



Brachial Plexus Schwannoma: Case Report and Literature Review

Schwannoma do Plexo Braquial: Relato de Caso e revisão da literatura

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Abstract

Schwannomas are mostly benign and solitary tumors that originate from Schwann cells. Macroscopically, they appear as rounded masses with a smooth surface. Schwannomas rarely affect the brachial plexus, accounting for approximately 5% of all cases of schwannomas, presenting a challenge for surgeons. The objective of this article is to describe a case report of a brachial plexus schwannoma in a hospital located in the Northeast of Brazil. A 49-year-old male patient presented pain resulting from the appearance of a left anterior cervical bulging with progressive growth. On physical examination, he had a Medical Research Council (MRC) score of 3 in left arm abduction and paresthesia in the left lateral forearm and arm. On magnetic resonance imaging (MRI), the lesion arises from the C4-C5 junction, measuring 5.9 × 5.4 × 5.5 cm, and the electroneuromyography showed chronic pre-ganglionic involvement of C5 to C7 bilaterally. A left cervicotomy was performed with a horizontal incision at the level of the laryngeal eminence. Brachial plexus lesions with progressive growth tend to be managed surgically. This diagnosis hypothesis should be considered in patients

Keywords

- Brachial Plexus
- Neural Sheath Tumors
- Schwannoma

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presenting progressive neck bulging in inspection during physical examination. This is an easy and cheap method of suspicion that can be used by health professionals.

Resumo

Os schwannomas são, em sua maioria, tumores benignos e solitários originados das células de Schwann. Macroscopicamente, aparecem como massas arredondadas com superfície lisa. Os schwannomas raramente afetam o plexo braquial, sendo responsáveis por aproximadamente 5% de todos os casos de schwannomas, representando um desafio para os cirurgiões. O objetivo deste artigo é descrever um relato de caso de schwannoma do plexo braquial em um hospital localizado no Nordeste do Brasil. Paciente do sexo masculino, 49 anos, apresentava dor decorrente do aparecimento de abaulamento cervical anterior esquerdo com crescimento progressivo. Ao exame físico, apresentava pontuação 3 do Medical Research Council (MRC) na abdução do braço esquerdo e parestesia na lateral do antebraço e braço esquerdo. Na ressonância magnética (RM), a lesão surge da junção C4-C5, medindo $5,9 \times 5,4 \times 5,5$ cm e a eletroneuromiografia mostrou envolvimento pré-ganglionar crônico de C5 a C7 bilateralmente. Foi realizada cervicotomia esquerda com incisão horizontal ao nível da eminência laríngea. Lesões do plexo braquial com crescimento progressivo tendem a ser tratadas cirurgicamente. Essa hipótese diagnóstica deve ser considerada em pacientes que apresentam abaulamento progressivo do pescoço na inspeção durante o exame físico. Este é um método de suspeita fácil e barato que pode ser utilizado por profissionais de saúde.

Palavras-chave

- ▶ Plexo Braquial
- ▶ Tumores de Bainha Neural
- ▶ Schwannoma

Introduction

Schwannomas are mostly benign and solitary tumors that originate from Schwann cells.¹ They are more frequent in adults over 40 and more frequent in females.^{2,3} They are usually found on the peripheral nerves of the upper limbs and neck. They can also reach the spinal nerve roots, being extra axial and extradural masses that grow through the intervertebral foramen, compressing the nerves.⁴ Macroscopically, they appear as rounded masses with a smooth surface.⁵

Schwannomas rarely affect the brachial plexus, accounting for approximately 5% of all cases of schwannomas.^{6,7} Since brachial plexus schwannomas are a rare entity and, due to the brachial plexus anatomic complexity, schwannomas in this region present a challenge for surgeons. The objective of this article is to describe a case report of a brachial plexus schwannoma in a hospital located in the Northeast of Brazil.

Case Report

We present the case of a 49-year-old male patient who complained of pain resulting from the appearance of a left anterior cervical bulging one and a half years ago, with progressive growth (►Fig. 1). On physical examination, he had a Medical Research Council (MRC) score of 3 in left arm abduction and paresthesia in the left lateral forearm and arm. He denied other motor or sensory alterations. On ultrasonography (US), there were no changes in vessel caliber. On magnetic resonance imaging (MRI), the lesion arises from the C4-C5 junction, measuring $5.9 \times 5.4 \times 5.5$ cm (►Fig. 2).

Electroneuromyography showed chronic pre-ganglionic involvement of C5 to C7 bilaterally. Fine-needle aspiration biopsy (FNAB) revealed the proliferation of spindle cells without atypia, suggestive of a benign mesenchymal neoplasm, schwannoma (neurilemoma).

With the patient in dorsal decubitus, a left cervicotomy was performed with a horizontal incision at the level of the laryngeal eminence. The platysma muscle was incised, and the carotid sheath was exposed. The carotid sheath was then bluntly dissected to isolate the vascular complex with the vagus nerve. The phrenic nerve from the lesion on the left was identified and isolated using neurostimulation. Brachial plexus microsurgery was performed with neurolysis exploration and interfascicular grafts. Tumor lesions were debulked for suture reduction, peripheral nerve tumors were excised, and the surgical site was closed by planes with reinsertion of the sternocleidomastoid muscle (►Figs. 3 and 4).



Fig. 1 Left anterior cervical bulging with progressive growth.

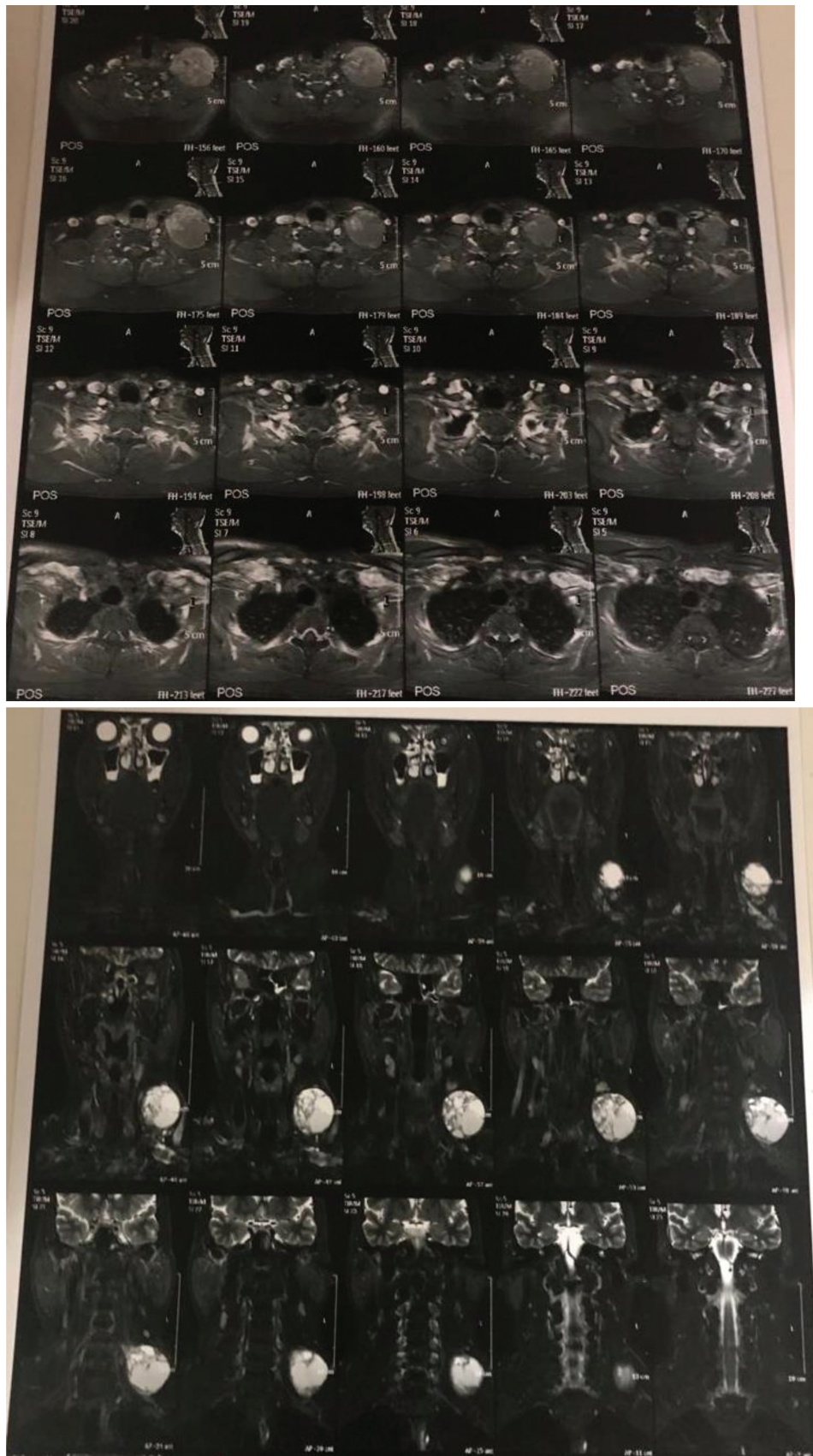


Fig. 2 Magnetic Resonance Imaging showing left brachial plexus schwannoma in axial view (a) and coronal view (b).

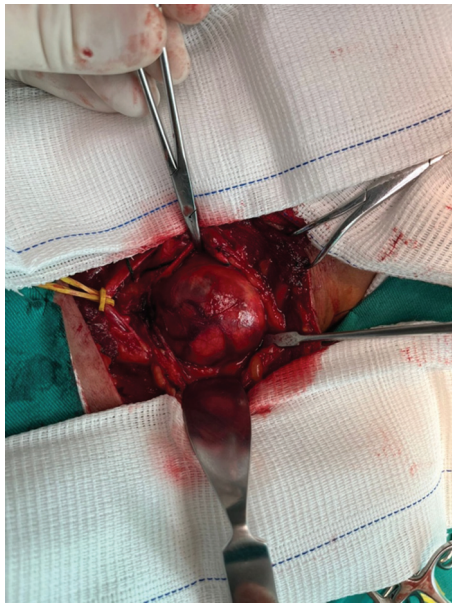


Fig. 3 Intraoperative view of left brachial plexus schwannoma.

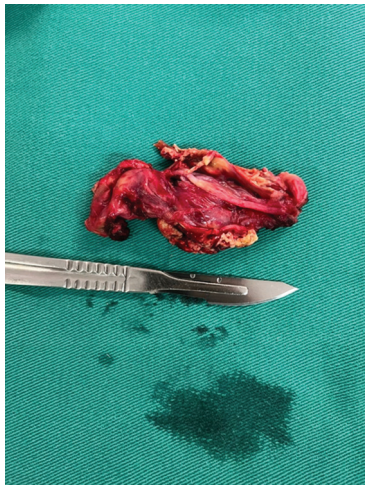


Fig. 4 Brachial plexus schwannoma after complete resection.

In macroscopy, the material exhibited irregular tissue formation, with a brownish to tan color, and elastic consistency, measuring $3.8 \times 3.2 \times 2.0$ cm and weighing 67g. Other irregular tissue fragments were also removed, measuring $2.2 \times 1.5 \times 0.8$ cm, and the aggregate measured 5.0×4.5 cm. Microscopically, compatibility with Grade 1 WHO Schwannoma was observed, with signs of hemorrhage at various stages of resolution.

In the postoperative period, the patient-maintained muscle weakness, particularly in arm abduction, scoring 3 on the MRC scale. Six months after surgery, the patient reported persistent intermittent pain, described as squeezing and burning with paresthesia, radiating to the arm. He reported peaks of intensity and variations in thermal sensation in the left arm and forearm. He denied limitation of movement. He was taking 75mg of pregabalin and 3mg of

eszopiclone and was referred to improvement of these sensory alterations.

Discussion

Tumors of the brachial plexus are very rare. Schwannoma is one of the types of brachial plexus tumor characterized as a benign primary neoplasm. Considering it is a subtype of brachial plexus tumor, it is an even rarer lesion in this topography.^{6,8,9} The clinical presentation of brachial plexus tumors may vary according to their location, extension, neural elements involved, and pathology.²

Symptoms can be caused by direct nerve invasion, infiltration of surrounding tissues, or local mass effect.² Schwannomas in this region usually present as a local slow-growing mass but in some cases present with symptoms of nerve compression.¹⁰ According to Go *et al.* the most common presenting symptom was growing mass (95.4%), sensory deficit (54.5%), motor deficit (40.9%), direct tenderness and pain (27.2%), followed by included radiating pain (22.7%).²

The surgical approach for treatment depends on where the tumor is located. Brachial plexus lesions with progressive growth tend to be managed surgically. Lesions involving roots and trunks are commonly treated with an anterior supraclavicular approach as observed in the present case. The lower tumors involving cords and terminal nerves require an anterior infraclavicular approach, with or without a section of the clavicle.²

Conclusion

Brachial plexus schwannoma is a rare benign tumor. This diagnosis hypothesis should be considered in patients presenting progressive neck bulging in inspection during physical examination. This is an easy and cheap method of suspicion that can be used by health professionals. MRI is one of the most common supplementary radiological exams used to diagnose brachial plexus tumors. Patients with progressive neck lesions and cervical root involvements tend to be managed surgically with a supraclavicular approach, as shown in this case.

Conflict of Interest

None.

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