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A RARE CLINICAL ENTITY ON TRAUMATIC SHOULDER PAIN TURNED OUT TO BE OSTEOLYTIC METASTASIS OF HUMERUS WITH HISTOPATHOLOGY PROVEN SQUAMOUS CELL CARCINOMA OF LUNG.

Radiology

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ABSTRACT

Skeletal metastases from advanced lung cancer can be exacerbated by either direct extension from nearby primary or more frequently by hematogenous spread of malignant cells. The most typical location for bone metastases in lung cancer is the lumbar spine. In long bones, humerus in particular are rare locations for metastases from lung primaries. Skeletal dissemination is most frequently linked to small cell and large cell bronchogenic carcinomas. In this case report we present a case of traumatic left shoulder pain and we evaluated the patient under magnetic resonance imaging which is the most commonly used imaging modality for assessment of suspected soft tissue pathologies associated with the shoulder pain followed by histopathology and PET- CT turned out to be squamous cell carcinoma lung with osteolytic metastasis to humerus.

KEYWORDS

Trauma, MRI, Humerus, Metastasis, squamous cell carcinoma lung

INTRODUCTION:

Skeletal metastases which affect 30% to 70% of all cancer patients, are the most common malignant bone tumours.[1]The third most typical location for metastases is the bone after lungs and liver [2,3],Up to 70% of advanced breast and prostate cancers and 15% to 30% of other common malignancies, such as those of the lung, colon, bladder, rectum, kidney or uterus, are the primary source of from which secondaries to bone will occur.[4] Detection of bone metastases is crucial for precise staging and effective therapy. Imaging is used to locate metastatic site and assess them for the possible complications such as pathological fractures and spinal cord compression. Imaging is also utilized to direct biopsies and evaluate therapy outcomes. [5,6] In this literature we report a rare instance of bronchogenic cancer that spread to the humerus and interestingly the patient only presented with pain in the left arm after a trauma.

Case Report:

A Forty – three year old male, chronic smoker, alcoholic, normotensive, brought to the casualty on 6 march 2023 with history of slip and fall from motor vehicle and trauma to the left shoulder joint for last 20 days with mild restriction of range of movements, and not able to lift left arm above shoulder level. Complaints of pain over left arm for last 15 days. There was no respiratory complaints or history of contact with positive tuberculosis cases. No history of previous trauma.

General examination of the patient shows mild anemia. His vitals includes Pulse rate 90 beats / minute, Temperature was 36 C, Blood pressure 120/ 60 mmHg. Systemic examination shows no obvious swelling over the shoulder. Skin over the shoulder appears normal. Movements of the shoulder joints was mildly restricted. There was no sensory or motor loss.

Patient undergone radiograph of left shoulder AP view (Figure: 1) showed an ill-defined lytic area with wide zone of transition located in the proximal head of left humerus with intact cortex. No evidence of periosteal reaction. No evidence of bony destruction / fracture.

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MRI of left shoulder joint (Figure: 2, 3 & 4) with the following sequences includes Coronal T1 Coronal T2, Axial PD FS are obtained and shows an ill-defined heterogeneous lesion which appears T1 hypointense, T2 hyper intense seen involving epimetaphyseal region of the left humerus. There is invasion of the anterior cortex with adjacent soft tissue component encasing the bicipital tendon. Insertion site of the subscapularis is invaded by the lesion. Invasion of adjacent neurovascular structures are seen. Mild muscle edema noted in the anterior deltoid.

CT –guided FNAC of left lung mass (Figure:5) showed Fibro collagenous tissue fragments with an invasive neoplasm composed of nets and cords of malignant epithelial cells having round to oval hyper chromatic nuclei exhibiting moderate pleomorphic and moderate eosinophilic cytoplasm with surrounding stroma showing dense lymphocytic infiltration. Suggestive of non – small cell carcinoma and squamous cell variety.

Immunohistochemistry showed P63 strongly positive of tumor cells with negative TTF-1 and Synaptophysin, suggestive of Squamous cell carcinoma of lung.

PET-CT scan (Figure:6) showed metabolically active pleural based soft tissue mass in lower lobe of left lung, Multiple nodular lesions in both lungs with few showing increased metabolic activity, Metabolically active nodular lesion in right adrenal gland , Metabolically active lytic skeletal lesions with some showing soft tissue component in medial end of clavicle , bilateral humerus , few right sided ribs, D10 and L5 vertebrae , Sacrum and bilateral pelvis bones , features suggestive of active left lung primary tumor with bilateral pulmonary metastases , right adrenal metastasis and multiple skeletal metastases, Impending fracture in proximal left humerus.

Figure: 1 CXA-AP view showed osteolytic lesion in the left proximal humerus.

Figure: 2 Coronal T1WI showed hypointesnse lesion in epimetaphyseal region of the left humerus.

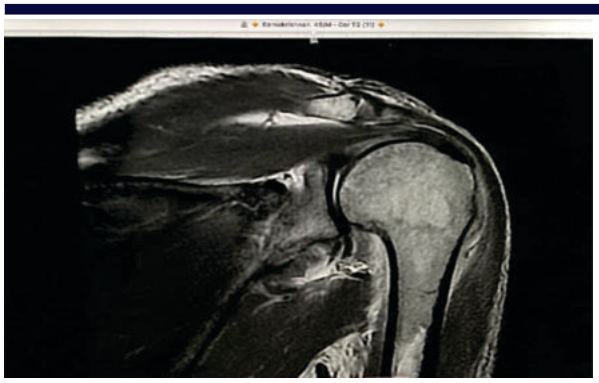


Figure: 3 Coronal T2WI showed hyper intense lesion in epimetaphyseal region of the left humerus.

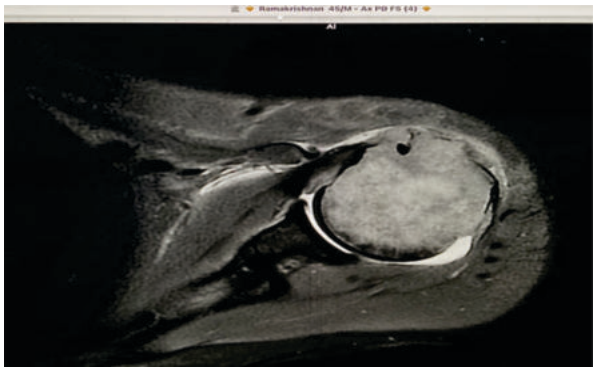


Figure: 4 Axial PDFS showed hyper intense lesion in epimetaphyseal region of the left humerus.

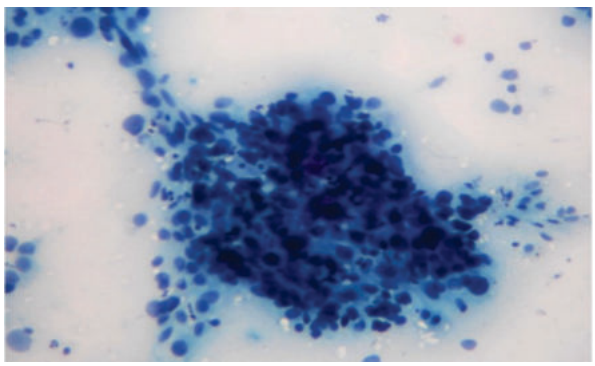
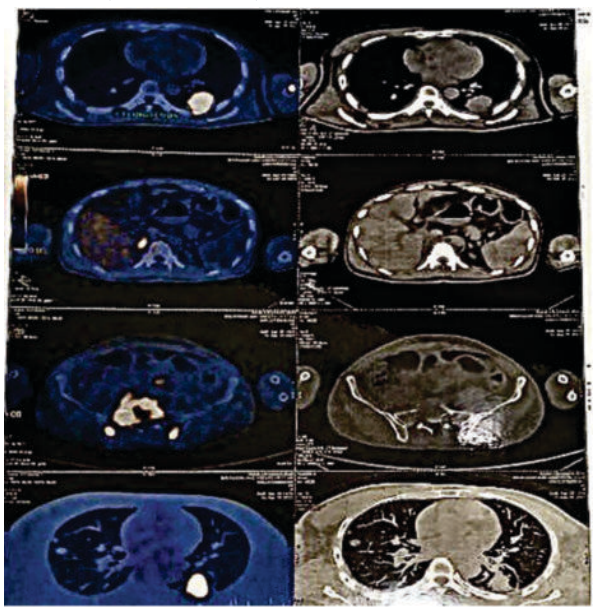


Figure: 5 Histopathology of left lung mass showing squamous cell carcinoma (MGG stain, 10X).



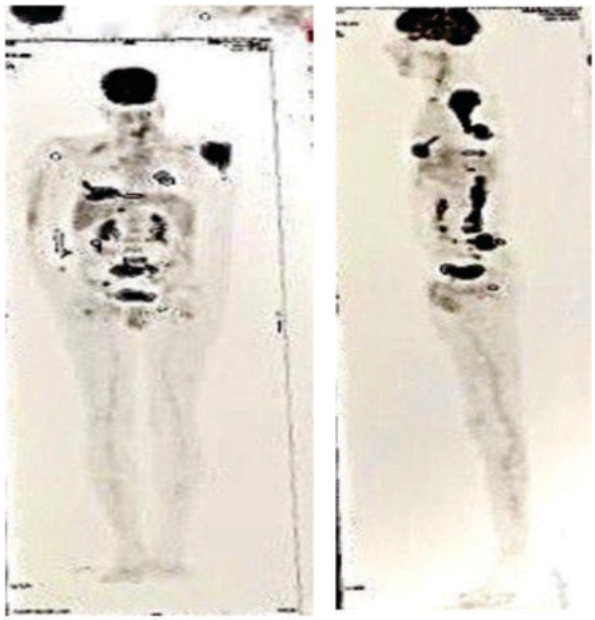


Figure: 6 PET-CT scan showing active left lung primary tumor, bilateral pulmonary metastases, right adrenal metastasis and multiple skeletal metastases with impending fracture in proximal left humerus.

DISCUSSION:

There are four different clinical manifestations of bronchogenic carcinoma. For example, cough, hemoptysis, post obstructive pneumonia, hoarseness of voice, superior vena caval syndrome, atelectasis etc., are common respiratory symptoms that patients report with. Very few individuals have no respiratory symptoms and incidental findings on chest radiographs. Third group experiences generalized cancer symptoms, such as fatigue, anorexia, and weight loss are signs of para-neoplastic syndrome. The last group shows signs of distant metastasis, such as bone pain, neurological impairments, cranial nerve palsy, symptoms of elevated intracranial pressure, jaundice, lymphadenopathy, metastatic nodules in the contralateral lung, pleural effusion etc.[7]

In our case report patient presents with traumatic left shoulder pain. Later x-ray findings turned out to be osteolytic lesion in left proximal humerus. MRI is superior in detection of soft tissue involvement and associated complications especially cord compression.[8] The question of which one was secondary in this situation was brought up. CT – guided biopsy of lung turned out to be primary in the lung, non-small cell carcinoma and squamous cell carcinoma variety. PET scan is another promising modality in detecting metastases proving primary in the lung and secondaries in the humerus.[9] FNAC [10, 11] confirms the diagnosis. Immunohistochemistry proved over clinical confusion suggestive of squamous cell carcinoma of lung.[12]

CONCLUSION:

Another key takeaway from this case is that secondary bone tumors are significantly more prevalent than primary which increases the likelihood of metastatic bone disease in any instance of painful bone tumor. Small asymptomatic primary small cell lung cancer may show with metastatic symptoms, however asymptomatic squamous cell carcinoma of lung is extremely rare. Hence, our case report was distinct from others.

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Authors' contribution

Lekha priya M: Writing, Investigation, Analysis, Review and Editing
All authors have read and agreed to submit the manuscript. Informed consent, proper written consent obtained from the patient.

Nasin Usman: Conceptualization, Supervision, Methodology, Resources, Data Collection, Writing and Formal analysis.

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Conflict of interest
The authors declare that there is no conflict of interests.

Data and materials availability
All data sets collected during this study are available upon reasonable request from the corresponding author.

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