A CASE OF METASTATIC BRACHIAL PLEXOPATHY

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BACKGROUND

Brachial plexopathy is a complex clinical entity causing motor and sensory impairments in upper limb which may be due to trauma, radiation, tumour etc. Metastatic brachial plexopathy (MBP) is a rare cause of upper limb dysfunction.

CASE DETAILS

PRESENTING COMPLAINTS

A 60-year-old male presented with:
- Progressive pain in the right shoulder radiating down the arm for 20 days.
- Weakness in the right upper limb for 15 days.

PAST MEDICAL HISTORY

- No significant comorbidities or prior malignancy.
- No history of trauma or radiation exposure.

PERSONAL HISTORY

Chronic alcoholic and smoker since 15 years

CLINICAL EXAMINATION

GENERAL PHYSICL EXAMINATION

No constitutional symptoms such as fever,weight loss.
No palpable lymphadenopathy or organomegaly.

MOTOR DEFICITS:
- Weakness predominantly in the C5-T1 myotomal distribution:
  - Significant weakness in shoulder abduction, external rotation, and finger flexion, abduction, and thumb abduction.

SENSORY DEFICITS:
- Patchy loss of sensation in the lateral arm, forearm, and hand.

REFLEX CHANGES:
- Reduced biceps and supinator reflexes on the right side.

OTHER FEATURES:
- Positive Tinel's sign over the supraclavicular fossa.
- Limited range of motion in the right shoulder due to weakness.

ETIOLOGY

1. TRAUMATIC CAUSES- obstetric and non obsttric
2. INFLAMMATORY / IMMUNE-MEDIATED
Parsonage–Turner / Post-infectious / Sarcoidosis/ (CIDP) – localized form
3. NEOPLASTIC
Pancoast tumor (superior sulcus lung carcinoma)
Metastatic infiltration (e.g., breast, lymphoma, GI malignancy)
Primary nerve sheath tumors (schwannoma, neurofibroma, peripheral nerve sheath tumor)
Radiation-induced brachial plexopathy
4. COMPRESSIVE / ENTRAPMENT
Cervical rib or fibrous band (Thoracic outlet syndrome)
Postoperative hematoma or abscess
Aneurysm or subclavian artery thrombosis Shoulder dislocation with plexus stretch/compression
5. Metabolic / Toxic
Diabetic amyotrophy (diabetic radiculoplexopathy)
Uremic neuropathy involving plexus (rare)
6. Hereditary / Miscellaneous
Hereditary neuralgic amyotrophy (HNA)
Post-radiation fibrosis
Post-infectious immune plexopathy (e.g., after COVID-19, influenza, hepatitis E)

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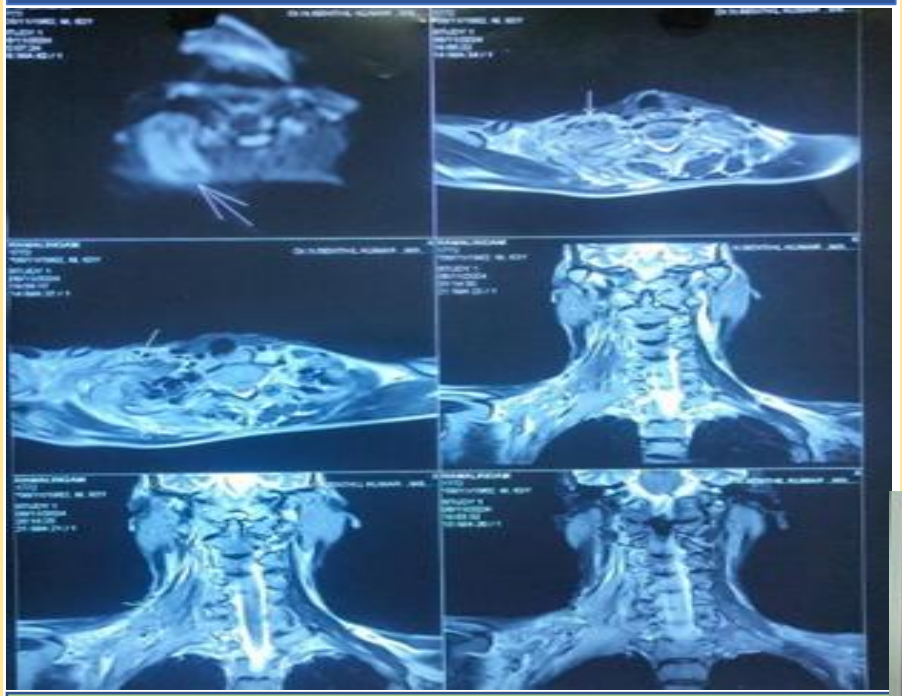
Blood investiogations
Hb: 11.8g% creat: 1.2 mg/dL
TC: 13,000/uL LFT : WNL
Plt: 1.9 Lakh/uL
CRP : +ve
ESR: 86/1 st hour

ELECTROPHYSIOLOGICAL STUDIES:
- Reduced compound muscle action potentials (CMAPs) in the right median, ulnar, radial, musculocutaneous, and suprascapular nerves.
- Normal nerve conduction velocity below the elbow, supporting brachial plexopathy localization.

CHEST XRAY
B/L minimal pleural effusion noted

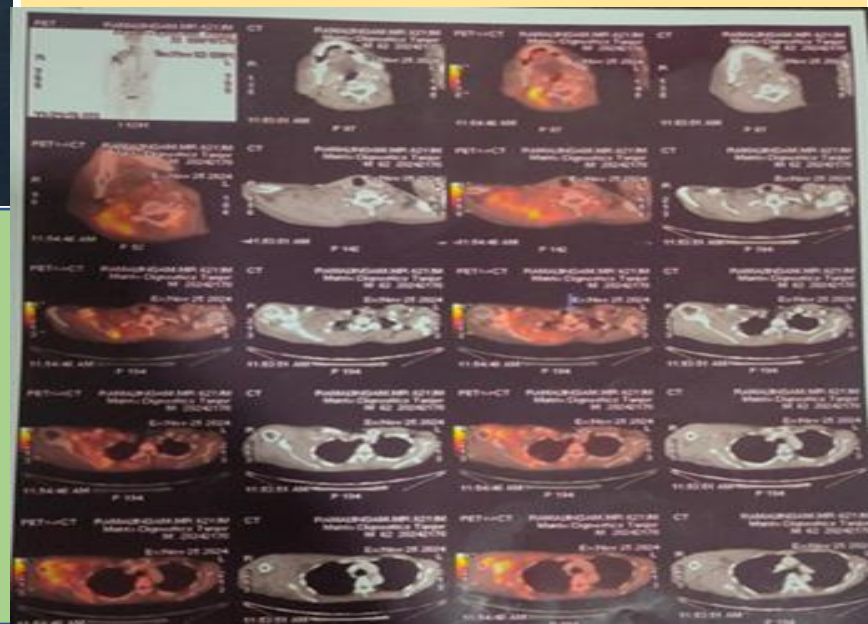
USG ABDOMEN AND PELVIS
Solid organs appeared normal
Minimal ascites

INVESTIGATIONS



MRI BRACHIAL PLEXUS
Edematous changes in the right neck and shoulder muscles without a focal enhancing lesion.
- Brachial plexus roots, trunks, and divisions appeared intact.
- Impression: Likely paraneoplastic etiology or metastatic infiltration.

FDG-avid, diffuse enhancing mass in the intermuscular and intramuscular plane of the right cervical and upper arm regions (SUV max 8.6), consistent with metastatic infiltration.
- Additional findings:
  - FDG-avid thickening in the cervical esophagus (SUV max 7.1).
  - Omental nodularities and diffuse stomach wall thickening.
  - Bilateral pleural effusion and abdominal ascites.
Differential Diagnosis:
-Neurolymphomatosis versus metastatic carcinoma.



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DISCUSSION

Metastatic brachial plexopathyaccounts for approximately 20-30% of brachial plexopathies. It typically presents with severe pain, followed by progressive weakness and sensory loss. Common primary malignancies associated with MBP include lung, breast, and gastrointestinal cancers.
In many patients, the neurological examination discloses signs referable to the lower plexus and its divisions; more than half of patients have Horner syndrome, whereas few have lymphedema of the affected limb. Some may have signs indicating involvement of entire plexus.
MBP can occur via:
- Hematogenous spread to the plexus.
- Lymphatic infiltration from adjacent structures.
-Direct invasion by local malignancy

MBP must be differentiated from

- radiation-induced brachial plexopathy (RIBP):
  - Pain: Prominent in MBP but absent or minimal in RIBP.
  - Onset: MBP often presents acutely or subacutely, while RIBP occurs months to years after radiation therapy.

MANAGEMENT

Oncologic Treatment:
- Systemic chemotherapy or targeted therapy based on the primary malignancy.
- Palliative radiotherapy for local control in symptomatic regions.

Symptom Management:
Pain Control:
- Analgesics (opioids, NSAIDs).
- Corticosteroids and nerve blocks for severe cases.

Physical Therapy:
- Exercises to maintain residual function and prevent contractures.

Prognosis:
The prognosis for MBP is poor due to the advanced disease stage at presentation. However, symptom relief and improved quality of life can be achieved with appropriate intervention

CONCLUSION

Metastatic brachial plexopathy is a rare but critical differential diagnosis in patients with unilateral upper limb weakness and pain, especially in the context of systemic malignancy. This case highlights the importance of advanced imaging techniques, such as PET-CT, in diagnosing MBP. A prompt, multidisciplinary approach is essential for optimal management and symptom relief.

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