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ORGANIZING PNEUMONIA SECONDARY TO TUBERCULOSIS: A CASE REPORT

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Abstract

Organizing pneumonia is a histological entity characterized by formation of granulation tissue in bronchiolar ducts, alveolar ducts and alveoli. We present a case report of 65 years old female with OP secondary to tuberculosis. OP secondary to TB is a rare condition and it is necessary to rule out secondary causes of OP for the proper management of underlying condition.

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INTRODUCTION:

Organizing pneumonia is a pulmonary tissue repair process that may manifest in various ways, including idiopathic, with no known cause, arising as a response to lung injury can be triggered by factors such as infection, drug toxicity, and exposure to drugs such as cocaine, inhalation of toxic gases, gastro-esophageal reflux, collagen disorders, organ transplantation, or radiotherapy. Histologically linked to pulmonary lesions of different origins, including vasculitis, lymphoma, lung cancer, hypersensitivity pneumonitis, eosinophilia pneumonia, acute interstitial pneumonia, non-specific interstitial pneumonia, or usual interstitial pneumonia. [1,2]

The primary symptoms of COP include cough, shortness of breath, fever and weight loss. Sparse crackles and bronchial breath sounds may be observed in regions with air–space consolidations. Radiological observations often show peripheral consolidation, although ground-glass infiltrates or solitary nodules can also appear. Confirming a diagnosis of COP typically requires histological examination. [3,4] Laboratory findings have limited utility in the diagnosis of COP. Typically, lung function tests reveal a mild to moderate restrictive pattern. [5] Bronchoscopy and bronchoalveolar lavage (BAL) are recommended to eliminate the possibility of infection, malignancy, or other inflammatory disorders. [6] The disease typically begin between the fifth and sixth decades of life, although it can occur in children. The occurrence is roughly the same in both men and women, and even nonsmokers may have an elevated risk. [7,8] The conventional treatment for COP involves immunosuppressive therapy, primarily through the use of corticosteroids, which should be continued until the lesions resolve. The recurrence rate ranged from 10% to 30%. Ending steroid therapy prematurely can increase the likelihood of recurrence. [9,10]

Case Report:

A 65 years old female presented with complaints of fever and productive cough that had worsened over the last 01 month. The associated symptoms included decreased appetite, undocumented weight loss, and dizziness. On examination, she had a blood pressure of 100/80 mmHg, heart rate of 98 beats per minute, respiratory rate of 24 breaths per minute, saturation of 88% at room air, and a temperature of 99F. Crepitation was auscultated on the right side of the chest, below the infra scapular region. Her laboratory data showed leukocytosis (WBC $12.1x10^3$), normocytic anemia (HB 7.8, MCV 87.1), raised CRP (48 mg/dl), and hypokalemia (3.1mEq/L). Chest radiography revealed a homogenous opacity on the right side of the chest, involving the horizontal fissure.

The patient was admitted to the pulmonology ward as a case of community-acquired pneumonia; therefore, a broad-spectrum antibiotic (levofloxacin) was given and 2–3 L of oxygen was administered via nasal cannula. Considering the patient's age and duration of symptoms, we decided to perform a contrast-enhanced CT scan of the chest to investigate the possibility of malignancy. CECT revealed consolidation and ground-glass haziness in the anterior segment of the right upper lobe.

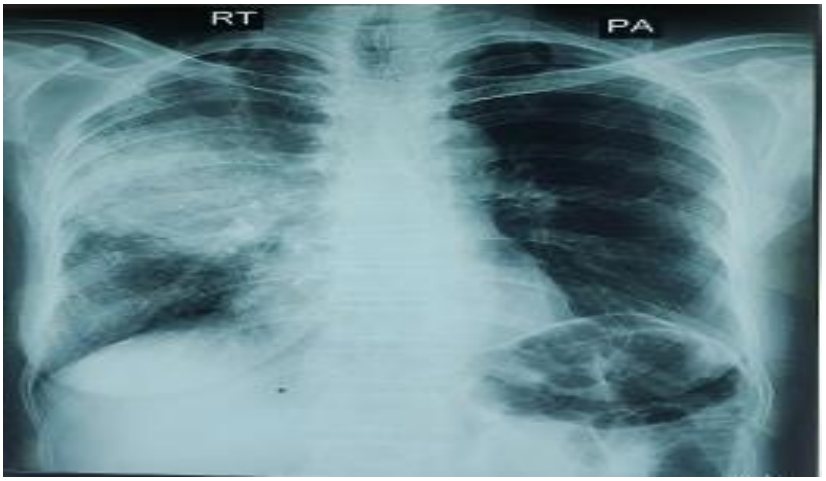

Figure 1: Chest X-ray showing homogenous opacity with few air bronchogram involving right side of the chest including horizontal fissure

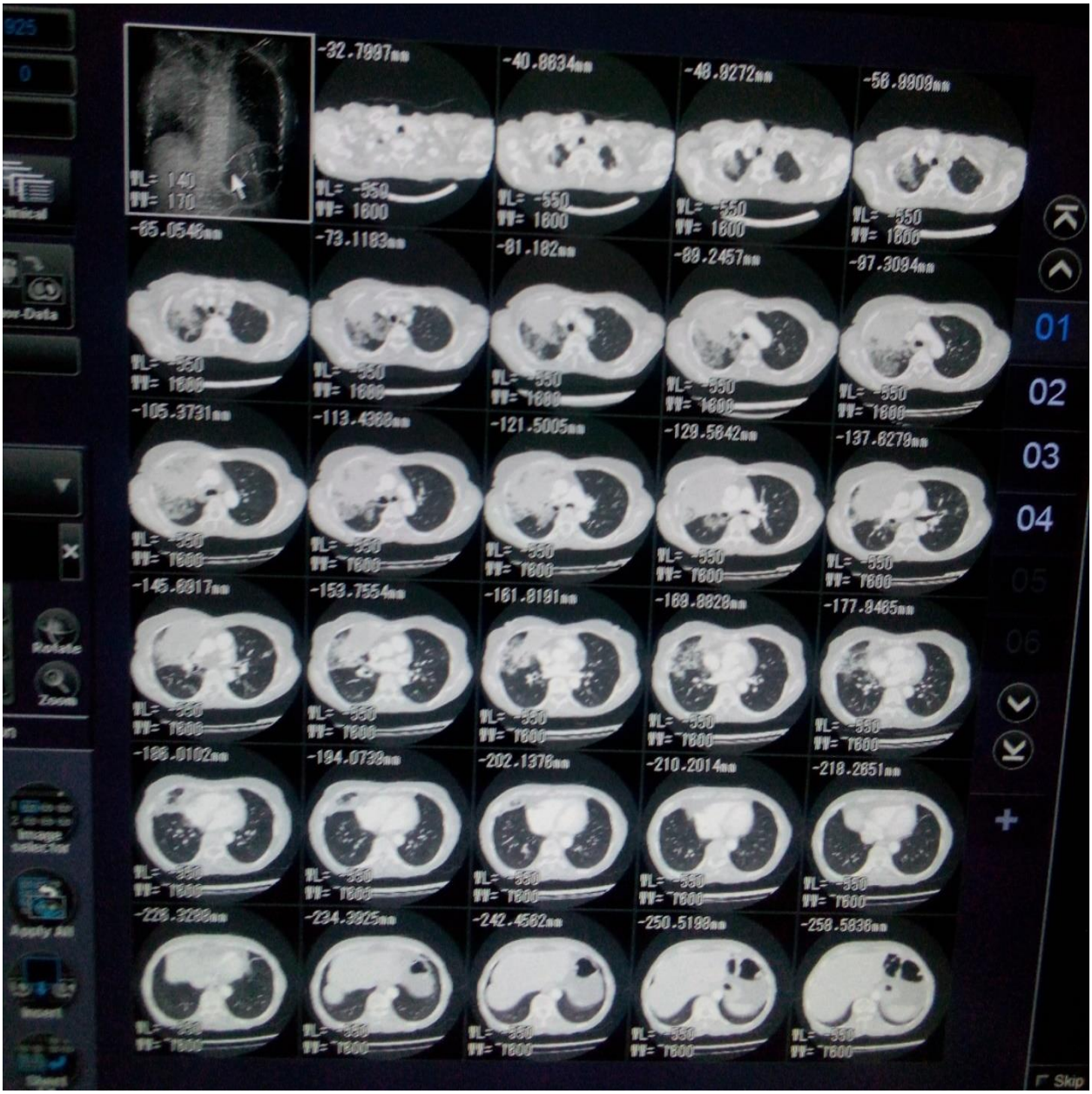

Figure 2: CECT chest showing right upper lobe opacity with ground glass haziness

Due to a significant suspicion of malignancy, ultrasound-guided needle biopsy was performed. As the patient initially responded well to treatment, she was discharged and called for follow-up along with a lung biopsy report.

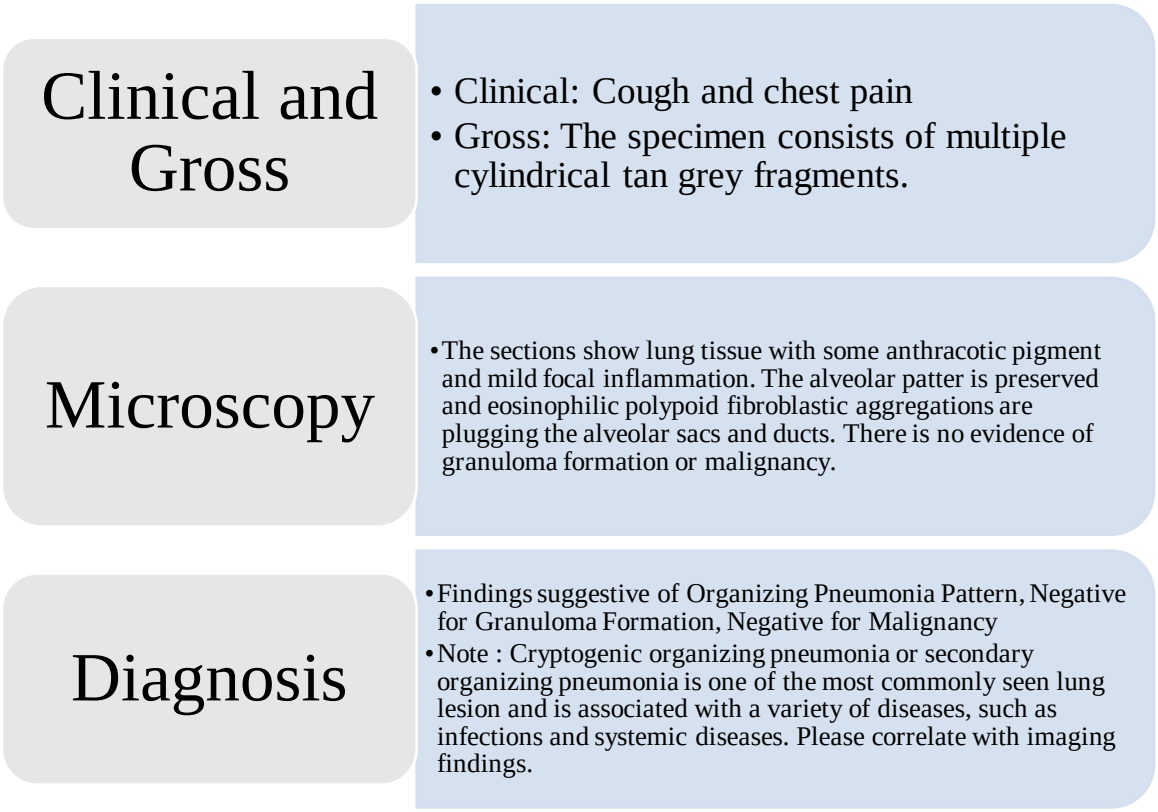

Figure 3: Histopathology report showing organizing pneumonia pattern

After a week, the patient presented with similar symptoms and was admitted again on antibiotics (piperacillin/tazobactam), and her induced sputum was sent for histopathology, AFB and MTB/Gene Xpert. Histopathology revealed eosinophilia polyploidy aggregation plugging the alveolar sacs and ducts, consistent with organizing pneumonia patterns. The AFB smear result was negative, but the MTB Gene Xpert was positive (low).

The patient was diagnosed with organizing pneumonia secondary to tuberculosis (TB). She was administered pulse therapy with methylprednisolone, rifampicin, isoniazid, pyrazinamide, and ethambutol. The patient was discharged with a maintenance dose of steroids and anti-tuberculosis drugs. On follow-up after one month, the patient reported significant improvement in her symptoms, along with resolution of opacity on chest radiography.

DISCUSSION:

Organizing pneumonia is defined by the occurrence of granulation tissue filling the distal bronchioles, respiratory bronchioles, bronchiolar ducts, and alveoli, indicating a pulmonary inflammatory process [11]. The causative pathogens associated with SOP primarily comprise viruses, bacteria, Cryptococcus, and aspergillus. In rare instances, Mycobacterium tuberculosis can be a causal factor. Identifying the root cause of OP in patients is crucial as it necessitates proper management of the underlying condition. If SOP is mistakenly diagnosed as COP, it could result in the initiation of corticosteroid therapy alone, potentially exacerbating the spread to the initial infection site. [12,13] The detection rate of MTB in respiratory specimens through smear or culture is approximately 60%. Utilizing molecular pathology techniques, such as PCR amplification of biopsy tissue samples, can enhance the rate of pathogen detection. It is essential to continually adapt treatment strategies according to the patient's symptoms, test outcomes, and response to treatment to achieve an accurate diagnosis and the best possible effectiveness. [14,15]

CONCLUSION:

Mycobacterium tuberculosis infection is one of the causes of pneumonia. All secondary causes of OP must be ruled out before labelling the patient with idiopathic or cryptogenic organizing pneumonia so that appropriate treatment can be initiated according to the underlying cause.

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