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General Medicine

DISSEMINATED KLEBSIELLA PNEUMONIAE INFECTION LEADING TO PYOGENIC LIVER ABSCESS AND SEPSIS-INDUCED IN-SITU PULMONARY ARTERIAL THROMBOSIS IN AN UNCONTROLLED DIABETIC FEMALE

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ABSTRACT We present a case of a 66-year-old female with poorly controlled type II diabetes mellitus and hypertension, who reported fever with chills, right upper abdominal pain, and vomiting. She had recently been treated for urosepsis, Klebsiella pneumoniae pneumonia, and pulmonary thromboembolism. On presentation, she was hypoxic, and laboratory workup revealed leukocytosis, thrombocytosis, hypoalbuminemia, and hypercoagulable state (fibrinogen 538 mg/dL). Contrast-enhanced CT abdomen revealed a multiseptated liver abscess in Segment VII. CT pulmonary angiography showed partial filling defects in the left main pulmonary artery and segmental branches, consistent with acute pulmonary thromboembolism. Blood, urine, and pus cultures all yielded ESBL-producing Klebsiellapneumoniae. Doppler ultrasound showed no deep vein thrombosis, indicating in-situ septic pulmonary arterial thrombosis. Ultrasound-guided aspiration yielded frank pus, confirming pyogenic liver abscess due to Klebsiella pneumoniae. Anticoagulation was withheld peri- procedure and reinitiated afterward. The patient improved with targeted antibiotics, optimized glycemic control, and supportive treatment. This case highlights the interplay between uncontrolled diabetes, disseminated Klebsiella pneumoniae infection, and inflammatory thrombosis mimicking a non-malignant Trousseau-like syndrome. Early diagnosis, source control, and multidisciplinary management are essential for favorable outcomes.

KEYWORDS : Klebsiella Pneumoniae; Pyogenic Liver Abscess; Sepsis-induced Thrombosis; In-situ Pulmonary Embolism; Diabetes Mellitus; Hypercoagulable State.

INTRODUCTION

Pyogenic liver abscess (PLA) is increasingly linked to Klebsiella pneumoniae, particularly in diabetic patients. Diabetes impairs immune function, enhances bacterial virulence, and predisposes to disseminated infection. Severe Klebsiella pneumoniae bacterial sepsis may trigger a prothrombotic state characterized by cytokine-mediated endothelial injury, elevated fibrinogen levels, reactive thrombocytosis, and activation of coagulation pathways, resulting in in-situ pulmonary arterial thrombosis, even without peripheral deep vein thrombosis.

Early recognition of infection-associated thrombosis is essential for timely treatment. We report a case of disseminated Klebsiella pneumoniae infection presenting with pyogenic liver abscess and in-situ sepsis-induced pulmonary arterial thrombosis in a poorly controlled diabetic female.

Case Report

A 66-year-old female, known case of type II diabetes mellitus (15 years, poorly controlled) and hypertension (10 years), presented with high-grade fever with chills for 10 days, dull right upper abdominal pain for 2 weeks, and vomiting for 2 days. She had been recently hospitalized for urinary tract infection, Klebsiella pneumoniae pneumonia, and pulmonary thromboembolism.

On arrival, she was pale, tachypneic, and hypoxic (SpO_2 90% on room air). Physical examination revealed mild hepatomegaly and tenderness in the right upper quadrant. No icterus, edema, clubbing, or lymphadenopathy was noted.

Laboratory Findings

Hemoglobin 10.8 g/dL, total leukocyte count 14.28 $\times 10^9$/L, platelet count 402 $\times 10^9$/L, albumin 2.6 g/dL, alkaline phosphatase 202 IU/L, CRP 119 mg/L, HbA1c 11.2%, sodium 130 mmol/L, and fibrinogen 538 mg/dL. Liver transaminases and renal function were normal.

Microbiology

Blood, urine, and liver aspirate cultures grew ESBL-producing Klebsiella pneumoniae. AFB smear, MTB-PCR, and fungal cultures were negative. ANA was positive (2+), while vasculitis and antiphospholipid antibody profiles were negative. Lower limb Doppler ultrasound showed no evidence of deep vein thrombosis.

Imaging Findings

- CECT Abdomen: Multiseptated pyogenic liver abscess in Segment VII, mild pleural and pericardial effusions.
- CT Pulmonary Angiography: Partial filling defects in left main pulmonary artery and segmental branches of both lower lobes, suggestive of acute pulmonary thromboembolism.
- Echocardiography: LVEF 60%, mild LV hypertrophy, no RWMA.

Anticoagulation was temporarily withheld due to the need for abscess drainage. Ultrasound- guided aspiration removed 50 mL of purulent content. Antibiotics were escalated based on culture sensitivity. Glycemic management was optimized using insulin, and anticoagulation (apixaban) was safely reinitiated. The patient showed gradual clinical improvement, normalization of inflammatory markers, and recovery of respiratory function. She was discharged in stable condition on oral antibiotics and anticoagulation.

DISCUSSION

Klebsiella pneumoniae is increasingly recognized as a cause of invasive pyogenic liver abscess syndrome, especially in diabetics, due to its hypermucoviscous phenotype and hematogenous dissemination. In this case, culture positivity in blood, urine, and liver pus confirmed disseminated infection.

Sepsis-induced hypercoagulability occurs due to inflammatory cytokines (IL-6, TNF-α), endothelial dysfunction, hyper-fibrinogenemia, and thrombocytosis. This may lead to in-situ pulmonary arterial thrombosis, even without DVT. This presentation mimics infection- associated Trousseau-like syndrome, similar to malignancy-related thrombosis, but caused by severe infection.

Management required strategic withholding and reintroduction of anticoagulation, source control via abscess drainage, glycemic optimization, and culture-directed antibiotic therapy. Multi-disciplinary coordination ensured successful recovery.

CONCLUSION

Disseminated ESBL-producing Klebsiella pneumoniae infection in uncontrolled diabetes can lead to pyogenic liver abscess and sepsis-induced in-situ pulmonary arterial thrombosis.

Infection-driven hypercoagulability should be suspected even in the absence of DVT. Earlyimaging, abscess drainage, culture-based antibiotics, glycemic control, and multidisciplinary management are essential for favorable outcomes.

Learning Points

✔ ESBL-producing Klebsiella pneumoniae can cause disseminated

infection involving blood, urine, and liver.

- ✔ Pulmonary thrombosis in sepsis can occur in-situ, even without DVT.
- ✔ Elevated fibrinogen and thrombocytosis indicate sepsis-associated hypercoagulability.
- ✔ Strict glycemic control is essential in invasive Klebsiella infections.
- ✔ Multidisciplinary coordination improves outcomes in infection-induced thrombosis.

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