CSDH can be done safely and effectively using scalp block with dexmedetomidine sedation. It is a superior alternative to GA and LA without sedation because it has significantly excellent intra and post-operative analgesia, better hemodynamic, less post-operative complications, and length of hospital stay.

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