BEWARE OF MASQUERADERS- ATYPICAL PRESENTATION OF BRONCHOGENIC CARCINOMA

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PRESENTATION OF CASE

A 56-year-old male presented with complaints of cough with expectoration for 3 months duration and fever for 15 days. He had no associated complaints of breathlessness, wheeze, loss of weight and appetite. For the above complaints, he had received two courses of antibiotics before this presentation elsewhere. He is a smoker for 30 years. There is no significant past medical history. There was no evidence of similar illness in the family. On presentation, patient had investigations done outside like chest x-ray that revealed a right upper and mid-zone cavity and CT thorax that revealed a cavity with fluid level with no evidence of lymphadenopathy or bone erosion. On examination, he was tachypnoeic with respiratory rate of 32/min, pulse rate was 90/min and saturation was 95% on room air. He had no clubbing or lymphadenopathy. Respiratory examination revealed expiratory rhonchi and diminished breath sounds in right mammary, infra-axillary and infrascapular areas.

DIFFERENTIAL DIAGNOSIS

The possible Differential Diagnosis with above presentation include infective conditions like Tuberculosis, Necrotising Pneumonia/ Lung Abscess, Pneumatocoele, Coccidioidomycosis, Actinomycosis, Nocardiosis and Melioidosis. Other differentials include cavitating malignancies of the lung like squamous cell carcinoma and adenocarcinoma (rarely). Wegener's granulomatosis, rheumatoid nodules and congenital lung lesions like congenital cystic adenomatoid malformation (CCAM), pulmonary sequestration and bronchogenic cyst.

CLINICAL DIAGNOSIS

Blood investigations were in acceptable limits. Chest x-ray (Fig. 1) revealed right mid-zone cavity with air fluid level. On evaluation in this hospital, patient had no response clinically and radiologically to the antibiotics taken outside before this presentation. The diagnosis of non-resolving/ slowly resolving Pneumonia was considered based on the clinical picture.

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Further evaluation was done to investigate the cause for non-resolving pneumonia.

Figure 1. CXR PA View- RUZ, RMZ Thick Walled Cavity with Air Fluid Level

Figure 2. CT Chest RML Thick Walled Cavity with Air Fluid Level

MANAGEMENT

For further evaluation, fiberoptic bronchoscopy (Fig. 3) was done. Narrowed right middle bronchus was noted. BAL culture showed E. coli. No fungal elements/ growth noted. Bronchial washings were negative for malignant cytology and AFB smear.

Patient was started on empirical IV broad-spectrum antibiotics initially and later according to sensitivity pattern. Patient did not show any significant improvement. During the course of hospital stay, patient developed right-sided chest pain and also developed abdominal pain in the right lumbar region for which ultrasonogram abdomen was done. USG revealed a heterogeneous mass lesion in both the adrenals that was noted on CT abdomen, which revealed findings highly suggestive of Adrenal Metastasis. CT guided biopsy (Fig. 2) was done from both the walls of the cavity in the lung and adrenal lesions. Histopathological examination done revealed moderately differentiated Adenocarcinoma.

Figure 3. FOB revealing Narrowed Right Middle Lobe Bronchus

PATHOLOGICAL DISCUSSION

Section of lung biopsy specimen (Fig. 4 and 5) stained with haematoxylin and eosin examined with 40X magnification showed linear cores of fibrocollagenous tissue with an infiltrating neoplasm composed of cells arranged in nests, trabeculae, glands and cords. The cells were having scant-to-moderate cytoplasm, pleomorphic and hyperchromatic nuclei. Multinucleated tumour cells and a few mitotic figures were noted.

Section of Adrenal Biopsy specimen showed fragments of tissue exhibiting a neoplasm composed of cells arranged in dyscohesive pattern. The cells are small to varying sizes and many of them are large showing scant-to-moderate amount of cytoplasm and with highly pleomorphic hyperchromatic nuclei.

Figure 4.

Figure 4 and 5. Histopathologic Slide Stained with Haematoxylin and Eosin Stain (40X Magnification) showing Tumour Giant Cells and Tumour Cluster Cells

FINAL DIAGNOSIS

The final diagnosis was stage IV Bronchogenic Carcinoma - Moderately Differentiated Adenocarcinoma with Adrenal Metastasis.

DISCUSSION

The presentation of primary lung cancer as cavitation is not rare. Cavity on chest x-rays was reported in around 2% - 16% of primary lung carcinomas¹⁻⁶ and with CT in 22% of primary lung carcinomas.⁷ The most common histological type of lung cancer to cavitate is squamous cell carcinoma (82% of cavitory lung cancer) followed by adeno and large cell carcinoma.^{3,8} Multiple cavitory lesions in primary lung cancer are rare. Multifocal Bronchoalveolar Carcinoma can occasionally have multiple cavitory lesions. Small cell carcinoma never cavitates. In our case we had a thick walled cavity proven as Adenocarcinoma, which was an unusual finding.⁹⁻¹¹

A primary lung cancer cavitates in three ways. The first mechanism is cavitory necrosis due to breakdown of growth itself. The second mechanism is stenotic abscess due to infection, inflammation and breakdown of lung parenchyma distal to the obstruction caused by the growth. The third mechanism is spill-over abscess. Although the mechanism is often difficult to ascertain, cavity in cancer most often results due to rapid tumour growth that exceeds the blood supply with resultant necrosis.

Radiological features of cavity that suggest malignancy include wall thickness, spiculations in margins and irregularity in inner and outer margins. Cavity wall thickness at its thickest section was the most useful predictor of malignancy.^{12,13} It is reported that 94% of cavities with a wall thickness of ≤ 4 mm were benign. Cavities with wall thickness of 5 - 15 mm were mixed. Similarly, 90% cavities with a wall thickness > 15 mm were usually malignant. Another study showed that 81% of cavitating malignancies were associated with overexpression of epidermal growth factor receptor (EGFR) and this high EGFR levels might be associated with rapid growth, necrosis and formation of cavity.⁷ The presence of cavity in primary lung malignancy is associated with a bad prognosis.¹⁴

Another study reported the differentiation of malignant and benign cavitory nodules using CT findings.¹⁵ In this study, 29% of benign cavitory nodules had a notch and in contrast 54% of malignant cavitory nodules had a notch. An irregular wall was found in 49% of malignant nodules and in 26% of benign nodules. It was also noted that a linear margin, bronchial wall thickening, satellite nodules, consolidation and ground-glass attenuation were significantly more frequent in benign lesions than in malignant ones. Although, these findings might be helpful in differentiating benign from malignant cavitory nodules to some degree, the CT findings of benign and malignant cavitory nodules may overlap.

Other unusual findings of primary cavitating lung malignancy include thin-wall cavitation and air-crescent sign.⁸ Although, "air-crescent sign" is often associated with an inflammatory process, lung cancer can also have an air-crescent sign rarely. Such cases may be benefited with PET scan.^{16,17} Contrarily, mycetoma also can arise from a cavitory lesion within lung cancer.¹⁸

Miura et al¹⁹ studied the characteristics of cavitating adenocarcinoma of lung divided as 4 types pathologically- 1. Central necrosis: central ischaemia was suspected; 2. Cancer cell lining: the inner wall of the cavity was lined by viable cancer cells without necrosis. The cause of this type may be detachment of the central portion of a papillary growth tumour without necrosis; 3. Bronchial expansion: the inner wall was composed of cancer cells and bronchus. This mainly caused by ectatic change of peripheral bronchi following tumour invasion to more central bronchi; 4. Alveolar expansion: the inner wall was composed of cancer cells and alveoli. Detachment of destroyed alveoli or invasion along the wall of cavities of a honeycomb lung was suspected as a possible cause.

CONCLUSION

This case is reported to highlight the atypical presentation of Bronchogenic carcinoma masquerading as a lung abscess. The most common histological type to cavitate is a Squamous cell carcinoma, but here we report a case of cavitating

Adenocarcinoma which is another unusual finding. Knowledge of atypical presentation of Bronchogenic malignancy is crucial in early suspicion and diagnosis, which in turn has a direct relation to the disease outcome. Differentiating malignant cavitory lesion and benign cavitory lesions in patients may be challenging. Radiology may help in narrowing differential diagnosis. However, a comprehensive approach in assessment of the patient including symptoms and correlation of clinico-radiological data is often needed to obtain the accurate diagnosis.

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