



## Squamous cell lung cancer with skeletal metastasis beyond knee and elbow: a case series

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### ABSTRACT

*Squamous cell carcinoma lung present with skeletal metastasis in one third of cases. Axial skeleton is involved more commonly than appendicular skeleton. Still skeletal metastasis is not infrequent in femur or humerus, but metastasis beyond knee or elbow joint is quite rare. Here, we report a series of three cases of squamous cell carcinoma lung with metastasis to tibia in two cases and fibula and ulna in another case.*

**KEYWORDS :** carcinoma lung, skeletal metastasis, tibia, ulna

### INTRODUCTION

Lung cancer is the leading cause of death worldwide. 30-40% of lung cancer patients present with bone metastasis<sup>[1]</sup>, which affects axial skeleton more often than appendicular skeleton<sup>[2]</sup>. Ribs, spine and pelvis are the commonest sites of metastasis from lung<sup>[3]</sup>. Bone metastasis beyond the knee and elbow is very rare<sup>[4]</sup>, more so with squamous cell histology. Bone metastasis may be of 3 types, osteosclerotic, osteolytic and mixed<sup>[2]</sup>. Those from lung are mainly osteolytic<sup>[2]</sup>. The cases we report here presented with osteolytic metastasis to tibia (in two cases) and fibula & ulna (in one case) from squamous cell carcinoma lung. We report these cases on account of their rarity.

### CASE REPORTS

#### Case 1

A 60 year old male patient presented in our out patient's department (OPD) with painful swelling over the midpart of right shin bone for 6 months. He has been a chronic smoker for 30 years. Local examination revealed a tender swelling, about 3x3cm in size, over mid shaft of right tibia which was hard, well defined with normal looking overlying skin and without any local rise of temperature. X-ray of right knee Antero-Posterior (AP) & Lateral view (figure A1) showed an irregular lytic lesion with mild soft tissue swelling in mid part of right tibia. Fine needle aspiration cytology (FNAC) from the right leg swelling revealed features suggestive of metastatic squamous cell carcinoma (figure B1). Subsequently Contrast Enhanced Computed Tomography (CECT) Scan of Thorax (figure - C1) revealed a right sided parahilar mass with hilar lymphadenopathy. FNAC from the right lung mass showed features of squamous cell carcinoma (figure - D1).

#### Case 2

A 55 years old male chronic smoker attended our OPD with complaints of antalgic gait for last 5 months and chronic dry cough for 3 weeks. He was non-diabetic non hypertensive and without any other co-morbidities. Clinical examination revealed a mild tenderness over the proximal end of left tibia and clubbing on all fingers and toes. No lymph nodes including those in the supra-clavicular area were palpated. X-ray of left knee AP & Lateral view (figure - A2) showed an osteolytic lesion in upper end of left tibia with erosion of medial cortical margin. Chest X-ray Postero-Anterior (PA) views showed a patchy scarry fibrotic opacity in the lower zone of right lung. CECT Scan of thorax (figure - B2) revealed an irregular thick walled cavitary lesion in right lower zone with hilar lymphadenopathy. Biopsy from the left tibial lesion (figure - C2) showed sheets,

clumps, and dense malignant cells having hyperchromatic, pleomorphic nuclei with inconspicuous nucleoli and squamous differentiation at places on the hemorrhagic background. Few cells showed individual keratinization, suggestive of metastatic squamous cell carcinoma. FNAC from the right lung lesion (figure - D2) showed clusters of atypical cells, some with squamous cell differentiation in a background of inflammatory cells, a picture suggestive of Squamous cell carcinoma.

#### Case 3

A 70 year old patient presented to our OPD with complaints of pain and tenderness in the left forearm for 4 months. He was a chronic smoker for 50 years. On examination, he had a single fixed supraclavicular lymph node on right side about 2x2cm in greatest dimension. There was tenderness over distal aspect of left forearm and over the lateral aspect of left leg at its distal end. X-ray of left leg AP & lateral view (figure - A3) showed an osteolytic lesion in distal end of left fibula and X-ray of left forearm AP & lateral view (figure - A3) showed an osteolytic lesion in distal end of right ulna. Core needle biopsy from the ulnar lesion (figure - B3) was done and the histopathological study revealed a picture of metastatic squamous cell carcinoma. CECT thorax (figure - C3) showed an irregular mass in the mid zone of right lung with hilar lymphadenopathy. FNAC from the right lung mass (figure - D3) revealed clusters and discretely present pleomorphic malignant cells having large hyper-chromatic nuclei and variable amount of cytoplasm suggestive of poorly differentiated squamous cell carcinoma.

### DISCUSSION

Skeleton is the most common site to metastasis from epithelial tumors<sup>[2]</sup>. Most common primary cancers that metastasize to bones are breast, prostate and lung<sup>[2]</sup>. Approximately one third of lung cancers present with symptoms of extrathoracic metastasis<sup>[5]</sup>. Metastasis from lung cancer usually involves the axial skeleton<sup>[6]</sup> and occurs via the vertebral venous plexus<sup>[7]</sup>. The most common site of bone metastasis from lung cancer is thoracolumbar vertebrae<sup>[8]</sup>. Other common sites are spine, ribs, pelvis, skull and proximal long bones (femur and humerus)<sup>[6]</sup>. Bone metastasis below knee or elbow are very uncommon, representing barely 4.1% of affected skeletal site<sup>[9]</sup>.

Bone metastasis is of three types, osteolytic, osteoblastic and mixed. Skeletal metastasis from lung cancer is predominantly osteolytic<sup>[2]</sup>. The major complaint is pain which is present in

80% of the cases<sup>[1]</sup>. The tumor cells release a variety of factors which stimulates local osteoclasts and osteoblasts. Osteoclast in turn releases growth factor that leads to growth of tumor cells. The osteoclasts resorb bone that causes bone pain<sup>[1]</sup>. In all our three cases patient presented with bone pain. There were no significant chest complaints. FNAC or core needle biopsy from the bone lytic lesion revealed metastatic squamous cell carcinoma. The most common site of primary lesion for skeletal metastasis in males were prostate and lungs<sup>[2]</sup>. But prostate cancer produce osteosclerotic lesions<sup>[10]</sup> and in these cases all bone lesions were osteolytic. Age of presentation in every case was over 50 years and all were chronic smokers. Degree of suspicion for malignancy of lung was high. On imaging studies there were parenchymal mass lesion in right lung in all cases. We asked for histological or cytological examination of the lung lesion which confirmed diagnosis of squamous cell carcinoma of lung in all the three cases.

As these patients had distant metastasis at presentation, they were not considered candidates for any form of local therapy (radiotherapy or surgery). All the patients were treated with palliative chemotherapy. The regimen in all three cases comprised Carboplatin with Gemcitabine. The symptomatic skeletal metastases were managed with bisphosphonates.

As the presentation of the diseases were atypical, there was considerable gap between onset of symptom and diagnosis and hence treatment. So, it is important on part of the oncologist to keep in mind the fact that metastasis from lung, though uncommon, may spread to bones beyond knee or elbow. This may lead to prompt diagnosis and subsequently improve outcome.



Figure A1 – X-ray of right leg (AP & lateral view) shows a lytic bone lesion in mid shaft of tibia (case 1)

Figure A2 - X-ray of left knee (AP & Lateral view) showed an osteolytic lesion in upper end of left tibia with erosion of medial cortical margin(case 2)

Figure A3 – X-ray of left leg (AP & lateral view) shows osteolytic lesions in distal end of left fibula and X-ray of left forearm shows an osteolytic lesion in distal end of right ulna (case 3)

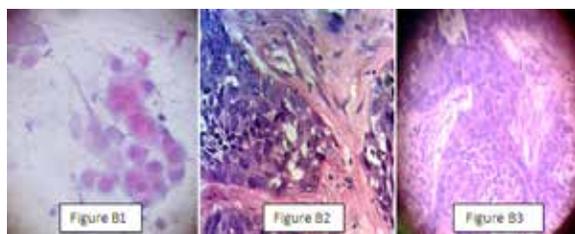


Figure B1 – FNAC from the tibial lesion shows cellular features suggestive of squamous cell carcinoma (case 1).

Figure B2 - Histopathology slide from tibial lesion (high power field) showing sheets, clumps, and dense malignant cells have hyper chromatic, pleomorphic nuclei with inconspicuous nucleoli and squamous differentiation at places on the hemorrhagic background, suggestive of metastatic squamous cell carcinoma (case 2).

Figure B3 – histopathology slide from ulner lesion showing features suggestive of metastatic squamous cell carcinoma (case 3).

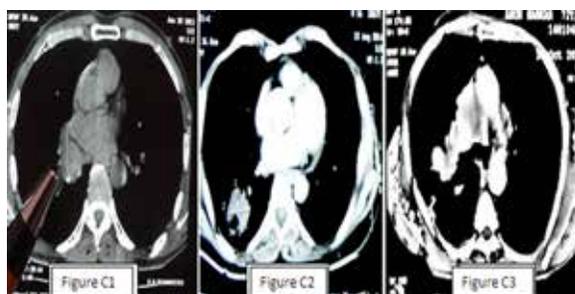


Figure C1 – CECT scan thorax shows a perihilar mass in right lung with hilar lymphadenopathy (case 1).

Figure C2 - CECT thorax showing an irregular thick walled cavitary lesion in right lower zone with hilar lymphadenopathy (case 2).

Figure C3 – CECT thorax showing an irregular mass in right mid zone with hilar lymphadenopathy (case 3).

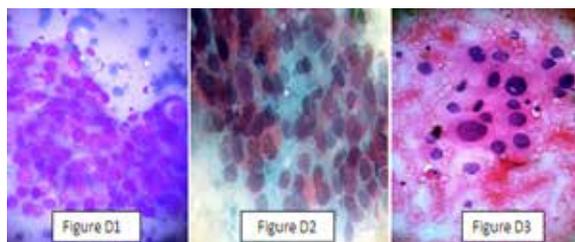


Figure D1- FNAC from the right lung lesion shows features suggestive of squamous cell carcinoma (case 1).

Figure D2 - FNAC from lung lesion showing clusters of atypical cells, some with squamous cell differentiation in a background of inflammatory cells, suggestive of Squamous cell carcinoma (case 2).

Figure D3 - FNAC from the right lung mass showing clusters and discretely present pleomorphic malignant cells having large hyper-chromatic nuclei and variable amount of cytoplasm suggestive of poorly differentiated squamous cell carcinoma(case 3)

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