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Median Nerve Compression at the Axilla by an Infiltrating Coracobrachialis Muscle: An Unusual Cause of Early CRPS - A Case Report

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Abstract: ***Median nerve neuropathy is most frequently encountered at distal entrapment sites; proximal compression at the axillary level is uncommon and may present diagnostic challenges, particularly in patients with prior malignancy. We report a 66-year-old male with a history of completely treated non-Hodgkin lymphoma 5 years back, who presented with severe neuropathic pain initially started along the median nerve distribution and later spread to entire arm in glove & stocking pattern for four months, unresponsive to conservative pharmacotherapy. Clinical findings were consistent with early complex regional pain syndrome (CRPS) with vasomotor and trophic changes. Magnetic resonance imaging (MRI) of the brachial plexus demonstrated long-segment thickening of the median nerve with associated axillary lymphadenopathy, raising suspicion of infiltrative pathology. Surgical exploration revealed compression of the median nerve by an infiltrating coracobrachialis muscle, producing inflammatory nerve thickening. Surgical decompression was performed, followed by stellate ganglion block three weeks later for residual sympathetically maintained pain, resulting in complete symptom resolution. This case underscores the importance of comprehensive clinical and radiological evaluation before proceeding with interventional pain management and highlights the need to identify and correct structural pathology prior to sympathetic blockade.***

Keywords: Median nerve neuropathy, Proximal nerve compression, Coracobrachialis muscle, Complex regional pain syndrome, Stellate ganglion block

1. Introduction

Median nerve neuropathy most commonly results from distal compression, particularly at the carpal tunnel. Proximal involvement at the level of the arm or axilla is distinctly rare and may lead to diagnostic uncertainty. When nerve thickening is observed in individuals with a history of malignancy, the possibility of tumour recurrence, lymphomatous infiltration, or metastatic disease must be carefully excluded.

Complex Regional Pain Syndrome (CRPS) is a multifactorial pain disorder characterized by sensory abnormalities, vasomotor disturbances, sudomotor changes, and trophic alterations. It is frequently triggered by peripheral nerve injury and may significantly amplify pain beyond the degree of structural pathology. Early recognition and timely intervention are essential to prevent chronic disability.

We present a rare case of proximal median nerve compression caused by infiltration of the coracobrachialis muscle at the axilla, complicated by early CRPS, successfully managed through surgical decompression followed by sympathetic blockade.

2. Case Report

A 66-year-old male presented with a four-month history of progressive burning pain with VAS Score 9/10, paraesthesia, and hypersensitivity initially started along the median nerve distribution but later spread to entire right upper limb in glove and stocking pattern diagnostic of Complex Regional Pain Syndrome (CRPS) [1]. The pain was severe, persistent, and refractory to neuropathic medications including gabapentinoids and tricyclic antidepressants.

Clinical examination revealed marked hyperalgesia and allodynia, early trophic skin changes of right upper limb [2]. Motor function was preserved, though movements were limited due to pain. The patient's medical history was significant for Non-Hodgkin lymphoma treated with chemotherapy 5 years' back and Coronary artery disease under medical management.

In view of classical CRPS signs and symptoms stellate ganglion block was the choice of intervention to allay his pain, but given his history of Non-Hodgkin's Lymphoma, recurrent or infiltrative disease was considered and advised MRI Brachial plexus. MRI of the brachial plexus demonstrated: Diffuse long-segment thickening of the median nerve noted from the level of axilla till the mid arm for a length of ~85 to 90 mm, maximum thickness ~ 15 to 20mm, consistent with neurogenic tumour along with multiple prominent lymph nodes along right subclavian vein [4] (Fig 1). These findings raised suspicion of infiltrative neuropathy, inflammatory neuritis, or neoplastic involvement.

3. Surgical Findings and Management

In view of progressive symptoms and radiological findings, surgical exploration of the axilla was undertaken for diagnostic clarification and decompression. Intraoperatively, the median nerve was found to be compressed by an infiltrating coracobrachialis muscle [3]. The nerve appeared inflamed and thickened (Fig 2). Lymph node excision biopsy was performed to exclude oncologic recurrence. Careful decompression of the median nerve was carried out. Histopathological examination was suggestive of neural involvement by Chronic Lymphoproliferative Disorder (CPLD).

Postoperatively, the patient experienced partial relief of mechanical pain. However, features of sympathetically mediated pain persisted due to CRPS. Three weeks after surgery, a stellate ganglion block was administered [5].

Following the procedure, the patient reported satisfactory resolution of pain with VAS Score 2/10, with marked improvement in sensory hypersensitivity and trophic changes [6]. At follow-up of 1 month and three months, he remained pain free and referred to oncology department for chemotherapy to address the recurrence of malignancy.

4. Discussion

Proximal median nerve compression at the axilla is an uncommon clinical entity. While distal entrapment neuropathies are well described, axillary compression due to muscular anomalies or infiltration is rarely reported. In this case, coracobrachialis muscle infiltration produced sustained mechanical compression and secondary inflammatory changes within the nerve.

The presence of nerve thickening on imaging in a patient with previous malignancy presents a diagnostic dilemma. Differentiating between compressive neuropathy and infiltrative neoplastic disease is critical, as management strategies differ substantially. The patient developed early features of CRPS [1], likely secondary to persistent nociceptive input and neurogenic inflammation. CRPS is understood to involve peripheral sensitization, central sensitization, and sympathetic dysfunction [2]. Addressing the structural compression was essential to reduce ongoing neural insult. However, residual sympathetically mediated pain required additional intervention. Stellate ganglion block has demonstrated efficacy in managing sympathetically maintained pain and early CRPS. In this case, performing the block after correcting the underlying mechanical cause resulted in complete and sustained symptom relief.

This case highlights several important principles:

1) Proximal nerve compression should be considered in refractory median neuropathy.
2) Oncologic history necessitates careful exclusion of infiltrative disease.
3) Structural pathology must be addressed before initiating interventional pain procedures.
4) A multimodal, stepwise treatment strategy yields optimal outcomes.

5. Conclusion

Median nerve compression at the axillary level due to infiltrating coracobrachialis muscle is a rare but treatable condition. In patients presenting with neuropathic pain and early CRPS features, especially those with prior malignancy, thorough diagnostic evaluation is mandatory before jumping on to intervention. Surgical decompression followed by targeted sympathetic blockade can provide excellent clinical outcomes when appropriately sequenced. Premature interventional pain procedures without identifying structural causes may result in incomplete relief. We are able to identify the recurrence of infiltrative disorder which is the background pathology, thereby aiding in the comprehensive diagnosis and management of patient and not just addressing his pain.

References

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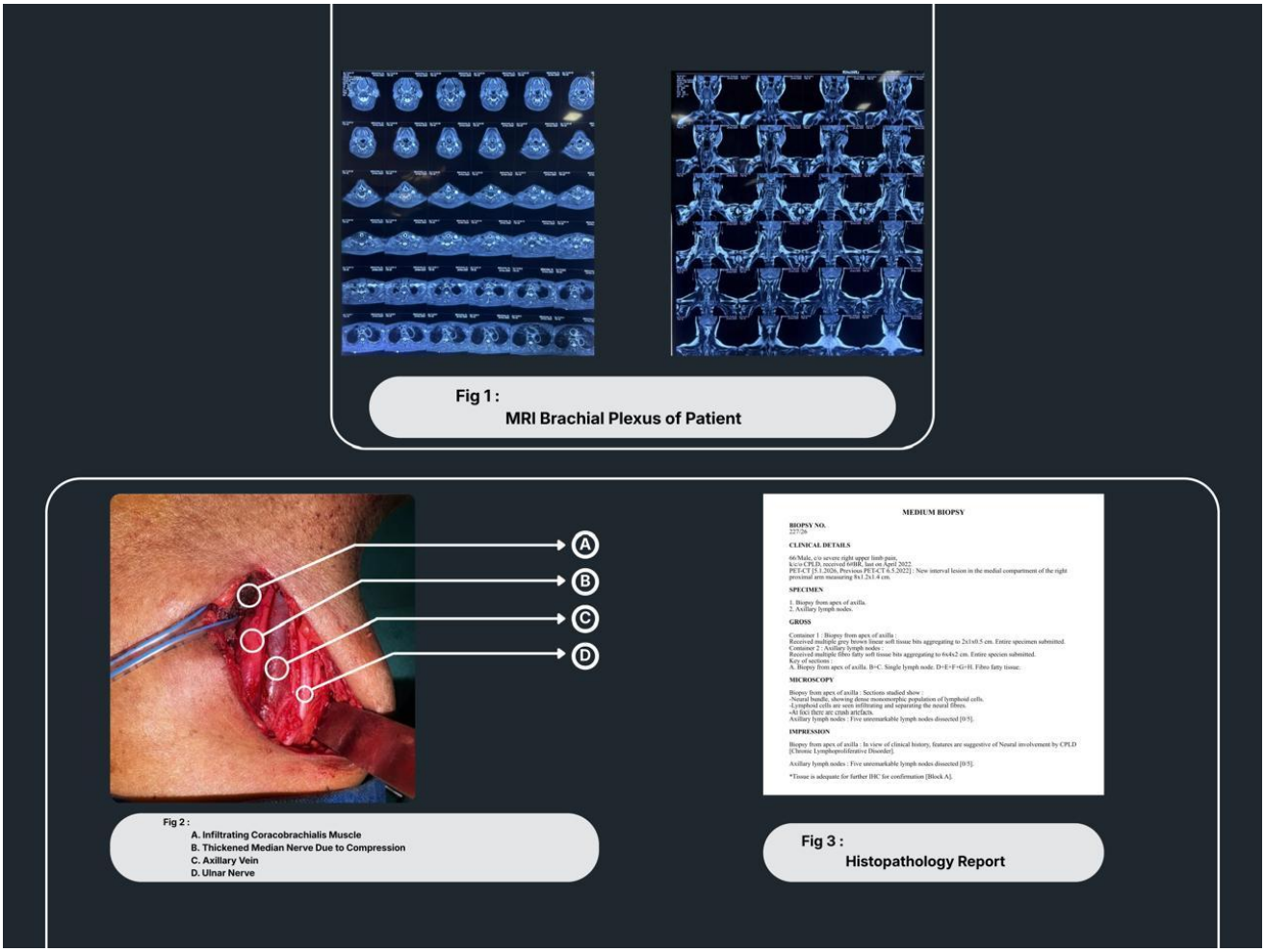

Fig 1 :
MRI Brachial Plexus of Patient

Fig 2 :
A. Infiltrating Coracobrachialis Muscle
B. Thickened Median Nerve Due to Compression
C. Axillary Vein
D. Ulnar Nerve

MEDIUM BIOPSY

BIOPSY NO.
227/26

CLINICAL DETAILS

66/Male, c/o severe right upper limb pain,
k/c/o CPLD, received 6/6HR, last on April 2022.
PET-CT [5.1.2026, Previous PET-CT 6.5.2022] : New interval lesion in the medial compartment of the right proximal arm measuring 8x1.2x1.4 cm.

SPECIMEN

1. Biopsy from apex of axilla.
2. Axillary lymph nodes.

GROSS

Container 1 : Biopsy from apex of axilla :
Received multiple grey brown linear soft tissue bits aggregating to 2x1x0.5 cm. Entire specimen submitted.
Container 2 : Axillary lymph nodes :
Received multiple fibro fatty soft tissue bits aggregating to 6x4x2 cm. Entire specien submitted.
Key of sections :
A. Biopsy from apex of axilla. B=C. Single lymph node. D=E+F+G+H. Fibro fatty tissue.

MICROSCOPY

Biopsy from apex of axilla : Sections studied show :
-Neural bundle, showing dense monomorphic population of lymphoid cells.
-Lymphoid cells are seen infiltrating and separating the neural fibers.
-At foci there are crush artefacts.
Axillary lymph nodes : Five unremarkable lymph nodes dissected [0/5].

IMPRESSION

Biopsy from apex of axilla : In view of clinical history, features are suggestive of Neural involvement by CPLD [Chronic Lymphoproliferative Disorder].

Axillary lymph nodes : Five unremarkable lymph nodes dissected [0/5].

*Tissue is adequate for further IHC for confirmation [Block A].

Fig 3 :
Histopathology Report