



A CASE OF METASTATIC ADENOCARCINOMA IN A YOUNG FEMALE

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ABSTRACT

A 20-year-old female presented with progressive shortness of breath, initially MMRC grade 1, progressing to grade 3 over three months. She also reported a dry cough, weight loss, generalized fatigue, and gastric symptoms, with a history of contact with a tuberculosis (TB) patient. Examination revealed right-sided pleural effusion, with imaging suggesting bilateral pleural effusion, patchy consolidations, and interlobar septal thickening. Pleural fluid analysis indicated lymphocytic exudative pleural effusion, but with an ADA level of 8, ruling out TB. Mantoux, RA factor, ANA, and anti-CCP were negative. PET-CT demonstrated multiple metabolically active sclerotic bone lesions, prominent lymph nodes, and a bulky left adrenal gland, raising suspicion of malignancy. Spinal biopsy confirmed metastatic poorly differentiated adenocarcinoma, an extremely rare diagnosis in this age group. The primary site remains unidentified. This case highlights the importance of a thorough workup in young patients presenting with pleural effusion and the need to consider malignancy even in the absence of clear risk factors.

KEYWORDS : Metastatic adenocarcinoma, pleural effusion, young female, malignancy, sclerotic bone lesions

INTRODUCTION:

Cigarette smoking is the greatest risk factor for lung cancer, but this tumour may also occur in nonsmokers (1,2). It is often divided into two types: small-cell lung cancer (SCLC) and the more common non-small-cell lung cancer (NSCLC). Lung adenocarcinoma is a form of NSCLC that mostly develops in the mucosal glands and accounts for around 40% of all lung cancers (3). According to the Surveillance, Epidemiology, and End Results Program (SEER) registry, based on 2007-2011 new cases, lung cancer (LC) is more commonly diagnosed among adults aged 65-74, with just 1.6% of all occurrences occurring in patients younger than 45 years.

Pleural effusion in young adults is commonly associated with infectious aetiologies, particularly tuberculosis in endemic regions. However, persistent, non-resolving effusions necessitate an extensive diagnostic approach, including the consideration of malignancy. Here, we report a case of metastatic adenocarcinoma with an unknown primary in a young female presenting with progressive dyspnoea and systemic symptoms.

CASE PRESENTATION:

A 20-year-old female presented with progressive shortness of breath over three months, initially MMRC Grade 1, worsening to Grade 3 on exertion. She also had a dry cough for the same duration, with no foul-smelling or blood-stained sputum. Additionally, she reported a weight loss of 2 kg over one month, generalized fatigue, myalgia, gastric pain, and intermittent vomiting. There was no history of fever, chest pain, palpitations, joint pain, dysphagia, or photosensitivity. The patient had no known comorbidities and reported a history of contact with a tuberculosis (TB) patient.

On examination, her vital signs were stable, with a blood pressure of 110/70 mmHg, a pulse rate of 90 beats per minute, an oxygen saturation of 97%, and a respiratory rate of 26 breaths per minute. Respiratory examination revealed reduced breath sounds in the right infra-scapular and infra-axillary areas. Chest radiography showed heterogenous opacity in the bilateral lower zone with blunting of

costophrenic and cardiophrenic angles

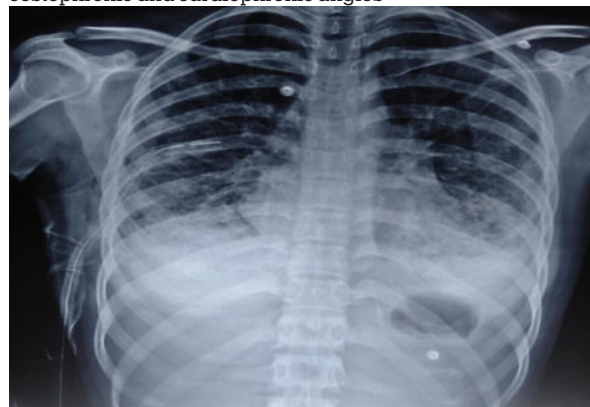


Figure 1:

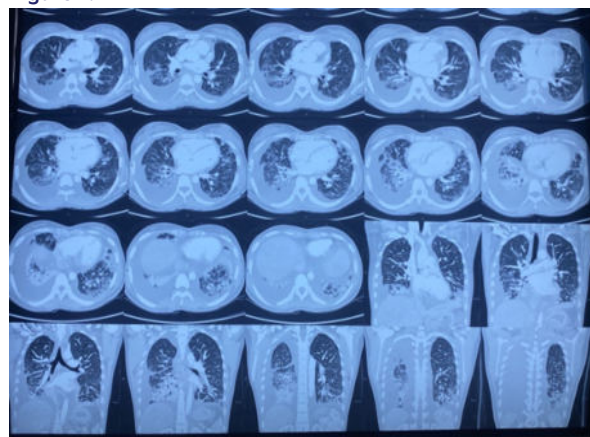


Figure 2:

Initial investigations included a CT chest, which showed bilateral pleural effusion, ill-defined patchy consolidation, fissural thickening, and interlobar septal thickening. Pleural fluid analysis revealed a lymphocytic predominant exudative

effusion with an ADA level of 8, protein content of 4.8 g/dL (serum protein: 6.8 g/dL), and LDH of 317 U/L (serum LDH: 319 U/L). Cytological analysis of the pleural fluid showed lymphocytes and mesothelial cells, with some mesothelial cells exhibiting atypical nuclear features suggestive of reactive or degenerative changes. Serological testing for RA, ANA, and Anti-CCP was negative.

A PET-CT scan revealed patchy consolidatory foci in the bilateral lower lobes and right middle lobe with mild metabolic activity. It also showed multiple metabolically active sclerotic lesions in the vertebrae, scapula, sternum, pelvic bones, and femora, along with mild left pleural effusion, mild right pneumothorax, and a bulky left adrenal gland with mild metabolic activity. Further imaging with CECT abdomen identified loss of lobulations in the pancreas with trace peripancreatic fluid, mild ascites, gall bladder wall oedema, and mesenteric lymphadenopathy. Given the concerning findings, a vertebral biopsy was performed, which confirmed metastatic poorly differentiated adenocarcinoma.

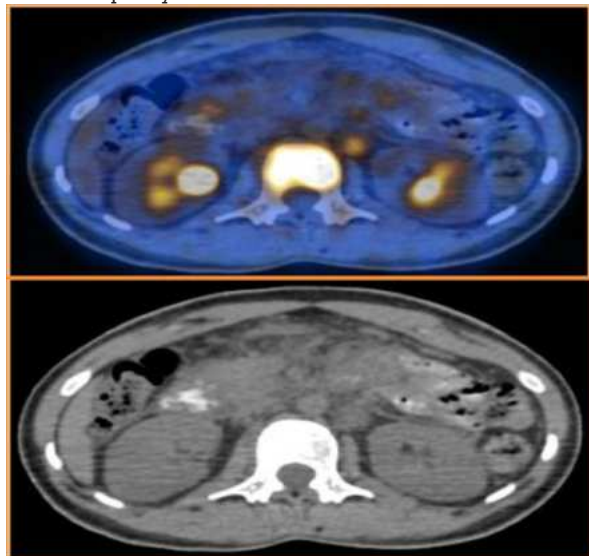


Figure 3:

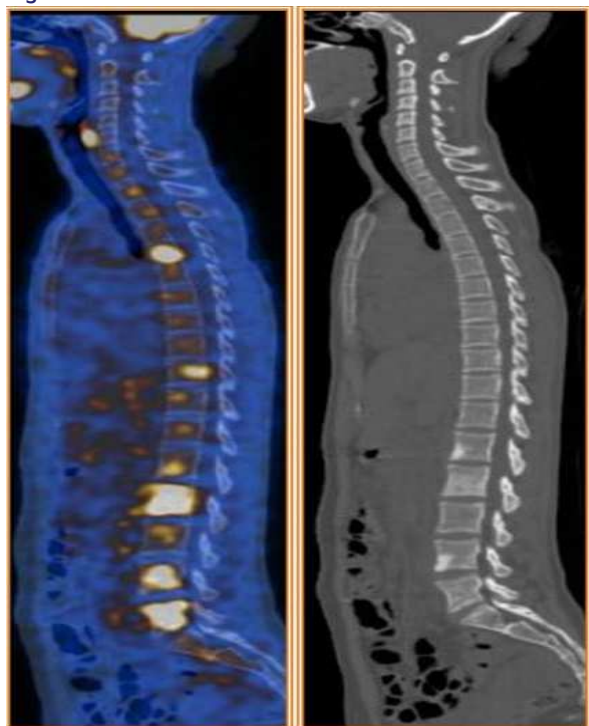


Figure 4:



Figure 5:

CONCLUSION:

In the twenty-first century, the incidence of lung adenocarcinoma among non-tobacco users is increasing, and such patients are approximately 2.5 times more likely to be women than men; this incidence is 1.5 to 2 times higher in Asian women (5-7). Stigma around lung cancer and tobacco use may cause delays in detection, particularly in women. This case emphasizes the importance of considering malignancy in young patients with unexplained pleural effusion and systemic symptoms. While tuberculosis remains a common cause, the persistence of effusion with additional systemic findings should prompt further evaluation. A high index of suspicion and a multidisciplinary approach are crucial for early diagnosis and management.

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