Sympathetic nerve trunk repair post schwannoma excision: Case report

Hitesh Verma¹, Arjun Dass², Surinder K Singhal³, Nitin Gupta⁴, Madhvi Sondhi⁵, Amrinder Kaur⁶

¹,²,³,⁴,⁵ Department of Otorhinolaryngology and Head and Neck Surgery, Government Medical College and Hospital Chandigarh, India
⁶ Senior Resident, Department of Pathology, Government Medical College and Hospital Chandigarh, India

Schwannomas are benign, capsulated and slow growing tumors that originate from the Schwann cells of the nerve sheath which form myelin sheath of nerves. Schwannomas of the head and neck are uncommon tumors that arise from peripheral nerves. Schwannomas can arise from a genetic disorder called neurofibromatosis. Schwannoma cells always present outside to the nerve. The symptoms usually appear as result of pushing aside nerve by tumor or compression against bony structure. Schwannomas can present with very subtle symptoms or morbid sequel. Schwannomas are mostly benign and less than 1% becomes malignant. Sympathetic nerve trunk schwannoma is relatively rare and we discuss the management, review of literature of such tumors and repair of sympathetic nerve trunk.

Key words: Sympathetic nerve trunk, schwannoma, parapharyngeal space, fine needle aspiration cytology (FNAC), computerized tomography scans (CT Scan), repair

INTRODUCTION

Schwannomas are benign, capsulated and slow growing tumors that originate from the Schwann cells of the nerve sheath which form myelin sheath of nerves. The tumor can arise from peripheral nerves (Leu, 2002). Schwannomas can arise from a genetic disorder called neurofibromatosis. The preoperative diagnosis of schwannoma is difficult, it can present with very subtle symptoms or morbid sequel and should be suggested by clinical features and supported by investigations included ultrasonography (US), computed tomography (CT), magnetic resonance imaging (MRI), and fine needle aspiration cytology (FNAC). Sympathetic nerve trunk schwannoma is relatively rare and they can present with myriad of manifestation varying from no symptom to extremely morbid condition. Complete surgical excision is the treatment of choice. Sympathetic nerve trunk reconstruction by end to end anastomosis may be one of the useful surgical options. We discuss the management, review of literature of such tumors and method of repair of sympathetic nerve trunk.

CASE REPORT

Twenty four years male patient presented with six months history of swelling on left side of upper part of neck. The swelling was insidious in onset, progressive in nature, persistent with no aggravating factor and was not relieved by medications. It was not associated with pain, fever,
malaise, any difficulty swallowing, breathing or change in voice. There was no history of loss of weight or appetite, palpitation, headache. Local examination showed single, 3x3 cm globular mass in the upper part of carotid triangle of left side of neck which was non tender with overlying normal temperature. The mass was firm in consistency with well defined margins, mobile in all directions, non-reducible, not fluctuant with overlying normal skin. The rest of local and general examination was normal. Fine needle aspiration cytology revealed features of benign spindle cell lesion. Contrast enhanced computed tomography (CECT) showed heterogeneous enhancing soft tissue density completely in left para-pharyngeal space pushing carotid vessels and internal jugular vein anteriorly but not encasing them (Fig. 1). Surgical excision of mass was done by trans-cervical approach. The mass was found deep to great vessels and pushing vagal nerve anteriorly (Fig. 2). The mass was involving sympathetic chain in its full thickness. The mass removed completely with cut end of sympathetic
chain re-sutured together by 8-0 monofilament through the epineurium under microscope and wound was closed in layers (Fig. 3). Post-operatively patient presented with features of Horner syndrome. The specimen showed Antoni type A and B pattern which is characteristic of schwannoma (Fig. 4). The patient is under regular follow up from 8 months with improved postoperative symptoms.

DISCUSSION

Schwannoma or neurilemmoma are benign neoplasms of Schwann cell origin. The Schwann cell surrounds nerve tissue and is believed to originate from the neural crest. They are typically solitary, well-encapsulated, benign tumours characteristically running along the course of a nerve or attached to peripheral, cranial, spinal and sympathetic nerves (Dass, 2013). Malignant transformation is rare. 25-45% of schwannomas are found in head and neck region. In the parapharyngeal space, schwannomas may arise from the last four cranial nerves or the autonomic nerves, the vagus being the most common site. Cervical sympathetic chain schwannomas are uncommon and most often appear as an asymptomatic, slow-growing, solitary neck mass; Horner’s syndrome is rarely apparent on physical examination (Bocciolini, 2005).

FNAC and radiographic imaging with USG, CT or MRI are usually performed to reach diagnosis. However, schwannomas are frequently difficult to characterize on FNAC. Liu et al. reported that the accuracy of FNAC was only 20% (Liu, 2011). On non-contrast CT, schwannomas are hypodense as compared with muscle. Contrast administration results in some degree of enhancement, which may be homogeneously solid or heterogeneous and patchy, in our case enhancement was patchy. It can be difficult to differentiate the rare hypervascular schwannoma from a paraganglioma. Magnetic resonance imaging allows for superior soft tissue contrast resolution for these reasons, it is now considered the imaging study of choice to evaluate parapharyngeal space tumors. A recent series showed that MRI carries 95% accuracy in delineating a parapharyngeal space mass in relation to the pre-/poststyloid compartments, its relationship to the deep lobe of the parotid, and its inherent soft-tissue characteristics. On MRI, schwannomas are well-circumscribed homogenous masses that exhibit high-signal intensity on T2-weighted images and a relatively homogeneous low-signal intensity on T1-weighted images. In contrast with paragangliomas, there are no vascular flow voids seen in schwannomas (Anil, 2010). Angiography is used selectively to assess enhancing lesions of the parapharyngeal space for evaluation of a vascular tumor and consideration for preoperative embolization (Saito, 2007).

As for the management of schwannomas, multiple treatment options exist including observation, complete tumor excision, and intracapsular enucleation (Valentino, 1998). For tumors arising from the major cranial nerves, complete tumor resection renders lifelong morbidity to the patients. On the other hand, the nerve-preserving excision method, such as intracapsular enucleation, does not guarantee intact nerve function after surgery and at the same time carries the risk of leaving the tumor behind. Methods of reconstruction of the sympathetic nerve trunk are end to end anastomosis or by nerve graft such as sural (Telaranta, 1998), intercostal nerve (Miura, 2003; Seok, 2010) where as we choose end to end anastomosis because distance between cut ends was approximated without tension. In end to end anastomosis by epineurium repair is done by sewing the cut ends together through the epineurium, that to increase the potential of the proximal part growing correctly along the route the degrading distal part leaves behind. Nerves grow at a rate of approximately 1 millimeter per day, so appearance of usual sensation will take a few months. The application of tissue Glue in the place of some sutures to limit scarring, resulting in better axonal growth, and speed up the surgery where as in our
case the patient was poor. Cell therapy to improve nerve regeneration is also under research (Lopes, 2011).

REFERENCES


Accepted 27 June, 2014.


Copyright: © 2014 Verma et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are cited.