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Anaesthetic Management in a Patient with Glomus Jugulare Tumour for Ankle Surgery

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Abstract

Anaesthesia has special considerations in any case of intracranial space occupying lesions. Not much of literature is available about anaesthetic considerations in a patient with Glomus jugulare tumour requiring surgery for non neurosurgical procedure.

Glomus jugulare tumours arise from the glomus body within the adventitia of the jugular bulb. Glomus bodies are histologically similar to carotid bodies. They are composed of epitheloid cells embedded in capillary net work. Occasionally these tumours are capable of secreting catecholamines. We present a known case of Glomus jugulare tumour with right ankle bimalleolar fracture dislocation for open reduction, fibular plating and cancellous screw fixation of medial malleolus.

Keywords
Glomus jugulare tumour, Intracranial tension, Epidural anaesthesia.

Introduction

Glomus jugulare tumours arise from the glomus body at the dome of the jugular bulb. They are generally very vascular and slow growing tumours, usually histologically benign, but have a tendency for local invasion [1,2]. They produce symptoms according to their vascularity and invasion into surrounding structures [1]. Their blood supply is mainly through the branches of external carotid artery. Occasionally Glomus jugulare tumours are capable of secreting catecholamines [3]. Cranial nerve involvement may be the clinical presentation. These patients require special considerations for anaesthetic plan whether they are to be operated for excision of tumour or any other surgical procedure. The anaesthetic goals in patients with intracranial space occupying lesion should be to avoid aspiration, maintain hemodynamics , avoid fluctuations in intracranial pressures,provide good intraoperative conditions and good postoperative analgesia.

Case Description

50 years old female patient known case of right glomus jugulare tumour was admitted to the hospital, with complaints of pain and swelling at the right ankle. She was diagnosed to have right glomus jugulare tumour four years back and was advised to undergo pre op embolisation followed by resection of tumour. She refused for surgery and opted for radiotherapy. She gave history of tinnitus and hearing loss in her right ear for last 3 years, nasal regurgitation for last 1 year, slurring of speech and deviation of tongue to right side for last 1 year.She did not give history of headache, vomiting or any other significant medical or surgical illness.She sustained injury in her ankle due to fall at home. There was no history of head injury, loss of conscious, vomiting and ENT bleed.

There was no history of diabetes, hypertension, tuberculosis, bronchial asthma, coronary artery disease, and epilepsy or cerebro vascular disease.

On examination she was conscious, coherent with stable vitals. Her cardiovascular and respiratory system examination did not reveal any abnormality. On examination of her central nervous system no sensory or motor deficit was detected. Slurring of speech was present. Cranial nerves examination revealed involvement of (vestibulocochlear) VIII cranial nerve, (glossopharyngeal) IX cranial nerve and (hypoglossal) XII cranial nerve as the patient had tinnitus and hearing loss on right side of the ear, difficulty in swallowing and nasal regurgitation; on examination, uvula and tongue were deviated to the right respectively. On fundoscopic examination there was no papilloedema.

Local examination of right ankle revealed that it was swollen, tender, with abnormal mobility at the joint and crepitus.

Patient was investigated; all her lab investigations including serum catecholamine levels were within normal limits. X ray right ankle showed bimalleolar fracture dislocation. MRI brain revealed mass lesion in the base of skull, right side measuring 2.2 x 1.9 x 3.1 cm in size – glomus jugulare tumour.

Cerebral angiogram revealed vascular space occupying lesion with slow to moderate flow in petrous temporal bone region, arterial feeders from branches of external carotid artery with drainage into the internal jugular vein.

Patient was posted for open reduction, fibular plating and cancellous screw fixation of medial malleolus. Problems and anaesthetic management were discussed with the patient during

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pre anaesthetic examination and informed consent was obtained for epidural anaesthesia.

Patient was kept fasting overnight. She was premedicated with oral alprazolam 0.25 mg and oral form of ranitidine 150 mg at bed time and on the morning of surgery.Patient was shifted to operating room. An intra venous access was secured. Standard monitoring including ECG, non-invasive blood pressure and puse oximeter applied.

Under all aseptic precautions in sitting position, after local infiltration with 2% lignocaine at L3-L4 intervertebral space, the epidural space was identified by loss of resistance using air with 18-gauge Touhy needle. After giving 3 ml of 2% xylocaine as test dose and negative aspiration for CSF and blood, epidural catheter (Portex®, Smiths Medical, Brisbane, Australia) was advanced 4 cm in addition to the distance of epidural space and fixed with adhesive plaster on patient's back. 10 mL of 2% xylocaine mixed with 10 mL of 0.5% bupivacaine given by the epidural catheter.

Sensory block was assessed bilaterally by using pin prick method with a short bevelled needle. Motor block was evaluated using modified Bromage scale (0: no motor block, 1: inability to raise extended legs, 2: inability to flex knees, 3: inability to flex ankle joints) [4]. During the course of operation, infusion containing 0.5% bupivacaine with 1: 1 fentanyl was continued at a rate of 5ml/hour by the infusion pump. Postoperative analgesia was provided by slow epidural administration of 4ml 0.5% bupivacaine whenever required.

Discussion

Glomus jugulare tumours are rare, accounting for only 0.03% of all neoplasms and 0.6% of head and neck tumors [5]. They are slow growing, vascular and locally invasive. The estimated annual incidence is one per 1.3 million population. Clinical presentation depends on their vascularity and invasion into the adjacent structures. Sometimes presenting symptoms may be due to the cranial nerves involvement. Intracranial extension of these tumors is usually extradural and mostly confined to the posterior fossa, they can extend to the middle fossa. Significant intracranial hypertension with glomus tumors is rare. When it does occur, it is usually due to tumor occlusion of venous sinuses.

Our patient was diagnosed to have a glomus jugulare tumour 4 years back, and was advised for preop embolisation followed by resection of tumour. Patient refused surgery and opted for radiotherapy. Latest MRI brain revealed tumour measuring 2.2x 1.9x 3.1 cm in size (Figure 1), in the base of skull on right side. Patient had no signs or clinical symptoms indicating raised intra cranial pressure (ICP). Even on MRI and fundoscopy there were no features of raised intra cranial pressure.

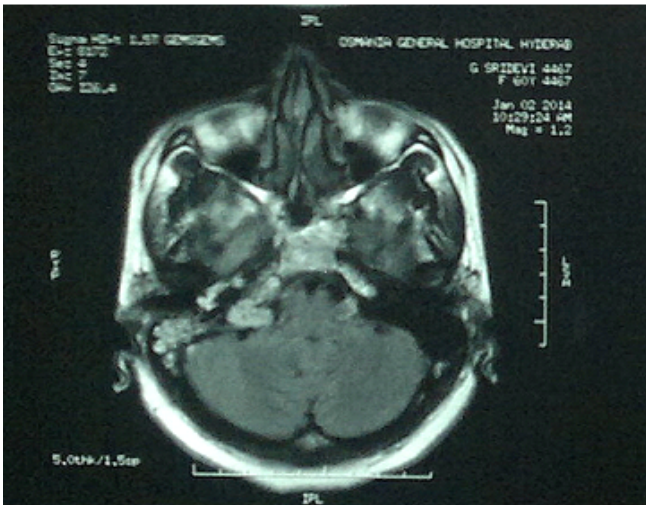

Figure 1: MRI Brain shows hypointense lesion in CPangle cistem on right side, Glomus Jugulare Tumour.

As the patient required lower limb surgery and there were no features of raised ICP - clinical, MRI or fundoscopic, regional anaesthesia was considered. Moreover due to the involvement of IX and XII cranial nerves, deviation of uvula and tongue and history of dysphagia and regurgitation general anaesthesia would have made patient more prone for regurgitation, aspiration and airway obstruction.

We planned regional anaesthetic technique with minimal changes in ICP, providing safe titrable intraopertive adequate sensory and motor blockade and postoperative analgesia as well. Intracranial compliance was assumed to be normal due to small size of the tumour.

Although there was no evidence of reduced intracranial compliance and raised ICP, subarachnoid block was not considered due to lumber puncture induced risk of coning. Other problem associated with subarachnoid block could have been hypotension which can reduce cerebral perfusion. The use of epidural and combined spinal epidural has been reported for labor analgesia and cesarean section in patients with intracranial tumours [6,7]. Anjolie C et al reported a case of intracranial neoplasm for emergency caesarean section under CSE and concluded that CSE can safely be used for caesarean section in patients with intracranial space occupying lesion without severe neurological deficit and in whom general anaesthesia is not preferable [8].However Hilt et al reported significant rise in CSF pressure in patients with reduced intracranial compliance even with injection of 10 ml of 0.5% bupivacaine and recommended slow administration of 5 ml top ups [9].

We could do our case uneventfully under epidural anaesthesia, intraoperatively patient's vitals were stable throughout. Moreover we also provided postoperative analgesia by slow epidural administration of 4ml 0.5% bupivacaine whenever required. In conclusion it can be said that epidural anaesthesia can be used successfully in patients of intracranial tumour with normal ICT and uncompromised intracranial compliance.

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