

CASE REPORT

Obstetrics

Metastatic lung cancer in pregnancy - a diagnostic and management challenge: A case report

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Abstract

Background: Lung cancer during pregnancy remains an uncommon occurrence. As of 2016, there were less than 70 histologically confirmed lung cancer in pregnancy cases reported in the literature.

Case presentation: A 29-year-old woman presented with a chronic cough in the second trimester of pregnancy at the Kenyatta National Hospital (KNH) as a referral. Treatment for Pulmonary Tuberculosis (PTB) was initiated in a peripheral facility based on suggestive signs on the chest radiograph. Symptoms persisted while on anti-TB medication. On further evaluation, she was diagnosed with advanced squamous cell lung cancer. The patient went into spontaneous labor and vaginally delivered a fresh stillbirth. She received palliative care, and succumbed from disease progression.

Conclusion: Lung cancer during pregnancy exhibits similar clinical presentation to prevalent conditions, especially in low-resource and TB prevalent settings, and pose challenges in early diagnosis, and consequently, poor outcome. Chronic cough should raise suspicion for malignancy and prompt investigation.

Keywords: Lung cancer, Small cell carcinoma, pulmonary tuberculosis

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Introduction

Lung cancer in pregnancy remains a clinical challenge in both diagnosis and therapeutic approaches (1). The estimated incidence of malignancies diagnosed in pregnant women in developed nations is 1 in 1 000 pregnancies; however, data from developing countries is largely lacking (2). This is a case report of squamous cell lung cancer during pregnancy, highlighting the need for a high index of suspicion in patients who present with chronic cough. The article draws

attention to the challenges in evaluation and management of lung cancer in pregnancy.

Case presentation

A 29-year-old female, at 26 weeks gestation by dates, presented to the obstetrics ward at the Kenyatta National Hospital (KNH) as a referral. She complained of non-productive cough, night sweats, chest pains, and fever for five months and was managed at a peripheral facility. Treatment for Pulmonary Tuberculosis (PTB) was initiated based on the Chest Radiograph (CXR), demonstrating patchy areas of consolidation in the right upper

lobe. Gene Xpert for Mycobacterium tuberculosis (MTB) was negative. Despite the completion of intensive phase PTB treatment, her symptoms did not improve. She developed lower limb weakness with the inability to walk. There was no history of smoking, and no exposure to second-hand smoke reported. She had no prior history of TB contact and no family history of malignancy.

On clinical examination, cachexia with mediastinal lymph node enlargement was noted. Her peripheral oxygen saturation (SpO₂) was 95 % in room air. Respiratory auscultation revealed diminished breath sounds on the right superior quadrant and coarse crepitations on basal lung fields bilaterally. Her fundal height was 22 weeks, and the fetus was in a longitudinal lie and cephalic presentation with regular fetal heart. She had reduced muscle bulk but normal power in her upper limbs. Her lower limbs had normal reflexes, reduced power at 3/5, and reduced muscle bulk bilaterally. Her total leukocyte count was 22 350 /mm³ (3 000 - 13 000/mm³). Serum Alpha-Fetoprotein (AFP) was raised at 64.25 U/l. Cancer Antigen (CA) 19-9 and CA-125 were within the reference range.

An obstetric ultrasound revealed a single live intrauterine pregnancy with an estimated fetal weight of 527 grams. Her abdominal ultrasound revealed multiple echogenic liver lesions suggestive of metastasis. A shielded chest Computed Tomography (CT) scan confirmed a dense mass in the right lung and metastasis to the vertebrae with cord compression, suggestive of right lung carcinoma with lymphangitis carcinomatosa and diffuse osseous metastasis. Histopathology of the CT scan guided biopsy of the lung mass showed a moderately differentiated squamous cell carcinoma of the right lung mass (Figure 1). Magnetic Resonance Imaging (MRI) of the spine showed infiltrative lesions with vertebral collapse consistent with metastasis at multiple levels: cervical, thoracic, lumbar spine with thoracolumbar spinal cord compression. Brain MRI was normal. The primary staging was done by chest CT scan, abdominopelvic ultrasound, and a spinal MRI. Based on the clinical and radiological features, the patient was staged as T₄N₂M_{1c} Stage IV lung cancer; moderately differentiated squamous cell carcinoma of the right lung with pulmonary, abdominal, and osseous metastases at 26 weeks of pregnancy with concomitant fetal growth restriction.

Following multidisciplinary consultations, the patient was put on palliative care comprising of physiotherapy, bladder care, two-hourly turning, and care of pressure points, parenteral nutrition, and analgesics. Her medications included proton

pump inhibitors, anti-emetics, and antenatal corticosteroids for fetal lung maturity. She did not receive any cytotoxic chemotherapy. On week four, post-admission, she went into spontaneous labor and vaginally delivered a fresh, still-born female fetus weighing 900 grams with no gross anomalies. Her condition deteriorated to a WHO performance status of 4, requiring total support. The patient succumbed two weeks after delivery.

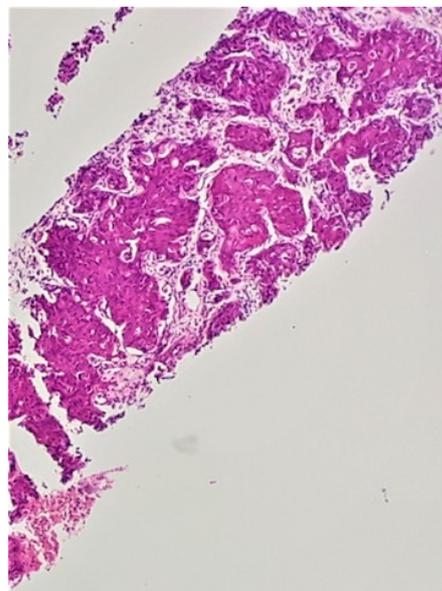


Figure 1: A histology photomicrograph of CT scan guided biopsy of the right lung mass showing malignant squamous tumor-forming anastomosing nests.

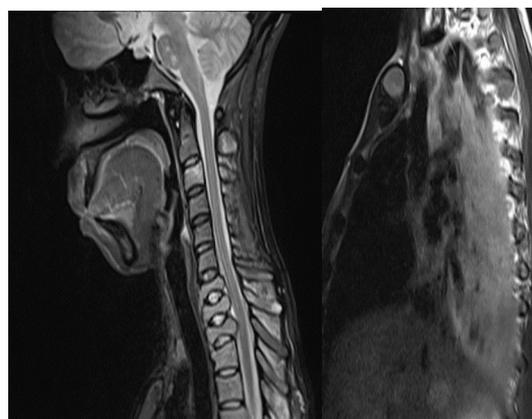


Figure 2: MRI whole spine, sagittal view; Fracture of the seventh cervical to second thoracic vertebra and compression of the spinal cord

Discussion

The incidence of pregnancy-associated cancer is relatively low, complicating only 0.02 - 0.1% of all pregnancies globally (3). Data on malignancies in pregnancy is underrepresented due to difficulties involving diagnosis and data reports, especially in

developing economies (3). Kenya is no different. National data on lung cancer trends in the pregnant population is sparse. The Nairobi cancer registry reported lung cancer incidence of 3.4 in 100 000 with male to female ratio of 2:1. Nationally, lung cancer is the eighth most common malignancy in females (4). Less than 50% of patients presenting with lung cancers in pregnancy carry a positive smoking history, indicating that tobacco is not a major etiological factor. The patient in the presented case reported a negative smoking history. Other carcinogenic mechanisms including Epidermal Growth Factor Receptor (EGFR) or Anaplastic Lymphoma Kinase (ALK) activating mutations, may be implicated (5).

Both lung cancer and PTB have similar clinical manifestations, with most patients (80%) presenting with clinical signs on the first visit and a minority diagnosed incidentally. Symptoms may be directly related to local effects of the tumor or endocrine or metastatic effects. Presentations due to local tumor effects include chronic cough with hemoptysis, chest pain, shortness of breath, wheezing, hoarseness of voice, Pancoast's syndrome, dysphagia, fatigue, weight loss, and superior venacaval obstruction (6). Diagnosis is a challenge in emerging economies due to the technicalities related to screening and diagnostic procedures (7). The patient presented was initially managed for TB based on CXR findings with subsequent referral to a tertiary level facility due to worsening of TB medication symptoms.

A lung cancer diagnosis may be delayed in pregnancy due to an overlap of symptoms with gestational symptoms (3). Exposure of the fetus to risks of complementary examination, such as ionizing radiation, contrast media, and surgical/anesthetic procedures, is also of concern and often hinders prompt investigations in this population (8). The use of shielded CXR, MRI scans without gadolinium, bronchoscopy, and lymph node biopsies are all relatively safe regarding the fetus, and should not be withheld in investigating pregnant patients with suspected thoracic pathologies (9). Due to significant physiological variations in pregnancy, tumor markers CA 15-3, SCC, CA 125, and AFP levels may be increased in pregnancy with resultant poor sensitivity and specificity required to make a proper diagnosis and follow-up in this cancer group (10). In the presented case, however, CA-125 was normal with elevated AFP levels.

In a review by Mitrou et al., maternal survival was dismal with 70% surviving for a few months. The median age at diagnosis was 36 years, and the median maternal gestational age was 27.3 months. Non-Small-Cell Lung Carcinoma (NSCLC),

predominantly of adenocarcinoma type, accounted for most histological diagnosis (77–87%). At presentation, 97% of patients were diagnosed in advanced stages (III-IV), suggesting that lung cancer in pregnancy likely follows an aggressive course. Furthermore, The prognosis of the mother per stage does not seem to be worse during pregnancy (11). However, the patient presented in this case report did not survive her stage IV tumor disease.

Radiotherapy is not routinely recommended during pregnancy and should be postponed until after childbirth whenever possible (12). For the second and third trimesters, there are no general recommendations. Most chemotherapeutic agents have low molecular weight and cross the placenta. Fetal toxicity has mainly been reported when treatment was given during embryogenesis in the first trimester of gestation. The rate of chemotherapy-associated fetal malformation is between 12.7% - 17%, and low birth weight at about 40% (13). Combinations of cisplatin and vinorelbine have been administered in pregnant women with NSCLC in several case reports (14).

In case there is a need for emergency chemotherapy or radiotherapy during the early stages of pregnancy, termination of pregnancy can be considered. The decision about the pregnancy termination should be made regarding the probability of a cure, drugs to be used, and patient preference. Standardized guidelines for the management of lung cancer in pregnancy are lacking. Each case is treated individually, and multidisciplinary collaboration between obstetricians, oncologists, neonatologists, pathologists, radiologists, and internists is paramount.

Conclusion

Lung cancer during pregnancy exhibits similar clinical presentation to prevalent conditions, especially in low-resource and TB prevalent settings, and pose challenges in early diagnosis, and consequently, poor outcome. Chronic cough should raise suspicion for malignancy and prompt investigation.

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Ethical Consideration

The Institutional Review Board at the Kenyatta National Hospital and The University of Nairobi Gynecology and Obstetrics department approved this study.

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