

Community acquired pneumonia due to *Klebsiella pneumoniae* and *Burkholderia pseudomallei* co-infection in a diabetic patient: a case report

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ABSTRACT

A 63-year-old diabetic man from Sherpur district, presented with 20-day history of fever and productive cough without any haemoptysis. Initially he was diagnosed as having pneumonia caused by *Klebsiella pneumoniae* and had been receiving sensitive antibiotic without satisfactory improvement. Clinical evaluation later revealed that, he was febrile, tachycardic, tachypneic and anaemic. Chest examination findings were consistent with consolidation at right upper chest. Further diagnostic work-up confirmed pneumonia due to co-infection by *Klebsiella pneumoniae* and *Burkholderia pseudomallei*. He tested positive for SARS-CoV-2 infection. Antibiotic was revised and his response to treatment was satisfactory till the latest follow-up. This case is reported to stress the importance for searching causes for non-resolution of pneumonia.

Key words: community acquired pneumonia, non-resolving pneumonia, melioidosis, *Burkholderia pseudomallei*.

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INTRODUCTION

Streptococcus pneumoniae and *Klebsiella pneumoniae* are reported as the most common pathogens causing pneumonia in non-diabetic and diabetic patients respectively.¹ *Burkholderia pseudomallei* is an emerging concern, especially for diabetic patients in Bangladesh.^{2,3} Coronavirus disease 2019 (COVID-19) is an ongoing issue, which contributed to significant

morbidity and mortality and complicated treatments of many non-COVID illnesses. Here, we report case history of an elderly diabetic patient with pneumonia due to co-infection by multiple pathogens.

CASE REPORT

A 63-year-old diabetic man from Sherpur district of Bangladesh presented with 20-day history of fever and productive cough without any haemoptysis. At first he was diagnosed as having right upper lobe pneumonia caused by *K. pneumoniae* and had been receiving sensitive antibiotic without satisfactory improvement. He required re-admission and clinical evaluation at our facility revealed that he was febrile, tachycardic, tachypneic and anaemic. Chest examination findings were consistent with consolidation at right upper chest.

Further imaging confirmed pneumonia involving the right upper chest (Figures 1, 2). He had anaemia (Hb 9.0 gm/dl), neutrophilic leukocytosis (total white cells 12,260/cmm with 84.4% neutrophils) and high inflammatory markers (erythrocyte sedimentation rate was 56 mm in first hour and C-reactive protein 185.2 mg/L). Sputum Gram stain showed Gram-negative

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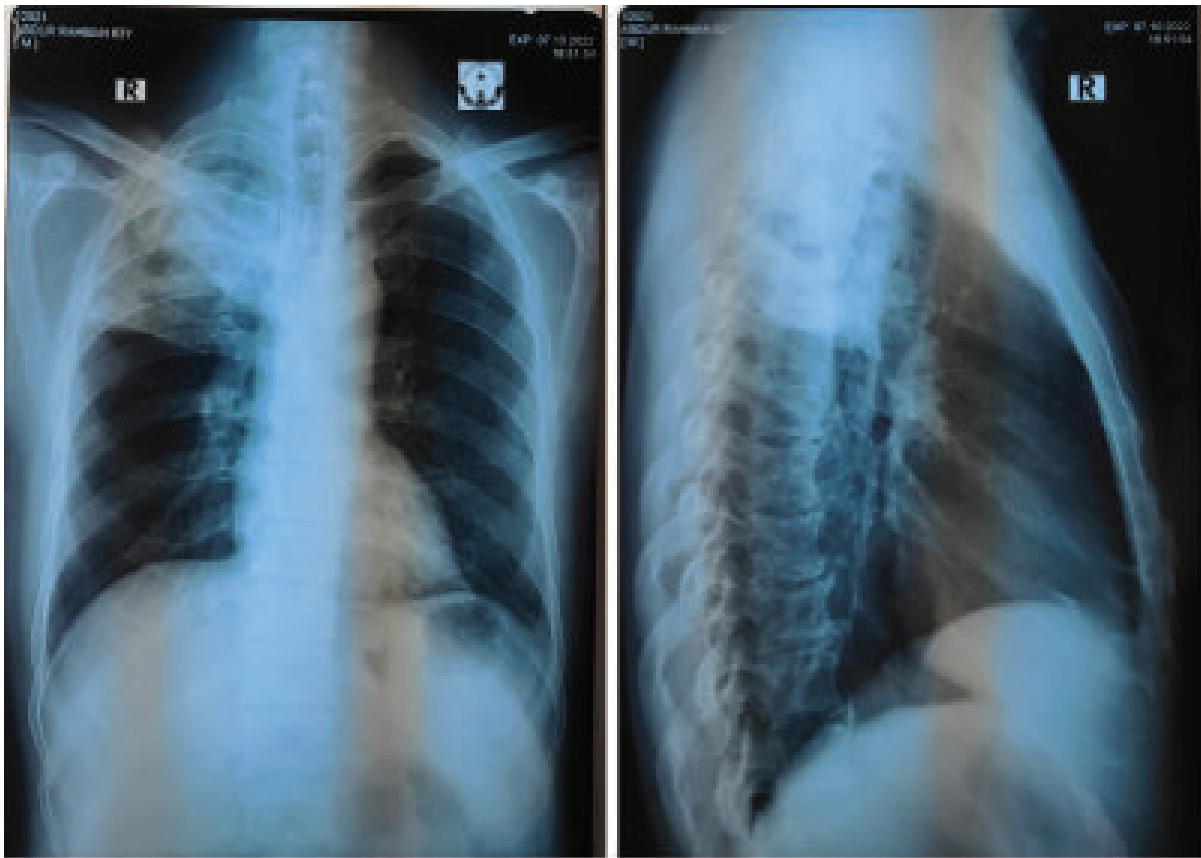


Figure 1. Chest X-ray postero-anterior and right lateral view showing consolidation at right upper chest

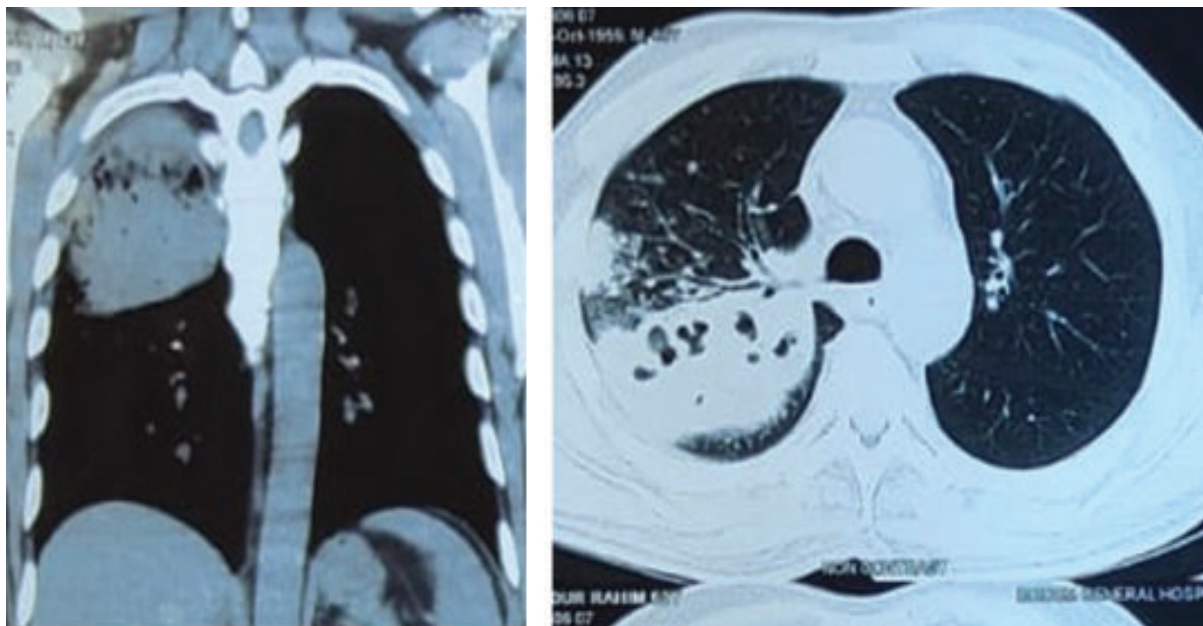


Figure 2. Computed tomography (CT) scan of chest showing consolidation at right upper chest

coccobacilli (moderate), Gram-negative bacilli (moderate), budding yeast with pseudohyphae (scanty), wet preparation for fungal microscopic examination showed moderate amount of budding yeast with fungal hyphae and there was no malignant cells. Sputum for acid fast bacilli and GeneX-pert were negative. Sputum cultures revealed growth of *K. pneumoniae* (profuse), *B. pseudomallei* (profuse) and non-*Albicans candida* (moderate) and he tested positive for severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) infection. Blood culture appeared sterile. He had poorly controlled glycaemic status [random blood glucose during admission was 13.9 mmol/L and glycated haemoglobin (HbA1c) was 9.2%]. Antibiotic was revised to ceftazidim (initial acute phase) and amoxicillin-clavulanic acid combination (in oral eradication phase)⁴ and his response to treatment was satisfactory till the latest follow-up.

DISCUSSION

Melioidosis is an emerging infection in Bangladesh.² Patients with diabetes mellitus are the predominant sufferers^{2,3,5} and the first case in any local journal was published in 2001.⁶ That patient was also from Sherpur district. Till date, less than one hundred cases are reported, mostly from north-east zones of the country and it is only the tip of the iceberg and definitely far beyond the estimated case numbers and deaths.^{7,8}

Melioidosis can present with acute presentations like pneumonia, cutaneous and organ abscesses, genitourinary infections, septic arthritis, septicaemia and septic shock.^{2,3,5-7} Sub-acute and chronic presentations may result from inappropriate and inadequate antibiotic treatments and such presentations mimic tuberculosis. Co-infection by *B. pseudomallei* and *K. pneumoniae* were rarely reported in literature. Our patient was not treated for non-*Albicans candida*, as it was likely to be a colonization, as per microbiologist's suggestion and he required no specific treatment for SARS-CoV-2 infection.

In conclusion, melioidosis is an uncommon but emerging disease in Bangladesh. Cases are increasingly being identified and reported. A high index of suspicion is

needed in appropriate clinical context, especially when patients are not responding to conventional antibiotic treatment like the present case.

Authors' contribution: AM, RM followed up and managed the case. TAC, MAA, MAR managed the case. LB was the key microbiologist. MAR drafted the manuscript. All authors read and approved the final manuscript for publication.

Consent: Informed written consent was taken from the patient for publication of the case report and any accompanying images.

Conflicts of interest: Nothing to declare.

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