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Case Report

Proximal median neuropathy due to schwannoma: Two case reports

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ABSTRACT

Although schwannoma is the most common benign tumor of the peripheral nervous system, median nerve schwannomas are extremely rare. These cases are usually silent and may get misdiagnosed. In this article, we presented two cases of schwannoma. They presented with normal electroneuromyography in their routine evaluation, and the provisional clinical diagnosis was median neuropathy. After examining the upper elbow segment, the definitive diagnosis was proximal median neuropathy, which was histopathologically confirmed.

Keywords: Proximal median neuropathy, schwannoma, solitary lesions.

Schwannomas, which develop from Schwann cells, are the most common benign tumors of the peripheral nervous system, comprising 90% of all peripheral neural tumors.[1] Schwannomas are usually palpable, painless, and solitary lesions.[2] Multiple schwannomas can be observed in neurofibromatosis type 1 and familial neurofibromatosis. Schwannomas frequently occur in the ulnar and peroneal nerves. Median nerve schwannomas are observed in less than 7% of all schwannomas.[2] In this article, we present two cases of schwannoma causing proximal median neuropathy.

CASE REPORT

Case 1- A 49-year-old male patient with a history of numbness and weakness in the left thumb for three months was referred to our clinic with a prediagnosis of carpal tunnel syndrome. The median nerve was found to be normal in the electroneuromyography (ENMG) performed in another center. The neurological examination revealed a left thumb abduction of 3-4/5 and hypoesthesia in the first three fingers of the left hand. In our ENMG evaluation, the motor conduction of the left median nerve was found to be normal at the wrist and elbow. The patient's clinical findings led us to examine the motor conduction of the median nerve at the level above the elbow, which was not a routine methodology. Stimulus intensity was set to 50 mA and duration to 0.5 msec for a supramaximal response. We detected a partial conduction block above the elbow (axilla) in the left median nerve motor conduction of the patient (Figure 1). In the needle study, partial denervation was detected in abductor pollicis brevis, flexor pollicis longus, and pronator teres muscles, while extensor indicis and first dorsal interosseous muscles were found to be normal. These findings were consistent with a demyelinating lesion in the elbow-axilla segment of the left median nerve.

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A mass lesion was detected in the median nerve tracing on magnetic resonance imaging (MRI) and surgically excised (Figure 2). The biopsy result was compatible with schwannoma.

Case 2- A 36-year-old female patient applied to our clinic after she had noticed pain on the inner surface of the arm above the right elbow and a palpable swelling in the same area about one week ago. Neurological examination revealed a palpable swelling above the elbow, pain when touched, and hypoesthesia in the right first three fingers. Tinel's sign was positive when the mass was tapped. In the ENMG examination of the patient, a marked slowdown in the motor conduction rate of the right median nerve was observed in the upper-elbow-axilla segment. This finding was considered the result of a demyelinating lesion of the right median nerve at the supra-elbow level. On MRI, a well-circumscribed enhancing lesion was detected on the inner surface of the arm above the right elbow (Figure 3). Surgical excision was performed, and it was reported as compatible with schwannoma in the histopathological examination.

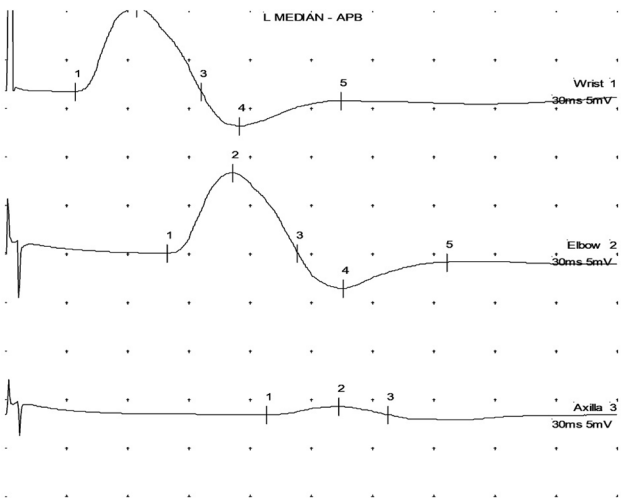

Figure 1. Median nerve motor conduction study. While a normal response was obtained with wrist and elbow stimulation, the motor amplitude of compound muscle action potential decreased with upper elbow stimulation, as seen in the third trace (partial conduction block).

Figure 2. Postexcision schwannoma.

DISCUSSION

Schwannomas are solitary tumors of the peripheral nervous system with different sizes. Lesions that are difficult to palpate on physical examination may be unnoticed. Symptoms are variable, ranging from asymptomatic to motor deficit. The diagnosis is made based on the patient's complaints, physical examination, and imaging methods.[3] Although there was not any palpable lesion in our first case, clinical findings suggestive of median nerve lesion led us to expand our routine ENMG examination, and we could localize the median neuropathy at the supra-elbow level. The second case presented with median neuropathy symptoms accompanied by Tinel's sign above the elbow level and a palpable mass. We localized the lesion in the upper elbow segment by ENMG and confirmed it with imaging.

Schwannomas appear hyperintense on T2 sections and hypointense on T1 images on MRI. The histologic evaluation of these tumors reveals

Figure 3. Schwannoma (arrow) in the median nerve trace showing enhancement in coronal sections on T2-weighted magnetic resonance imaging.

Atoni A and Atoni B cells, which stain with the S100 protein.[3] Histopathological examination of both our cases showed positive staining with the S100 protein. Schwannomas may be asymptomatic or painful with positive Tinel's sign or Tinel-like sensory changes.[4] Our second case complained particularly of pain in lack of an apparent weakening, with a positive Tinel's sign.

Benign tumors have a slow growth pattern, so they rarely cause motor dysfunction. Therefore, while schwannomas rarely cause motor dysfunction, malignancy should be considered in lesions that cause motor dysfunction.[5] In our first case, motor dysfunction was also detected in muscles innervated by the median nerve. Schwannomas tend to be located in the head, neck, and often in the brachial plexus. Extremity involvement is less frequent. While the ulnar nerve is usually involved in the upper extremity, median nerve involvement is rare.[3]

Despite being solitary, multiple schwannomas have also been reported in the literature. Multiple schwannomas present with a frequency of 1%. While multiple schwannomas are seen in the median and ulnar nerves of the upper extremity, they are rare in the radial nerve.[3] The recurrence rate of solitary schwannomas after surgical excision is low, and they are usually curable.[2]

Another feature of our cases is their supra-elbow localization and presentation with proximal median neuropathy. Proximal neuropathies of the median nerve around the elbow often result from the compression in the pronator teres and lacertus fibrosus bicipitis muscles. Median neuropathy above the elbow is rare, constituting 0.4% of all median nerve neuropathies. Proximal median neuropathies frequently originate from traumas, and median neuropathies due to schwannomas have been rarely reported. Compression with crutches, hematoma, and iatrogenic complications as a result of intervention to the brachial artery can be cited among other causes of proximal median neuropathy.[6] As routine ENMG examination of the median nerve is limited up to the elbow, if the examination up to this segment is normal, but median neuropathy is still clinically considered, the nerve examination should be extended up to the axilla. In case of an abnormality, the cause should be investigated with imaging. In both our cases, although nerve examination was normal in routine examination, an abnormality was observed in the upper elbow segment, and a mass lesion causing neuropathy was revealed by imaging.

Patient Consent for Publication: A written informed consent was obtained from each patient.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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