ORIGINAL RESEARCH PAPER

Anaesthesiology

VAGAL AND CERVICAL SYMPATHETIC CHAIN SCHWANNOMA AND THEIR ANAESTHETIC CONCERNS

KEY WORDS: Schwannoma, vagal nerve, Bradycardia, Benign tumors

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ABSTRACT

Schwannoma of head and neck is a rare tumor arising from neural component . Majority of patients with cervical vagal schwannoma present with mass in the lateral part of neck without any neurological deficit. Complete surgical resection is the treatment of choice. We report here a symptomatic cervical vagal schwannoma in a 46 year old female presenting with dyphagia for 2 weeks . MRI neck revealed a well defined smooth marginated non infiltrative lesion of size 19*23*35 mm, anteriorly abutting sternocleidomastoid and posteriorly abutting cervical segment of left vertebral artery-cervical/ vagal origin . The patient was first planned for temporary cardiac pacing to avoid the consequences of vagal nerve handling like bradycardia intraoperatively. Standard GA was given. Superficial cervical plexus was given and the surgical area was anaesthetized to prevent the complications of vagal nerve handling. The tumor was dissected carefully and sent for biopsy. Patient reversed and intraoperative was uneventful. After excision of tumor, our patient complained of mild left eyelid drooping indicating the tumor excised to be of cervical sympathetic chain origin.

INTRODUCTION

Schwannomas are benign, rare type of tumour that arise from peripheral or cranial nerves. They grow from cells called Schwann cells. Schwann cells protect and support the nerve cells of the nervous system.[1] Although they occur throughout the body, up to 45% are found in the head and neck, with many arising in the parapharyngeal space as either vagus nerve cervical schwannoma (VNCS) or cervical sympathetic chain schwannoma (CSCS).[2] Cervical sympathetic chain schwannomas are extremely rare, and slow growing tumour. They usually occur in patients between 20 and 50 years of age group.[3] We describe here the anaesthetic concerns and the problems encountered during and after its excision.

Case Report

A 46 years old female belonging to ASA grade 1 initially presented with progressive and painless swelling on the left side of the neck for past 1 month. Later she developed complaints of dysphagia for the recent 2 weeks. On local examination, the mass was firm in consistency, non tender, measuring 5*5 cm extending along the lateral border of neck.

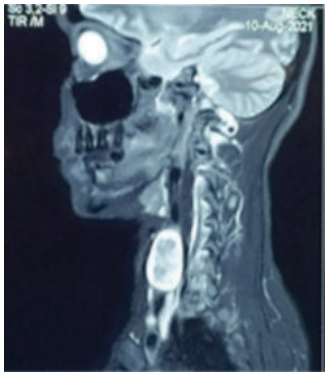

Figure 1 : MRI neck showing neck mass

MRI neck revealed a well defined smooth marginated non infiltrative lesion of size 19*23*35 mm, medically abutting and displacing left lobe of thyroid, laterally displacing internal jugular vein and left common carotid artery with no invasion, anteriorly abutting sternocleidomastoid and posteriorly abutting cervical segment of left vertebral artery - ?cervical sympathetic chain / vagal schwannoma (Figure 1). Rest of the systemic examinations were normal. And all the routine investigations like blood, chest X-ray, ECG were normal. She was planned for schwannoma excision.

Informed and written consent were obtained. The patient was premedicated with Tab. Alprazolam 0.25mg, Tab. Ranitidine 150mg, and Tab. Metoclopramide 10mg night before and on the day of surgery. Plastic and vascular surgeons were informed in view of micro vascular nerve surgery repair. Adequate blood and blood products reserved. Intensive care unit bed was booked in case of any complications following vagal nerve handling.

The Operating room was made ready with Inj. Isoprenaline, Inj. Adrenaline, Inj. Atropine and a defibrillator. The patient was first planned for temporary cardiac pacing to avoid the consequences of vagal nerve handling like bradycardia intraoperatively. So the patient was shifted to Operating room for temporary transvenous cardiac pacing (Figure 3). Intravenous line was secured after connecting routine monitors like ECG, pulse oximetry, non invasive blood pressure monitoring, end tidal CO2. Her baseline heart rate was 120bpm, blood pressure was 140/80 mm Hg, saturation was 99% at room air.

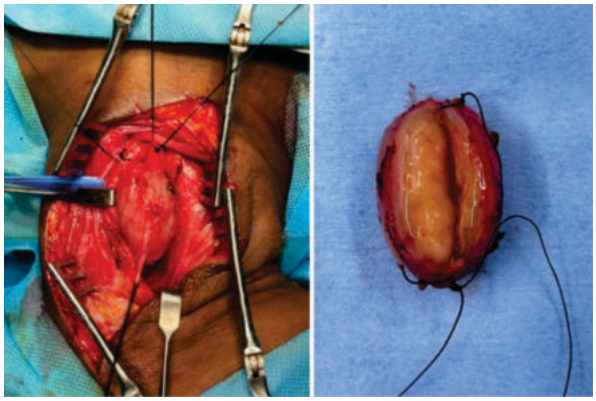

Figure 2 : Dissection and excision of neck mass

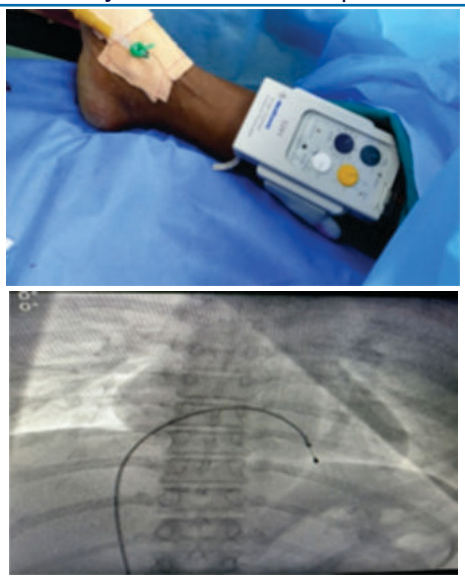

Figure 3 :Transvenous cardiac pacing

Standard general anaesthesia was performed with Inj. Fentanyl 100mcgs iv, Inj. Propofol 100mg iv, Inj. Atracurium 40mg iv . Patient was intubated with 6.5mm endotracheal tube fixed at 19cm. Anaesthesia was maintained with N2O:O2 (2:3) , Isoflurane (0.5-1%)and intermittent doses of atracurium. The patient was hemodynamically stable post induction. Superficial cervical plexus block was give with 4ml of 0.25% Inj. Bupivacaine+ 4 ml of Inj. Xylocard . Intraoperative vitals was maintained with BP of around 130/80mm Hg, saturation of 100%, heart rate of 100-110bpm. The surgical area of concern was anaesthetised with local anaesthesia to prevent the complications of vagal nerve handling. The tumour was dissected carefully and sent for biopsy (Figure 2). The duration of surgery was 3 hours. Neuromuscular blockade was successfully reversed after surgery. Recovery was smooth and uneventful. The patient was followed up postoperatively. Our patient complained of mild left eye drooping in the first preoperative day (Figure 4) – indicating the tumor to be of cervical sympathetic chain of origin.

Figure 4 : Post operative Ptosis left eye

DISCUSSION

Cervical sympathetic chain schwannomas (CSCS) are rare, benign tumours originating from the superior or middle part of the cervical chain and typically located in the retrostyloid compartment of the parapharyngeal space. CSCS occur more frequently in adults 20 to 50 years old.[3] Schwannomas mostly arise from glossopharyngeal, hypoglossal and accessory nerves. Involvement of vagus nerve has been reported in only 10% of the cases. Schwannoma of vagus nerve grows between the internal or common carotid artery and the internal jugular vein causing separation of two vascular structures ; whereas no separation has been seen between the artery and vein in CSCS.[4] A superficial course of vagus nerve on the mass or vagal connection with the tumour can be important elements to detect the sympathetic or vagal origin of the tumour, but they are difficult to find by preoperative radiology. Interestingly, numerous clinical presentation and symptoms have been reported in literature ranging from hoarseness, sensorineural hearing loss, Horner's syndrome, neck mass, and hypoglossal nerve palsy.[5] The commonest symptom, however, is depending on the location and size of the tumor. Pre-operative diagnosis of schwannoma is difficult because many vagal schwannomas do not present with neurological deficits and several differential diagnoses for tumour of the neck may be considered, including paraganglioma, branchial cleft cyst, malignant lymphoma, metastatic cervical lymphadenopathy. When symptoms are present, hoarseness is the most common complaint. Occasionally, a paroxysmal cough may be produced on palpating the mass. This is a clinical sign, unique to vagal schwannoma. Presence of this sign, associated with a mass located along the medial border of the sternocleidomastoid muscle, should make clinicians suspicious of vagal nerve sheath tumours.[6] There is general agreement concerning the great value of MRI in the pre-operative work-up as it is helpful in defining diagnosis and in evaluating the extent and the relationship of the tumour with the jugular vein and the carotid artery. The MRI appearance is considered quite typical and may lead to suspicion of the diagnosis pre-operatively as the cervical vagal neurinoma frequently appears as a well-circumscribed mass lying between the internal jugular vein and the carotid artery.[7] As reported by Furukawa et al., MRI findings are also useful in providing a pre-operative estimation of the nerve of origin of the schwannomas and to differentiate pre-operatively between schwannoma of the vagus nerve and schwannoma of the cervical sympathetic chain. The vagal schwannomas, in fact, displace the internal jugular vein laterally and the carotid artery medially, whereas schwannomas from the cervical sympathetic chain displace both the carotid artery and jugular vein without separating them .[8] Mukherjee et al. experienced cardiac arrest in their patient during excision of a large vagal schwannoma. The probable cause of cardiac arrest was thought to be direct vagal stimulation.[9]In our case , vagal schwannoma was excluded because of no intraoperative events related to vagal nerve handling and no clinical signs of vagal nerve involvement were evident. Here the patient was asymptomatic other than dysphagia. After excision of the tumour, our patient complained of mild left eyelid drooping - which indicates the tumour excised to be of cervical sympathetic chain origin . Majority of patients who have undergone this intervention are reported to manifest some degree of horner's syndrome, which is the most frequent complication after CSCS removal.[10] Intervention often leaves the patient with some degree of Horner's syndrome, which is relatively well tolerated and should be discussed with the patient during preoperative counseling.[11] So it is manadatory for the anaesthetist as well to inform the patient about possible postoperative neurological complications during preoperative evaluation.

CONCLUSION

ECG changes and bradycardia were anticipated in view of vagal origin of schwannoma. Since it was of cervical sympathetic chain origin no such findings were elicited during or after the excision of the tumour. However the anaesthetist should be ready to face the challenges expected on table . Therefore the patient should be managed and monitored meticulously. Proper communication and cooperation should be warranted between surgeon and anaesthetists.

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