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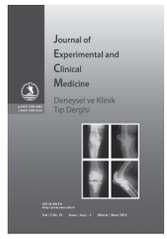

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Cystic schwannoma of the right brachial plexus causing thoracic outlet syndrome

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ABSTRACT

A rare case of a schwannoma of the right brachial plexus presenting with a cystic lesion is presented here. A 36-year-old man was admitted to our department with numbness, pain and progressive, lingering paralysis in the right arm. The MRI showed a cystic lesion with a diameter of 4 cm, in the right brachial plexus. In the ensuing electromyographic studies, the lesion was determined to cause thoracic outlet syndrome. The patient was prepared for surgery and the lesion was totally removed. After the surgical exploration, a histopathological examination was conducted and a schwannoma originating from the brachial plexus was diagnosed. There were no postoperative signs of neurological disorders. After ten month, the patient was better and there was no recurrence. It has been noted that a schwannoma sometimes accompanies a cystic lesion. However, a schwannoma of the brachial plexus manifesting as a cystic lesion leading to thoracic outlet syndrome is very rare. To our knowledge, this is the first report of a schwannoma originating from the right brachial plexus causing thoracic outlet syndrome.
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1. Introduction

Schwannomas account for 8% of intracranial tumours and represent about 30% of primary spinal tumours. These tumours can occur along the acoustic nerve as well as the olfactory and optic nerves in the cranial cavity. In the peripheral nerves they can occur as sporadic tumours or as part of the familial tumour syndromes neurofibromatosis-1 and neurofibromatosis-2 (De Angelis et al., 2002). Schwannomas are benign neoplasm of the peripheral nerves originating in Schwann cells and are mostly solid or heterogeneous solids (Karataş et al., 2007; Langner et al., 2007). Schwannomas originating from the brachial plexus are rare, and pure cystic schwannomas have rarely been reported (Chen et al., 2008). Additionally, thoracic outlet syndrome caused by a schwannoma is also very rare (McAllister et al., 1989; Hornick et al., 1991; Atasoy, 1997; Nakazawa et al., 2005). Therefore, we report the first case of a schwannoma originating from the right brachial plexus manifesting as a cystic lesion leading to thoracic outlet syndrome.

2. Case

A 36-year-old man was admitted to our department with numbness, pain, and progressive, lingering paralysis in the right arm. According to case history, a lipoma excision had been performed twice on other extremities. His physical examination was normal. However, the neurological examination revealed monoparesis (4/5) and hypoesthesia at the C5, C6, C7, and C8 dermatomes. There were no signs of neurofibromatosis. In the first radiologic examinations, his cervical pathology was not determined. We used magnetic resonance imaging (MRI) for the next exam since he had lesions similar to lipomas in other regions of his body. The MRI showed a cystic lesion, with a diameter of 4 cm, in the right brachial plexus (Fig. 1A, B and C). In the ensuing electromyographic studies, the lesion was determined to cause thoracic outlet syndrome. Therefore, the patient was prepared for surgery.

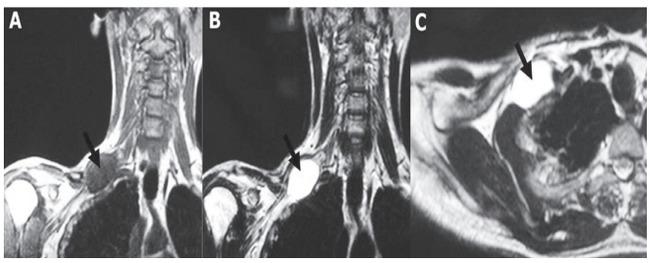

Fig. 1. T1-weighted coronal MRI (A), T2-weighted coronal MRI (B) and T2-weighted transverse MRI (C) show a cystic lesion (arrows) with a diameter of 4 cm, in the right brachial plexus

The patient was operated in the supine position under general anaesthesia. During the surgical operation, the anterior scalene muscle was divided after the subclavicular skin incision and subcutaneous tissue were dissected. A yellowish-gray lesion was observed to be pressing down on the underside of the brachial plexus (Fig. 2).

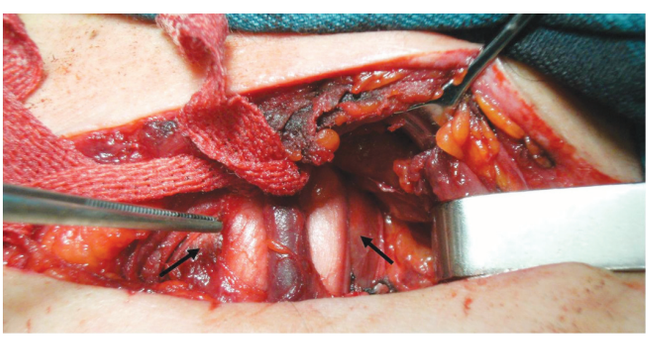

Fig. 2. Intraoperative situs showing the cystic lesion (arrows) and brachial plexus

It was very difficult to dissect the lesion from the plexus and vessels because it was not possible to determine the borders limit of the lesion inferior and superior. We removed a small, posterior portion of the lesion. The membrane wall of the removed lesion was excised (Fig. 3A).

Two sections of the lesion were sent for histopathological examination. During the surgical operation, an intraoperative aspiration biopsy was done to reduce the pressure effect of the lesion rather than for a diagnosis. The necessary measures were used to aspirate the lesion. Approximately 10cc of yellow fluid was extracted by means of intraoperative aspiration (Fig. 3B).

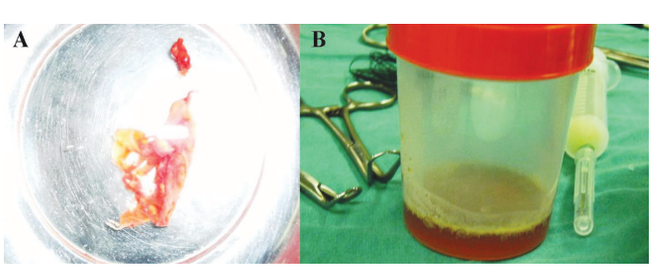

Fig. 3. Extracted pathological specimens (A) and intraoperative aspirated yellow fluid (B)

At the histopathological examination different-sized Schwann cells with a hyperchromatic large nucleus and distinctive eosinophilic nucleolus in patches that formed hypocellular and myxoid areas were observed. Therefore, a diagnosis of a schwannoma originating from the right brachial plexus was confirmed (Fig. 4).

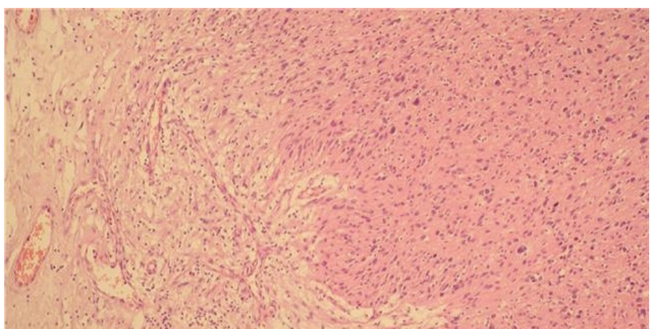

Fig. 4. Histopathologically, a schwannoma consists of different-sized Schwann cells, which had a hyperchromatic large nucleus and distinctive eosinophilic nucleolus in patches that formed hypocellular and myxoid areas.

Postoperatively, the patient reported pain relief and showed improved motor function in the right arm. He was better without recurrence ten months later.

3. Discussion

Neurogenic tumors of the brachial plexus are rare and most of them are benign (De Angelis et al., 2002). Schwannomas (neurilemmomas) are the most frequent and largest category of benign nerve tumors (Kim et al., 2006). They are mostly solid or heterogeneous, slow-growing tumors that are most commonly seen in the cervical and thoracolumbar junction region (Karataş et al., 2007). Schwannomas in the brachial plexus are known very rare (Chen et al., 2008). Recently, a case was reported as a schwannoma of the brachial plexus presenting as an enlarging cystic mass (Chen et al., 2008). In this case, a 52-year-old woman was reported to have a rapidly enlarging cystic lesion in the left pectoralis minor space, and the lesion was a schwannoma originating from the fascicles of the brachial plexus. In our case, a 36-year-old man is reported with a cystic lesion in the right brachial plexus.

In addition, thoracic outlet syndrome caused by a schwannoma is also very rare (McAllister et al., 1989; Hornick et al., 1991; Atasoy, 1997; Nakazawa et al. 2005). The first case report of thoracic outlet compression syndrome caused by a schwannoma in the T1 nerve root was presented by McAllister et al. (1989). Later, a case of neurilemmoma originating from the T1 nerve root in the left superior mediastinum as the cause of combined thoracic outlet syndrome and Horner's syndrome was reported by Hornic et al. (1991). Atasoy et al., (1997) reported a case with a schwannoma of the C7 nerve root causing thoracic outlet syndrome. Recently, Nakazawa et al. (2005) reported a case of thoracic outlet syndrome caused by a neurilemmoma in the pectoralis minor space. In the presented case, we report a schwannoma of the right brachial plexus causing thoracic outlet syndrome.

However, there are some differences between these cases and our case. For example, Atasoy, (1997) reported a patient, a 30-year-old woman with numbness on the radial side of the left hand, left arm tiredness, nocturnal pain in the left forearm and pain in the left elbow, shoulder and neck. Nakaza-

wa et al. (2005) reported a 34-year-old man who presented with paraesthesia of the palm, middle and ring fingers of the right hand. However, our patient was a 36-year-old man with numbness, pain, and progressive, lingering paralysis in the right arm.

In this case report, a rare case of a schwannoma of the right brachial plexus presenting with a cystic lesion has been presented. This case report illustrates a schwannoma as a cause of thoracic outlet syndrome originating from brachial plexus.

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