

Septic Pulmonary Embolism and Meningitis by Community Acquired Klebsiella Pneumoniae

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ABSTRACT

A 19-year-old healthy male presented with fever, headache, diplopia and neck pain. His work-up showed gram negative bacilli in cerebrospinal fluid and Computerized tomography(CT) chest showed peripheral nodules with cavitations, a feeding vessel sign, wedge shaped peripheral lesions abutting the pleura, suggestive of septic pulmonary emboli(SPE). Sputum and bronchoalveolar lavage cultures were positive for Klebsiella pneumoniae(KP). Such a case of community acquired KP infections are rare in healthy individuals, but are common in alcoholics and diabetes mellitus. Extended spectrum beta lactamases (ESBL) producing KP are more common nowadays due to wide spread use of cephalosprins. SPE is also an uncommon entity seen secondary to central venous catheter infections, endocarditis or in IV drug abusers and staphylococcus aureus being most common organism associated. Thus here we present a rare case of KP meningitis with SPE in a healthy male which responded well to carbapenems.

Key Words: SPE, ESBL, KP, CT

INTRODUCTION

Klebsiella pneumoniae, also known as Friedlander bacilli, is a gram negative, capsulated, multidrug resistant organism. They contain ESBL that are responsible for drug resistance and increased mortality. It is a common hospital acquired pathogen and a potential community acquired pathogen. However, widespread use of third generation cephalosporins is one of the risk factor for emergence of ESBL producing KP(1). Because of emergence of ESBL, carbapenems have been the agents of choice for the management of multidrug resistant KP infections. But now carbapenem resistance has also emerged among these organisms by production of carbapenemases(2). Alcoholism and diabetes mellitus are two important risk factors for Klebsiella septicemia.

Septic pulmonary embolism being uncommon entity, but a life threatening condition, is usually due to staphylococcus and rarely fungal pathogens. Primary source mostly being infective endocarditis, IV drug abuse, septic thrombophlebitis and soft tissue infections. SPE is usually diagnosed based on typical CT findings and the presence of primary source of infection. (3)

CASE DESCRIPTION

A 19 year old male, resident of Panipat, Haryana, presented to us with complains of fever, headache, diplopia and neck pain since 10 days. He was admitted in a hospital for 5 days initially and received 5 days of antibiotics, namely ceftriaxone and vancomycin, in view of bacterial meningitis and referred to us. When he presented to us he was conscious and oriented, febrile, and dyspneic with oxygen saturation 92% at room air and Glasgow Coma Scale of 15/15. Systemic examination revealed right lateral rectus palsy and positive kernig's sign. Fundus examination was normal. His complete hemogram showed hemoglobin 11.2 gm/dl, white blood cells(WBCs) 7400 cells/cc with 86% polymorphs and platelets of 1.1 lac/cc. Liver and renal function tests, serum electrolytes were normal. Human immunodeficiency Virus by ELISA was negative. Cerebrospinal fluid examination(CSF) done in a outside hospital revealed, WBCs of 48 cells/cc with 95% polymorphs and rest lymphocytes, proteins of 55 mg/dl, glucose of 52 mg/dl, and gram-negative bacilli were seen. Repeat CSF examination

done at our centre was acellular with proteins of 58mg/dl, glucose 81 mg/dl, gram stain and CSF cultures were negative. CT head was normal and MRI brain showed mild meningeal enhancement in bilateral temporal regions, extending into bilateral cavernous sinuses, predominantly on right side. His chest x-ray showed diffuse bilateral nodular densities with ill-defined margins in the peripheral lung fields(fig.1).



Fig 1: Plain Chest X-Ray showing diffuse bilateral nodular densities with ill-defined margins in the peripheral lung fields.

CECT chest showed multiple ill-defined nodular opacities and thick walled cavitary nodules in both lung parenchyma, more in peripheral lung fields, with few of them showing halo sign (central soft tissue attenuation surrounded by a halo of ground-glass attenuation). Feeding vessel sign consisting of a distinct vessel leading directly into the centre of the nodule was present highly suggestive of SPE(fig.2).

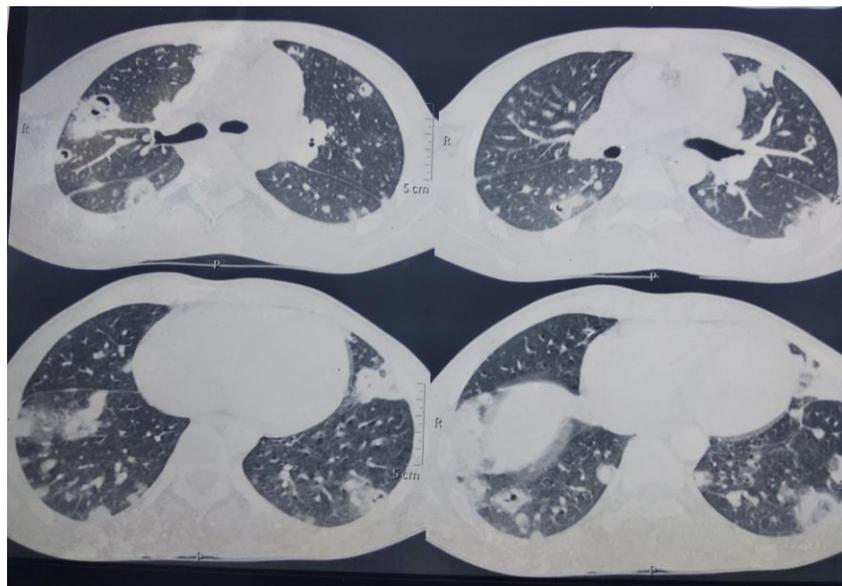


Fig 2: CECT chest showing thick walled cavitary nodules abutting to pleura and feeding vessel sign (arrow).

Blood and urine cultures were sterile. Sputum examination showed gram negative bacilli, cultures were suggestive of KP sensitive to meropenem and amikacin. Bronchoalveolar lavage cultures were also positive for KP. 2D echocardiography done to rule out vegetations in heart was normal. Ultrasound abdomen was normal. The final diagnosis is septic pulmonary emboli and meningitis with right lateral rectus palsy caused by community acquired Klebsiella pneumoniae. He was given

Inj. meropenem (1g intravenous QID) with supportive treatment. Patient showed rapid improvement after starting carbapenems. His repeat chest x ray after 14 days showed clearance of majority of lesions(fig.3).

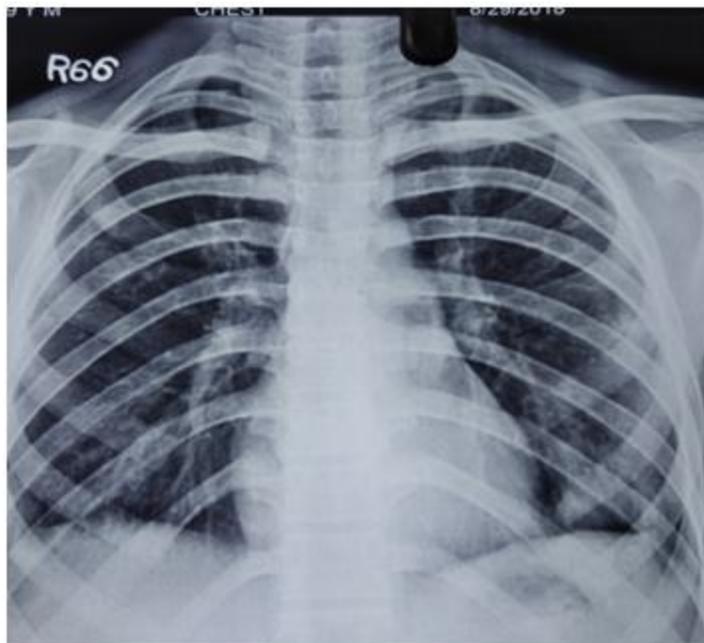


Fig 3: Plain Chest X-Ray showing clearance of majority of lesions.

DISCUSSION

Klebsiella pneumoniae is an emerging multidrug resistant organism. The common sites of localization in healthy humans will be gastrointestinal tract, respiratory tract, eyes and genitourinary tract. Capsular antigen K, somatic antigen O, fimbrial and nonfimbrial antigens are the important virulence factors. A special fimbria, called KPF-28, which helps in adherence and bowel colonization is found to be responsible for ESBL producing *Klebsiella pneumoniae*.(4)

In this case patient being young healthy host, non alcoholic, not a intravenous drug abuser, with an unknown primary focus of KP infection, developed meningitis and SPE. Although his CT chest findings resembled that of fungal infections like aspergillosis, which is a close differential of SPE radiologically, his sputum and bronchoalveolar lavage cultures were positive for KP and sensitive for carbapenems.

In conclusion, community acquired KP infections rarely cause catastrophes in healthy individuals and is associated with meningitis and SPE in our case. And it responded well to carbapenems which are currently drug of choice in ESBL producing KP.

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