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Case Report

Hidden in the plexus: a case of brachial plexus schwannoma

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ABSTRACT

Schwannomas are benign, encapsulated, and slow-growing tumors that arise from Schwann cells of peripheral nerves. Although these tumors most commonly involve cranial nerves, brachial plexus schwannomas are rare and often misdiagnosed as other supraclavicular masses. We present the case of a 41-year-old male with a right-sided neck swelling, later diagnosed as a brachial plexus schwannoma. The patient underwent complete surgical excision with preservation of the surrounding neural structures and achieved good recovery. This case highlights the importance of including brachial plexus schwannoma in the differential diagnosis of supraclavicular swellings and discusses the challenges and outcomes of surgical management.

Keywords: Brachial plexus, Schwannoma, Neck swelling, Enucleation, Case report

INTRODUCTION

Schwannoma, also known as neurilemmoma, is a benign tumor that arises from Schwann cells, which form the myelin sheath of peripheral nerves. It is a well-encapsulated, slow-growing lesion that can occur in any peripheral nerve.[1] Malignant transformation of schwannoma is extremely rare. These tumors may arise from cranial nerves, most commonly the vestibulocochlear nerve, or from other peripheral nerves such as the sympathetic chain or the brachial plexus.[2]

Brachial plexus schwannomas are particularly rare, accounting for only about 5% of all schwannomas.[3] Because of their location, they often present as supraclavicular swellings and may mimic lymphadenopathy, thyroid masses, or other soft tissue tumors.[4]

Their eccentric origin from the nerve, with preservation of neural continuity, is an important diagnostic clue. Surgical excision with nerve preservation is the treatment of choice.[5]

CASE REPORT

A 41-year-old male presented with a painless swelling on the right side of the neck that had been progressively increasing in size for the past six months. The swelling was insidious in onset and was not associated with pain, weakness, tingling, or numbness in the right upper limb.

On clinical examination, a single, well-defined, lemon-shaped swelling measuring approximately 4×4 cm was observed in the supraclavicular region, posterior to the sternocleidomastoid muscle. The swelling was firm in consistency, non-tender, non-pulsatile, and non-transilluminant. The overlying skin was normal, and the swelling was not fixed to underlying structures. No bruit was audible and there was no regional lymphadenopathy (Figure 1).

Ultrasonography revealed a well-defined, heterogeneous, hypoechoic lesion measuring 4.3×2.7×3.5 cm, with no internal vascularity, located posterior to the sternocleidomastoid muscle. Fine needle aspiration cytology showed clusters of spindle cells in a clear background, suggestive of a benign spindle cell tumor

such as schwannoma. Contrast-enhanced computed tomography of the neck demonstrated a 5×4.3×3.5 cm hypodense lesion with minimal heterogeneity and mild contrast enhancement. The lesion was seen occupying the lower aspect of the posterior triangle of the neck at the level of C5-C6, compressing the internal jugular vein and abutting the carotid artery anteriorly, while stretching the posterior neck muscles. The lesion appeared to originate from the C5 spinal nerve root outside the neural foramen, consistent with a type 4 schwannoma (Figure 2).

Surgical excision was performed under general anesthesia. A skin crease incision extending from the anterior border of the trapezius to the posterior border of the sternocleidomastoid was made to expose the lesion. The tumor was identified as arising from the spinal foramina, carefully dissected, and intracapsular enucleation was carried out, preserving the surrounding neural structures. The excised specimen was sent for histopathological examination, which confirmed the diagnosis of schwannoma (Figure 3).

In immediate postoperative period, patient experienced mild tingling and weakness in the right hand. These symptoms improved with vitamin B12 supplementation and physiotherapy. At follow-up, the patient showed satisfactory recovery with no recurrence of the swelling.

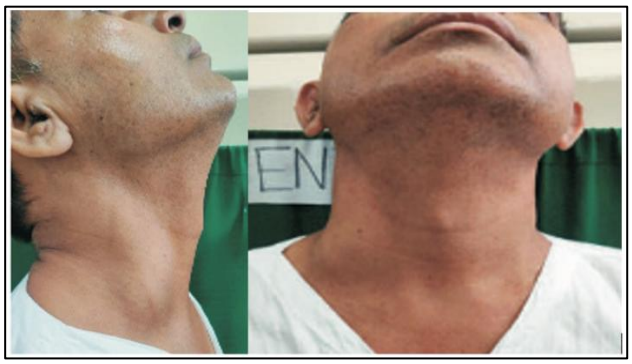

Figure 1: Clinical picture of schwannoma.

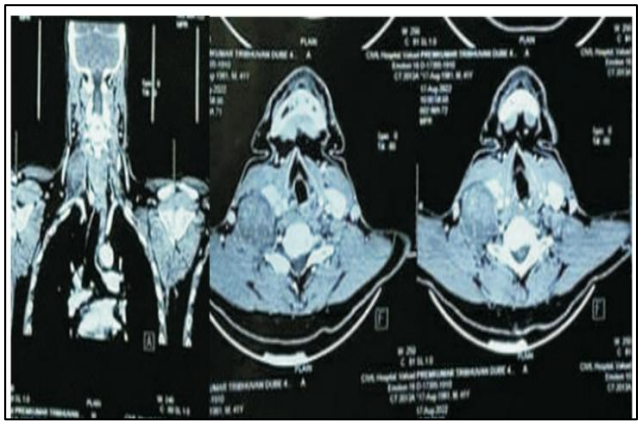

Figure 2: CECT of well-defined hypodense enhancement occupying lower aspect of posterior triangle of neck at level of C5-C6.

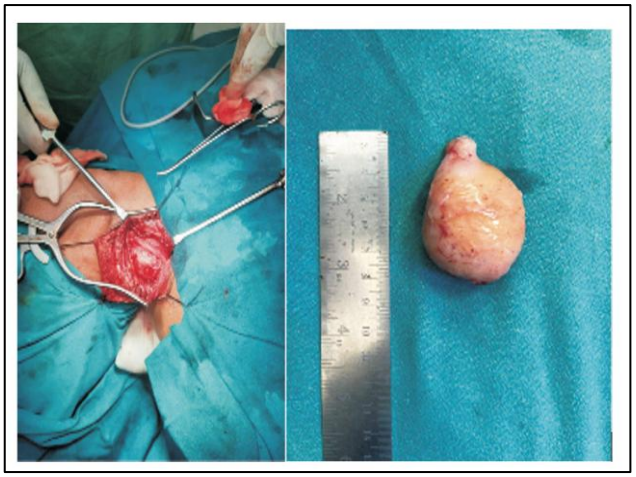

Figure 3: Excised specimen of schwannoma along with intra-operative picture.

DISCUSSION

Schwannomas are benign tumors of Schwann cell origin and are among the most common peripheral nerve sheath tumors. Most schwannomas occur sporadically as solitary benign tumors, although multiple lesions may be seen in some patients.[6] While they generally arise spontaneously, schwannomas are also a hallmark feature of two hereditary tumor syndromes: neurofibromatosis type 2 and schwannomatosis.[7] Because of their location in the supraclavicular region, brachial plexus schwannomas are frequently misdiagnosed as lymph node enlargements, thyroid swellings, lymphangioma, lipomas, or branchial cysts.[8] Careful evaluation with imaging and cytology is therefore essential for diagnosis.

Radiological imaging, particularly CT and MRI, is essential for determining the origin and extent of schwannomas. On CT, these tumors typically appear as well-circumscribed, encapsulated, hypodense lesions that may show mild contrast enhancement and are usually iso-dense relative to brain parenchyma. On MRI, schwannomas are characteristically iso- to hypointense on T1-weighted images and demonstrate enhancement following gadolinium administration.[9,10] Fine-needle aspiration cytology may indicate a spindle cell lesion; however, definitive diagnosis depends on histopathological examination. The use of FNAC or biopsy is limited, as these procedures carry the risk of damaging intact fascicles, causing hemorrhage, and potentially resulting in neurological deficits.[11]

The treatment of brachial plexus schwannomas is complete surgical excision. The goal is to remove the tumor while preserving the continuity of the involved nerve. This is possible because schwannomas are typically eccentric to the nerve, allowing separation of the tumor from the fascicles. Enucleation is usually feasible, although careful microsurgical technique is required to minimize the risk of neurological deficits.

Intraoperative nerve monitoring may further improve safety.[12]

Postoperative neurological deficits, such as paresthesia or weakness, are not uncommon but are usually transient, as observed in our case. Long-term prognosis after complete excision is excellent, with low recurrence rates.[13]

Our case highlights the clinical features, radiological findings, and management of a brachial plexus schwannoma. The patient presented with a painless, slowly progressive neck swelling and underwent successful surgical excision with preservation of neural function. This case emphasizes the importance of considering schwannoma as a differential diagnosis in all supraclavicular swellings and illustrates that surgical treatment provides excellent outcomes when performed carefully.

CONCLUSION

Brachial plexus schwannoma is a rare but important differential diagnosis of supraclavicular neck masses. Accurate diagnosis with imaging and histopathology, along with meticulous surgical excision preserving neural structures, can provide excellent outcomes. Early recognition and management are essential to avoid unnecessary morbidity.

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