

Case study

Middle Trunk of Brachial Plexus Schwannoma :

A case report with uncommon localization and literature review

ABSTRACT

Aims: We report a case of schwannoma arising from middle trunk of her right brachial plexus and presented with radiant pain along her lower arm. The patient developed temporarily neurological deficit after surgery.

Presentation of Case: A 30- year old patient presented with history of lump on her right lower neck in last three months. The patient did not have significant complaint but she occasionally felt sharp pain which was radiating down to her lower right arm. USG of the neck showed hypoechoic soft tissue mass with posterior acoustic enhancement and FNAC suggested of schwannoma.

Discussion and Conclusion: This case report indicates uncommon location of schwannoma in the neck related with symptoms that may occur as the mass increases in size. In our case, we reported a case with involvement of brachial plexus which is relatively rare for schwannoma to appear on middle trunk of brachial plexus. Surgical excision is the treatment of choice, with recurrence being rare. Excision of the tumour without injuring the parent nerve demands detailed preoperative planning and meticulous dissection. This case highlights the importance of understanding of anatomy of surrounding structures to prevent serious complications post operatively.

Key words : *brachial plexus tumours, middle trunk, Schwannoma*

INTRODUCTION

Schwannoma are benign tumour of Schwann cell origin¹. About 25% of schwannoma occurs in head and neck. Previous studies have reported all sites of origin such as cranial nerves IX-XII, sympathetic chain, cervical and brachial plexus^{1,2}. Schwannomas of brachial plexus are rare, occurring in 0.3-0.4/100.000 person per year³⁻⁵. Donner et al reported a 5% incidence rate for schwannomas localized in the supraclavicular brachial plexus. It usually appears as a painless mass and when it becomes bulky, it can give compression symptoms such as pain and paresthesia. Although malignant transformation is extremely low, but they can be locally destructive if allowed to progress. MRI and CT Scan may help in differentiate these disease before surgery. Confirmation can be obtained by histopathology examination. Due of their rarity and complex anatomical location, they may create a dreadful challenge to surgeons⁶.

CASE PRESENTATION

A 30-year-old Indonesian woman had presented to our Head and Neck Surgery clinic with a nine-month history of a lump on the right side of her lower neck. The mass continued to increase in size, but did not limit her neck movement. There were no associated symptoms, but she felt sharp shooting pain and tingling sensation which radiating down to her lower right arm. There was no history of tobacco or irritant use. On physical examination a 3x2 cm, firm to tensely cystic, oval, semi fixed, well demarcated mass was noticed and palpated in the posterior triangle. It was not associated with any changes in the overlying skin, but a radiating pain went down to her right middle finger was triggered by applying pressure to the tumour and appeared after exertion. An examination of other neurology status was unremarkable. Mark hypotonia and muscle weakness were not found and sensory modality such as touch, temperature and pinprick was normal.

On investigation, complete blood count, random blood sugar, liver and kidney function tests were normal. Thorax x-ray did not reveal any abnormality. Due to patient's poor socio-economy status, we could not do any imaging studies like CT Scan or MRI, therefore neck ultrasound was performed and it showed a heterogenous hypoechoic soft tissue mass with posterior acoustic enhancement and multiple cystic lesion within the mass in her right , hence posterior neck, measuring about $2.98 \times 2.18 \times 3.37$ cm in its greatest dimension, with mildly increased peripheral vascularization. A possibility of schwannoma was suggested (figure 1).

A fine-needle aspiration cytology (FNAC) was obtained and the histological finding of the tissue showed benign spindle shaped cells with wavy nuclei embedded in a fibrillar and myxoid matrix , suggestive for schwannoma.

The case was diagnosed as schwannoma of right brachial plexus and our patient underwent a mass excision with preservation of all the main brachial trunks under general anesthesia. An anterior supraclavicular approach was used. We displaced sternocleidomastoid muscle and a well encapsulated cystic mass was seen from middle trunk of the brachial plexus. The mass was carefully separated from the nerve trunk without damaging the nerve sheath and preservation of all the three main trunks was achieved (figure 2-4). Post operatively, patient has minimal sensory and motoric deficit on median and radial nerve's innervation.

Histological analysis of the excised tissue showed proliferation of spindle cells arranged in palisading pattern, forming Verocay body (Antoni A) and relatively few cellular regions in myxoid interstitial tissue (Antoni B configuration). No cytological atypia was noted. The above findings consistent with a tissue diagnosis of schwannoma (figure 5 and 6). The patient was discharged on the fifth postoperative day and underwent daily rehabilitation practice for her lower arm. Six months later she does not show any relapse. Paresthesia, sensory and motoric deficit completely resolved.

DISCUSSION

Neurogenic tumours of head and neck are uncommon tumours that can arise from cranial, peripheral, and autonomic nerves. The vast majority are benign and include neurofibromas and schwannomas¹.

Schwannoma of brachial plexus is extremely uncommon⁶. It usually appears as benign well encapsulated mass originating from the nerve sheath. Most often occur in the 3rd and 4th decades of life and women are affected more often than men, with reported ratios between 2:1 and 3:2⁷. Patient's initial symptoms include progressively growing mass in supraclavicular region, pain, numbness and loss of function. Involving symptoms attributed to nerve compression should raise suspicion and further examination with MRI is advisable⁸.

FNAC has been recommended as the first initial testing procedure, it may give a diagnosis in a quarter of cases. The predominant feature is the presence of spindle cells with distinct Antoni A and B components, hyaline vessels, and nuclear palisading^{9,10}.

The role of CT scan has been replaced by MRI examination. MRI not only capable to delineate the margin of the tumour from surrounding tissue and inform which nerve the mass originate from, it also can differentiate schwannoma from those arising from soft tissues^{11,12}. In the diagnosis of this case, because of our limitation to do CT Scan or MRI, we must rely on history, positive finding on clinical and cytology examination and also ultrasound's result to create a working diagnosis. As in our case, we concluded that although ultrasound able to determinate suspicious schwannoma lesion but it offered very limited information about source of the mass and surrounding vital structures pre operatively.

The surgical management of schwannoma is less clear cut with cautious dissection. Surgical enucleation or 'peeling off' is still the treatment of choice of this lesion, in order to relief patient's symptoms and minimizes a possible neural damage. However in majority cases, it is feasible to do complete resection and preserving all vital surrounding nerves, because of their eccentric and non-infiltrating growth. Any nerve injury should be repaired by primary anastomosis or nerve graft⁸. One literature reported 4% incidence of malignancy in schwannoma from 146 cervical schwannoma cases, hence some authors for oncologic reason, partial excision or enucleation is inadvisable^{13,14}.

Radiation and chemotherapy have no definite role in the management of schwannoma. The use of these adjuvant modalities should only be considered for large, deep, high grade disease which demonstrates metastase or metastatic potential^{15,16}.

CONCLUSION

Schwannoma should be included in differential diagnoses when confronted with lateral supraclavicular neck mass especially with sign of neural compression. Preoperative diagnosis is very important, therefore imaging studies such as CT Scan or MRI are strongly suggested. Knowledge of the trunk involved assists in preoperative counseling about possible neurological sequelae post excision. Care should be taken to preserve the nerve function during dissection.

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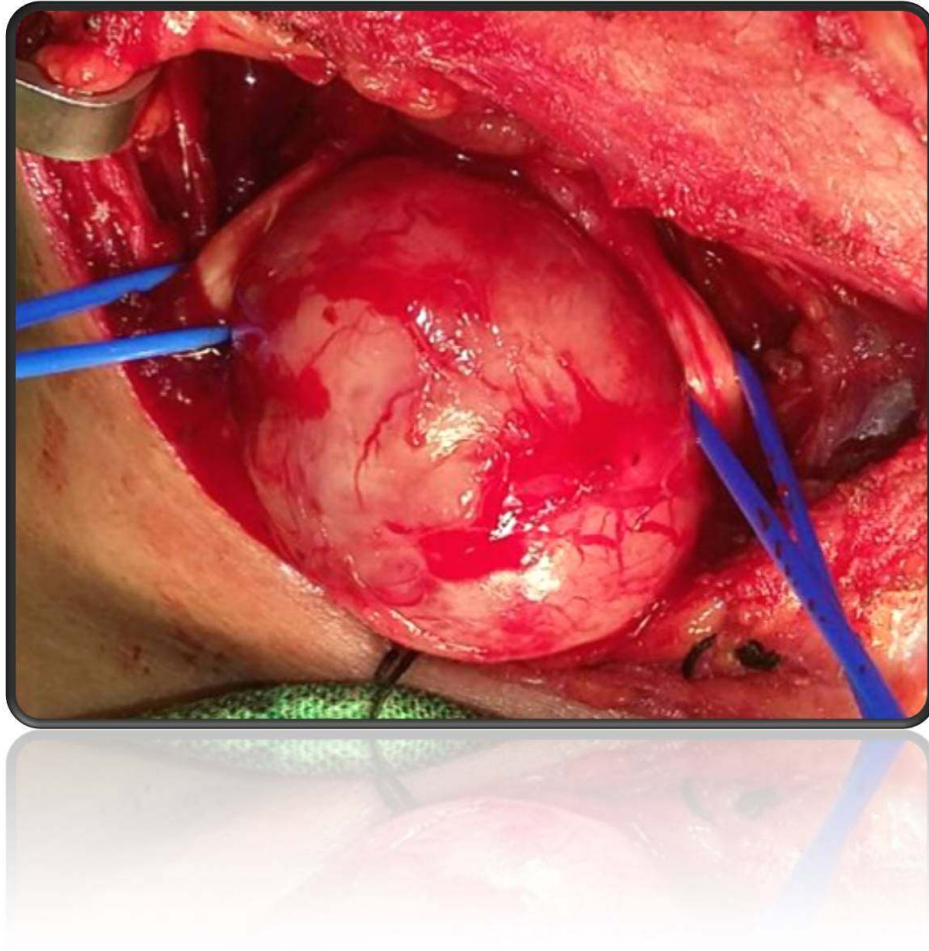
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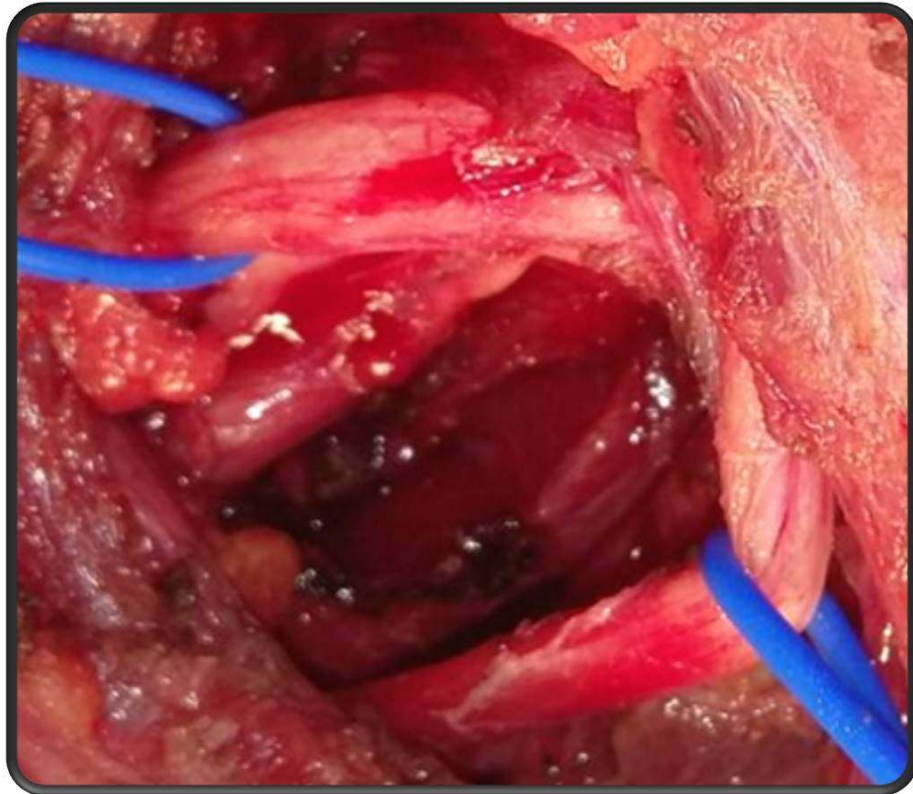
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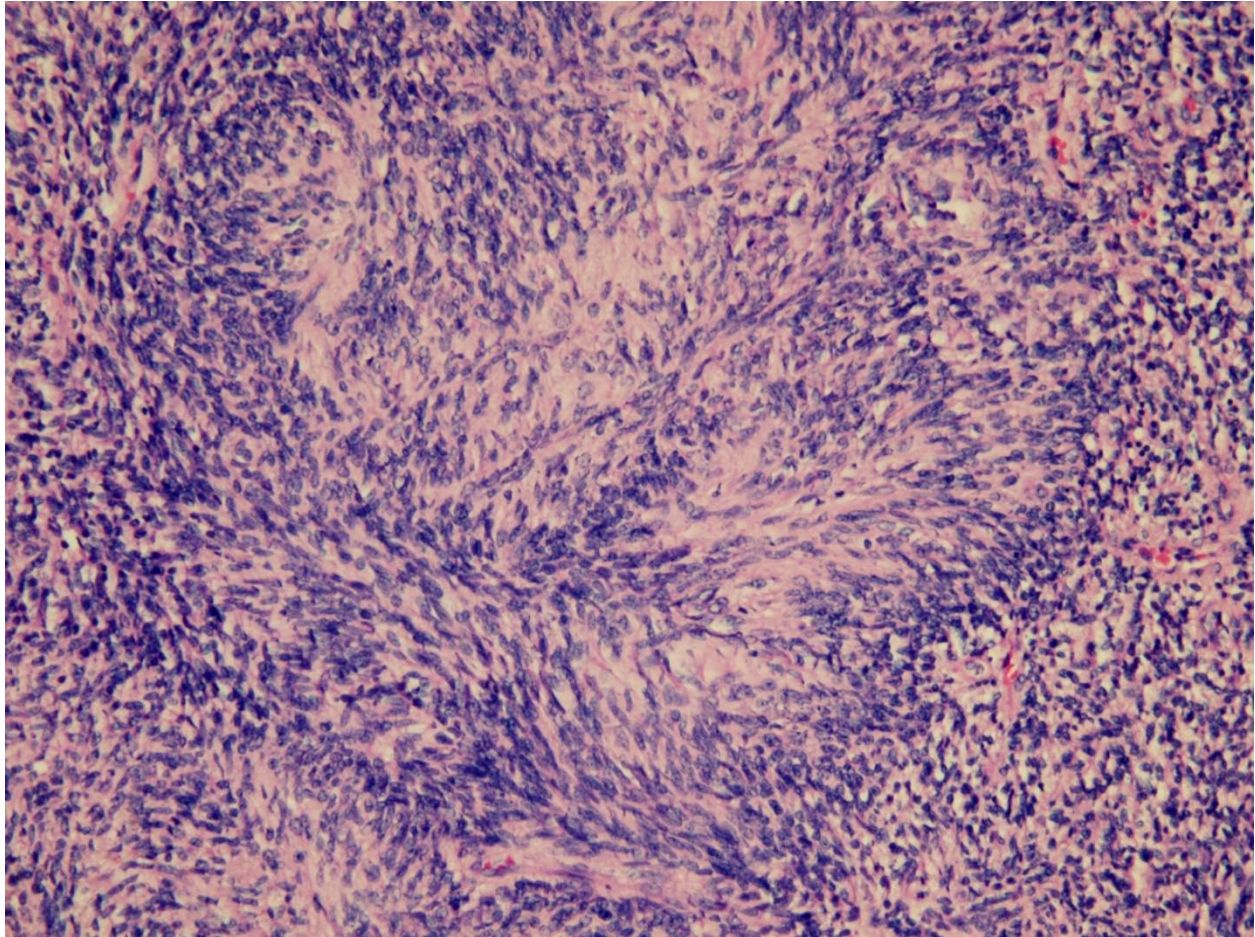
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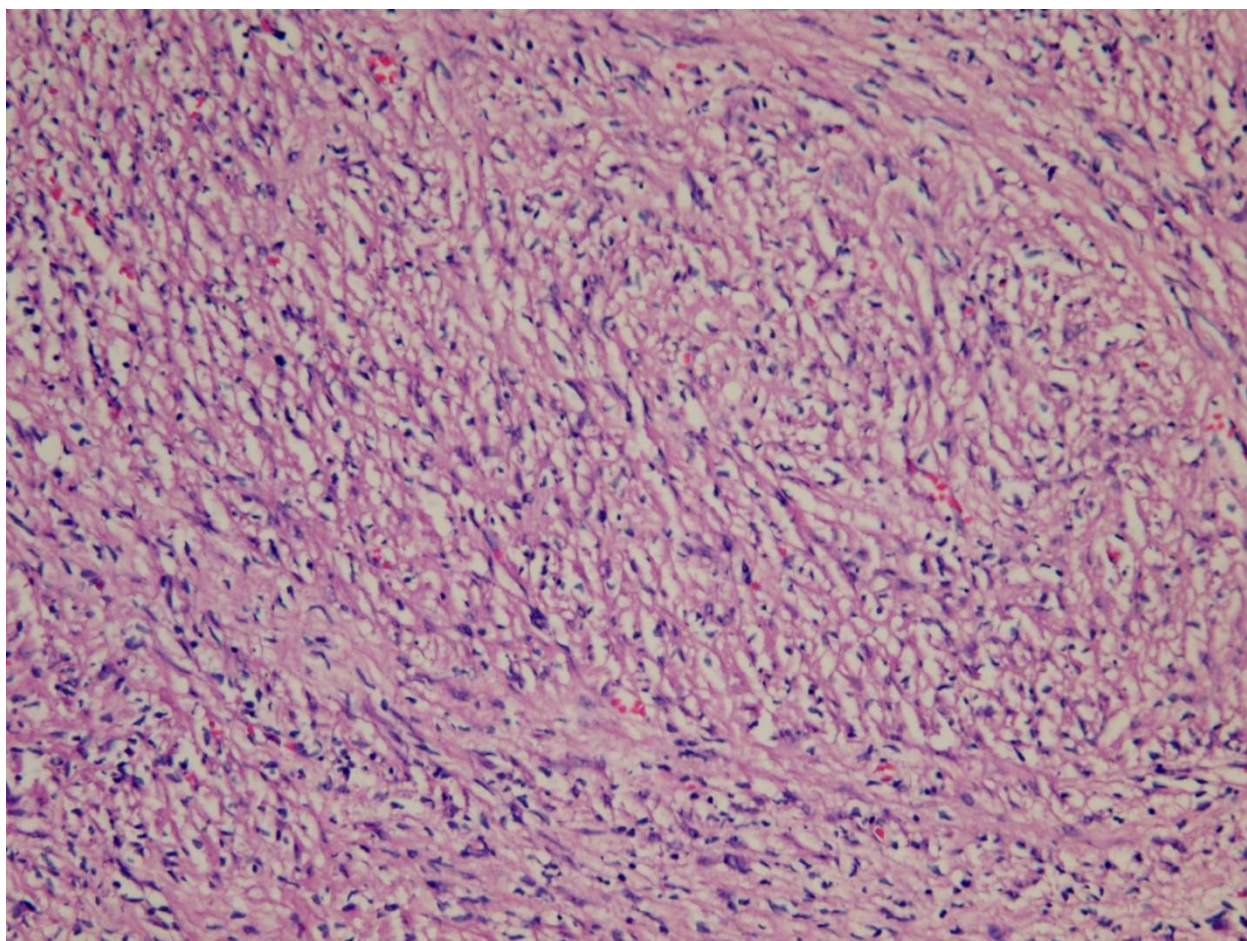
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