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INTRAMUSCULAR LIPOMA CAUSING POSTERIOR INTEROSSEOUS NERVE PALSY: A CASE REPORT

Radio-Diagnosis

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ABSTRACT

Posterior interosseous nerve (PIN) is an uncommon entrapment neuropathy of the radial nerve that typically presents with painless finger drop and wrist extension weakness, among its rare causes is compression by soft tissue tumours such as intramuscular lipomas. We report a case of a 49-year-old female presenting with continuous dull aching pain in her right proximal forearm shortly followed by progressive weakness of her fingers and wrist extension. Magnetic Resonance Imaging (MRI) revealed a well- defined intramuscular lipoma within the supinator muscle compressing the PIN. Surgical excision led to significant neurological recovery. Intramuscular lipomas, although benign, can cause compressive neuropathies such as PIN palsy. High-resolution MRI plays a crucial role in diagnosis, and timely surgical intervention can lead to excellent functional outcomes.

KEYWORDS

Posterior Interosseous Nerve, Intramuscular Lipoma, Radial Nerve Palsy, Soft Tissue Tumour

INTRODUCTION

The posterior interosseous nerve (PIN), a deep branch of the radial nerve, is susceptible to compression at various anatomical sites, particularly as it passes through the supinator muscle at the arcade of frohse. PIN palsy typically manifests as motor weakness without sensory deficits. while entrapment is commonly attributes to fibrous bands or trauma, compressive lesions such as ganglion cysts, lipomas, and neurogenic tumours are rare but significant causes. Intramuscular lipomas are exceedingly uncommon etiologies for PIN palsy. We present a case of PIN palsy secondary to an intramuscular lipoma within the supinator muscle and discuss its clinical and radiological features, differential diagnosis and management.

Case presentation.

A 49-year-old right-handed woman presented with a three-month history of progressive weakness followed by complete loss of extension of her right middle and ring fingers and was associated dull aching pain in the proximal forearm. She denied trauma or any sensory disturbances. There was no significant past medical or surgical history. Physical examination demonstrated a palpable mass in the proximal right forearm. There was absence of independent extension of the right middle and ring finger. Extension of the remaining right digits were weak but intact. She also exhibited slight radial deviation of her right wrist when compared to the left. No sensory deficits were noted over the radial nerve distribution.

Electrodiagnostic studies demonstrated reduced motor conduction velocity across the radial tunnel and subacute to chronic denervation changes in the extensor digitorum communis. the sensory nerve conduction was normal.

A non-contrast MRI of the right forearm showed a 2 x 1.8 x 1.8 cm, well circumscribed, homogeneously hyperintense lesion on T 1 weighted and T2 weighted images within the supinator muscle, isointense to the subcutaneous fat and suppressed on fat- saturated sequences, consistent with a lipoma [Figure A and B]. The lesion was causing compression of the PIN at the level of arcade of frohse with T2 hyperintense denervation atrophy of the extensor digitorum, extensor carpi ulnaris, extensor digiti minimi and abductor policis longus muscles [Figure C].

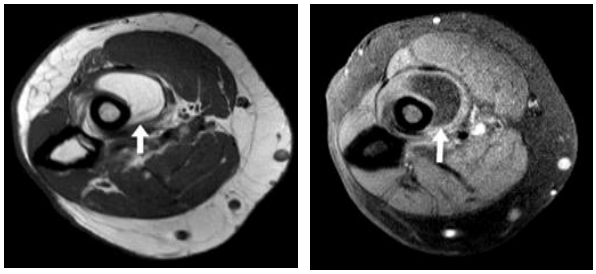

Figure A, B: Axial T1 weighted and T2 fat saturated magnetic resonance images at the level of right proximal forearm demonstrating a well-defined hyperintense lesion (white arrows) within the supinator muscle showing loss of signal on fat saturated image, indicative of an intramuscular lipoma.

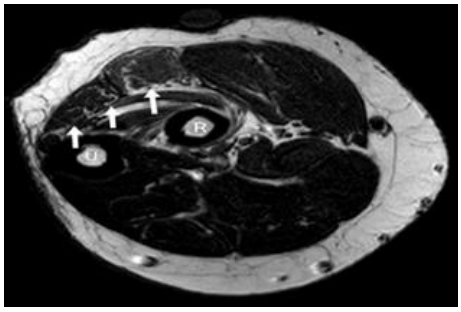

Figure C: Axial T2 weighted magnetic resonance image at the level of right proximal forearm showing T2 hyperintense denervation atrophy of the extensor carpi ulnaris, extensor digiti minimi and extensor digitorum muscles (white arrows medial to lateral). U=Ulna, R= Radius

Surgical excision of the mass was done. Intraoperatively the mass was identified within the supinator muscle, enveloping but not infiltrating the PIN. Complete excision was achieved without nerve damage. Histopathology confirmed mature adipose tissue with no evidence of malignancy.

Postoperative course was uneventful. At two week follow up, the patient showed significant improvement in motor function of her right middle and little finger.

DISCUSSION

Intramuscular lipomas are rare, accounting for about 1% of all benign soft tissue tumours that maybe encountered within the proximal forearm musculature, notably within or adjacent to the supinator muscle compromising the posterior interosseous branch of the radial nerve [1-3].

PIN palsy is most commonly attributed to compressive neuropathies, with the radial tunnel -particularly the arcade of frohse (proximal edge of the supinator muscle) being the frequent site of entrapment.[4] Among the spectrum of compressive etiologies, space occupying lesions such as ganglion cysts, tumours of neural origin and inflammatory pathologies like rheumatoid synovitis are notable [5-7].

Patients with compressive PIN palsy typically present with a slowly progressing weakness of digital extension. Wrist extension maybe preserved but typically occurs with radial deviation due to preserved extensor carpi radialis longus function as in our patient[2].Classically, sensory deficits or pain is absent as PIN is a purely motor branch of the

radial nerve, however pain may be a late symptom, usually in deep and very large lipomas and is most likely due to compression or expansion of the adjacent soft tissues or peripheral nerve involvement[1].The insidious onset in compressive etiologies, such as intramuscular lipomas, often leads to delayed diagnosis, especially in the absence of palpable mass or preceding trauma.

Diagnosis is usually made on the basis of clinical examination and radiological findings. MRI is the imaging method of choice for evaluating the presence and extent of any clinically suspicious mass as the causative factor of PIN palsy, as it allows excellent characterization soft tissue tumours and their relationship to neurovascular structures [8]. In our case, classical imaging appearance of a well circumscribed lesion showing signal characteristics identical to subcutaneous fat on T1 and T2 weighted images helped narrow down the diagnosis. Fat suppression confirmed the lipomatous nature. Electrodiagnostic studies also provide useful information regarding the site of nerve involvement [9].

Early surgical decompression is the mainstay of treatment. Outcomes are favourable, particularly when the nerve is not infiltrated or severely fibrosed [10]. Delayed diagnosis may lead to irreversible motor deficits.

CONCLUSION

Intramuscular lipomas although rare, should be considered in the differential diagnosis of isolated PIN palsy, especially in painless progressive motor weakness. MRI is essential for accurate localization and characterization of the lesion. Timely surgical intervention can result in excellent neurological.

Conflicts of Interest

The authors reveal that they have no conflicts of interest and have received no funding for this work.

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