

## Bacterial wanderlust: A case of pneumococcal liver abscess



### Medical Science

**KEYWORDS :** *Streptococcus pneumoniae*, diabetes, liver abscess

<b>Dr Debarati Banerjee</b>	Demonstrator, Department of Microbiology, Calcutta National Medical College
<b>Dr Debopriyo Samaddar</b>	Demonstrator, Department of Microbiology, Calcutta National Medical College
<b>Dr Jaya Das</b>	P.G.T , Department of Microbiology, Calcutta National Medical College
<b>Dr Rituparna Haldar</b>	Demonstrator, Department of Microbiology, Calcutta National Medical College
<b>Prof. Rajyasri Guhathakurta</b>	Prof and HOD, Department of Microbiology, Calcutta National Medical College

### ABSTRACT

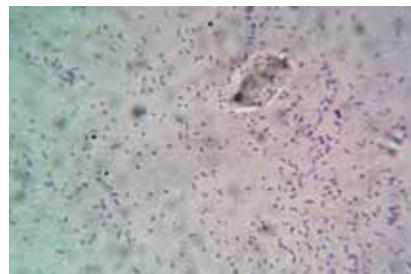
*The lanceolate shaped diplococcus Streptococcus pneumoniae is a common aetiological agent for infections of respiratory tract and meninges. Unusual manifestations of infection caused by this pathogen are still a rarity at present.*

*These uncommon presentations result from different underlying abnormalities. Here we describe a case of a diabetic patient with incompletely treated pulmonary Koch's who presented with a right upper quadrant pain and fever. Ultrasonography revealed a right hepatic lobe abscess and guided aspirated pus revealed lanceolate shaped Gram positive diplococci on both direct stain and culture. Different biochemical tests confirmed the organism to be pneumococcus and antibiotic sensitivity was done with complete cure of the lesion.*

**INTRODUCTION:** Invasive disease caused by *Streptococcus pneumoniae* still remains an important cause of morbidity and mortality in various population groups mostly originating from a primary focus of airway infection [1]. Unusual pneumococcal infections occurred frequently in the pre-antibiotic age but rapidly declined with the advent of antibiotic era. However, despite monumental advances in medical technology there is a resurgence of invasive pneumococcal disease because of the ongoing HIV epidemic and the emergence of antibiotic resistant strains [2]. *Streptococcus pneumoniae* is responsible for a remarkable array of different unusual manifestations including pancreatic and liver abscesses, aortitis, gingival lesions, inguinal adenitis, testicular and tubo-ovarian abscesses and necrotizing fasciitis. Alcoholism, HIV infection, splenectomy, connective tissue diseases, steroid use, diabetes mellitus and intravenous drug use remain common risk factors for invasive pneumococcal infection [4]. We describe a diabetic patient who was incompletely treated for pulmonary tuberculosis earlier and presented with a liver abscess as first manifestation of invasive pneumococcal disease, without respiratory symptoms at the time of presentation. The patient was treated with surgical drainage of the abscess and systemic antibiotics with good results. Hence, *Streptococcus pneumoniae* should well be considered as a possible aetiology of hepatic abscess with or without respiratory symptoms.

**CASE REPORT:** A male patient of 58 years, a known case of Type 2 diabetes for the last 10 years, with inadequate metabolic control presented with history of continuous abdominal pain localized in the right upper quadrant. He had a past history of pulmonary tuberculosis five years back and defaulter due to incomplete treatment. The patient was febrile but denied the presence of cough or dyspnoea. Physical examination revealed hepatomegaly. Chest radiographs on the day of admission revealed occasional fibrotic bands on basal zones of left lung with minimal pleural effusion on the right side. However, ultrasonography of the upper abdomen revealed abscess formations in the right hepatic lobe, the largest of which measured 110 mm diameter. Blood culture sent was negative. Ultrasound guided percutaneous drainage of the abscess was planned and executed. The purulent material was sent to Microbiology department for further processing. The purulent material was subjected to routine Gram stain, Z-N stain, culture and wet mount examination. Gram stain showed plenty of pus cells and few Gram positive lanceolate shaped diplococci with a faint halo surrounding them. No

acid fast bacilli were seen on ZN stain. The sample was routinely cultured on MacConkey's agar and Blood agar. There was no growth seen on MacConkey's agar. While on blood agar the colonies were tiny, smooth, transparent and low convex showing a narrow zone of  $\alpha$ -hemolysis around the colonies after overnight incubation which further assumed 'draughtsman form' after 24 hrs of incubation with 5-10% CO<sub>2</sub>. The colonies were subjected to Gram stain, catalase test, bile solubility test, and optochin susceptibility test. The organism isolated was Gram positive lanceolate shaped diplococci with a faint halo surrounding them morphologically resembling pneumococcus (Fig.1), catalase negative, bile soluble (Fig.2), and susceptible to optochin (Fig.3), thereby confirming it to be *Streptococcus pneumoniae*. Antibiotic susceptibility test was performed on Mueller Hinton agar supplemented with 5% sheep blood according to the CLSI guidelines, 2015 (M100-S25).[2] The isolate was sensitive to Penicillin, Ampicillin, Ceftriaxone, Vancomycin. The patient was successfully treated with intravenous Ceftriaxone 1g 12 hourly for seven days and then the treatment was continued with oral amoxicillin for another two weeks.



**Fig.1**



**Fig.2**



Fig.3

### DISCUSSION & CONCLUSION:

This case highlights that post tubercular patients as well as diabetics have a propensity for suffering from pneumococcal invasive disease. Similar findings among the diabetic patients have already been described by Gilardi et al and Lund <sup>[1,7]</sup>. Nevertheless, liver abscess is still quite a rare occurrence in such cases, especially when blood cultures are negative. On the other hand, up to 25% of liver abscesses are characterized by the presence of bacteraemia, with *Staphylococcus aureus* being the most common pathogen <sup>[5]</sup>. Ultrasound is a good diagnostic modality especially if computed tomography (CT), Magnetic resonance imaging (MRI) is unavailable <sup>[6]</sup>. The treatment usually administered as a combination of interventional radiology procedures along with systemic antimicrobials <sup>[5]</sup>. This case was also successfully treated likewise. To conclude, this case signifies the fact that *S. pneumoniae* should be considered among the possible causes of liver abscesses, especially in immunocompromised patients, post-splenectomy patients or any patient with the risk factors for invasive disease caused by the bacteria, regardless of respiratory symptoms or positive blood cultures.

### REFERENCES:

1. Gilardi L, Eugenia Dellepiane M. Hepatic abscess as first manifestation of pneumococcal invasive disease. Rev Chilena Infectol 2011 Aug;28(4):381.
2. Taylor S, Sanders C. Unusual Manifestations of Invasive Pneumococcal Infection. The American Journal of Medicine 1999; 107(1A): 125-275.
3. Clinical and Laboratory Standards Institute. Performance Standards for Antimicrobial Susceptibility Testing; Twenty-Fifth Informational Supplement. Clinical and Laboratory Standards Institute; Wayne, PA: Jan 2015. Document M100-S25.
4. M. Musher D Streptococcus pneumoniae. In: Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. Mandell GL; Bennett J. & Dolin R eds. 7 th ed. Philadelphia: Churchill Livingstone, Elsevier; 2010. p. 263341.
5. Fantuzzi A, Albertz N, Valenzuela A, Stuart N, Castro A. abscess liver: A series of 107 cases and review of the literature. Rev Chil infectol 2009; 26 (1): 4953.
6. Wang CL, XJ GuoQiu SB, Lei And ZD Yuan, Dong HB, et al. Diagnosis of bacterial hepatic abscess by CT.Hepatobiliary Pancreatic Dis Int 2007; 6: 2715.
7. Lund Tonnesen S. Liver Abscess: An Unusual Manifestation of Pneumococcal Infection. Scand J Infect Diseases 1995; 27 (4): 397-8.