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Case Report

A Rare Case of Deep Peroneal Nerve Palsy Resulting from Compression Neuropathy by Intra-Neural Synovial Cyst- Case Report

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Abstract

Introduction: Compression neuropathy of the peripheral nerves due to synovial cysts are a rare occurrence.

Case Summary: This article presents the clinical and radiological features of deep peroneal nerve palsy resulting from compression neuropathy due to synovial cyst presenting with complete foot drop along with the intra-operative findings and post surgery recovery following excision and neurolysis in a 52 years old male individual.

Discussion: Peripheral nerve compression neuropathy resulting from focal entrapment by synovial cysts is uncommon. Surgical excision has excellent outcome in these cases.

Conclusion: Surgical treatment should be considered early in the course of management in cases of compression neuropathy presenting with focal deficit.

Keywords: Peroneal Nerve; Palsy; Neuropathy; Intra-Neural Synovial Cyst

Introduction

Synovial cysts are common soft tissue tumours. However compression neuropathy resulting from focal entrapment by synovial cysts are a rare occurrence. The common peroneal nerve is at increased risk for mechanical constriction as it courses around the proximal end of the fibula. In this report I present a case of intra-neural synovial cyst of the common peroneal nerve causing focal entrapment and compression neuropathy resulting in acute onset foot drop in a 52 years old male. Few cases have been described in literature where synovial cysts presenting with similar clinical features were treated with surgical excision and decompression with favourable outcome [1-3]. Sultan first reported a case of compression neuropathy of the peroneal nerve in 1921 [4]. The patient in the present case was evaluated clinically and with appropriate investigations to arrive at the most probable diagnosis. He underwent exploration and subsequent excision of the cyst with decompression and neurolysis of the common and deep peroneal nerves. He had an excellent clinical outcome following surgery with near complete recovery of power and return to his usual activities at 06 months follow up.

Case Summary

A 52 years old male serving personnel, driver by trade presented to the hospital with complaints of acute onset pain over the lateral aspect of his right upper leg followed by ipsilateral foot drop. There was no history of preceding trauma. He also did not notice any swelling or altered skin condition. He was a known case of type 2 diabetes mellitus and primary hypertension and was on oral hypoglycaemic drugs and antihypertensives at presentation with adequate control of blood sugar and blood pressure. There was no evidence of any target organ damage.

Clinical evaluation of the patient revealed a high stepping gait with complete foot drop on the right with the ankle dorsiflexors having power 0/5 (MRC grade). There was also sensory loss in the first dorsal web space. There was however no sensory or motor loss in the distribution of the superficial peroneal nerve. There was tenderness on deep pressure over the region of the proximal fibula. However there was no obvious palpable mass or irregularity and

the overlying skin was unremarkable. Examination of the remaining limb did not reveal any other abnormality. With these findings a diagnosis of deep peroneal nerve palsy was made and the etiology remained to be established.

Plain radiograph of the knee and proximal leg did not reveal any bony lesion. USG reported a cystic lesion abutting the right CPN and deep peroneal nerve. MRI was performed for better delineation of the lesion. MRI was reported as a lobulated cystic lesion surrounding the CPN extending along its recurrent articular branch coursing between fibula and peroneus longus muscle near junction of fibular head and neck with CPN superior to the cyst showing signal alteration with thickening, likely to represent a synovial cyst causing compression neuropathy. NCS findings suggested RT CPN neuropathy.

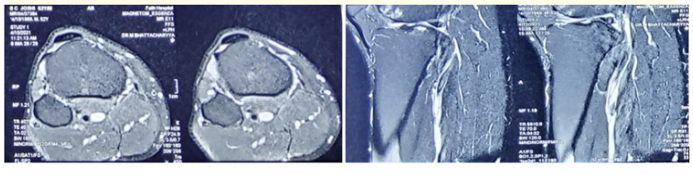

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Figure 1: (a,b): Preoperative MRI views showing the common and deep peroneal nerves covered by cyst.

In view of the neurological deficit and investigations suggesting a compressive etiology, it was decided to perform surgical exploration and decompression of the CPN. The patient was taken up for surgery after all necessary pre-operative investigations and pre-anaesthetic check up. He was placed in a supine position with a bolster under the ipsilateral hip to internally rotate the limb. Torniquet was not used keeping in view the existing neuropathy. A linear longitudinal incision was made along the posterior border of the fibular head and neck distally and extended proximally along the biceps femoris tendon. The CPN was identified after careful dissection and was found to be extensively covered with cyst in all the visualized extent. The CPN was mobilized by releasing the adherent fibres of the peroneus longus and neurolysis was carried out distally to completely visualize the bifurcation of the CPN and the superficial and deep branches. The cyst was found to extend along the bifurcation to involve the deep peroneal branch till it left the lateral compartment through the peroneus longus. After careful dissection and mobilization a epineurotomy was performed and clear gelatinous fluid was expressed from the lesion. The cyst was carefully resected out in entire extent and the surgical field was thoroughly washed with normal saline.

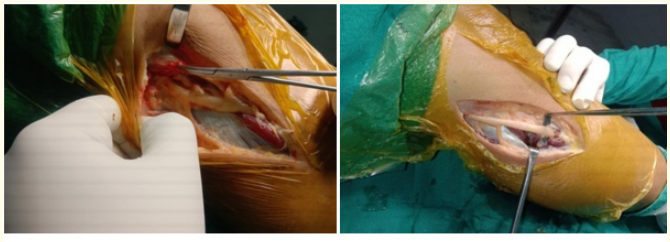

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Figure 2: Intra-op images showing the common and deep peroneal nerves covered by cyst (a) and after dissection of the cyst and neurolysis (b).

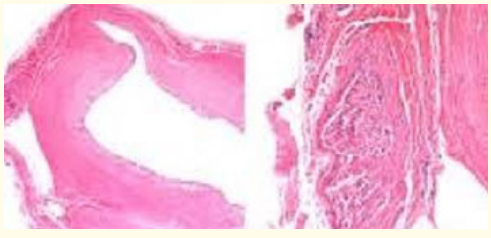

Figure 3: Histopathologic view.

The wound was closed with absorbable sutures after ensuring complete hemostasis. The cyst fluid and bits of tissue was sent for culture and sensitivity testing which did not reveal any infection after incubation. Histopathological examination revealed features of intra-neural synovial cyst. Post operatively the patient was encouraged to apply foot drop splint and carry out passive range of motion exercises. Follow up at 06 weeks post operatively revealed partial return of sensation over first dorsal web space with flicker of movements of the toes. Subsequently the patient was asked to return at 06 months with advice to continue foot drop splint and passive ROM exercises. At 06 months post-operatively he had complete recovery of sensation with a power 4/5 (MRC grade) of the ankle dorsiflexors. He was able to return to his usual activities and drive a heavy vehicle.

Discussion

The common peroneal nerve arises in the popliteal fossa from the sciatic nerve. It then passes through the origin of the peroneus longus muscle at the level of the fibular neck and then divides into the superficial and deep peroneal branches. It is vulnerable to injury both from external forces as well as focal entrapment by space occupying lesions. Injury by external forces are by far the commonest cause of CPN neuropathy. Compression neuropathy due to focal

entrapment is relatively rare and more so is due to synovial cysts. A detailed history followed by thorough examination will help in arriving at the clinical diagnosis. The pathology can be ascertained with excellent accuracy by radiological investigations in the form of plain radiographs, ultrasonography and MRI [5-7]. MRI is highly sensitive and specific for delineation of soft tissue SOL and also of immense benefit for pre-operative planning. Once the diagnosis is established surgical decompression should be planned early in the face of neurological deficit.

Conclusion

Acute onset focal neurological deficit in the form of paresis can have a wide range of differential diagnoses. Once a definitive diagnosis is reached after clinical examination and appropriate investigations it is necessary to institute adequate treatment for a favorable outcome. Compression neuropathy due to SOL can be adequately managed by early surgical decompression with excellent results as evident in the present case.

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