

A rare case of *Propionibacterium* species causing lung abscess

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ABSTRACT

Propionibacterium species are a part of the normal microbial flora of the body and are usually found as contaminants of blood culture. Here, we report a case of *Propionibacterium* spp. causing lung abscess in a 69-year-old male smoker, alcoholic and diabetic. After taking treatment for about 1 year, he was referred to the Government Medical College, Thiruvananthapuram where *Propionibacterium* species, sensitive to Penicillin was isolated from his sputum repeatedly. He recovered completely after 6 weeks of oral Penicillin therapy.

Key words: Lung abscess, Penicillin, *Propionibacterium* species

INTRODUCTION

Propionibacterium is an anaerobic/microaerophilic Gram-positive non-sporing, non-acid fast, non-motile bacteria belonging to family Propionibacteriaceae. Important members are *Propionibacterium acnes*, *Propionibacterium granulosum* and *Propionibacterium propionicum*. They are Gram-positive pleomorphic bacilli, which is non-sporing, non-acid fast, non-motile, and aerotolerant in birds in flight or picket fence arrangement. They are part of normal microbial flora of human body occasionally causing human infections. *P. acnes* is found in acne. They have been isolated in infective endocarditis and in infections associated with implanted prostheses.

CASE REPORT

A 69-year-old man presented in the Medicine Outpatient Department of Government Medical College, Thiruvananthapuram, Kerala, in September 2012 with a productive cough, copious foul smelling sputum and progressive weight loss of 6 months duration. The cough was aggravated in the night. He was a chronic smoker and alcoholic. He was a diabetic, but not on any continuous treatment.

History

He was investigated for the same complaints in March 2012 at Government Medical College, Kottayam, Kerala. The reports of the investigations done are as follows. Chest X-ray, showed multilobar consolidation of lungs [Figure 1]. Contrast enhanced computerised tomography (CT) thorax taken then showed multiple segmental collapse consolidation [Figure 2]. Fibre optic bronchoscopy showed extraneous compression of lingular lobe bronchus. CT-guided fine needle aspiration was done, and cytology was consistent with suppurative inflammatory lesion. Sputum examination for acid-fast bacilli (AFB) was negative. There were no malignant cells in cytological examination. All blood tests were normal except for raised erythrocyte sedimentation rate (ESR) 150 mm/1st h and total leucocyte count 11,300/mm³. HIV antibody and Hepatitis B surface antigen (HBsAg) were negative. He was on different courses of antibiotics without any improvement.

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In August 2012, a repeat chest X-ray revealed a fluid level with encysted pleural effusion on the right side [Figure 3]. ESR



Figure 1: Chest X-ray (March 2012) showing multilobar consolidation of lungs



Figure 2: Contrast enhanced computerised tomography thorax showing multiple segmental collapse consolidation

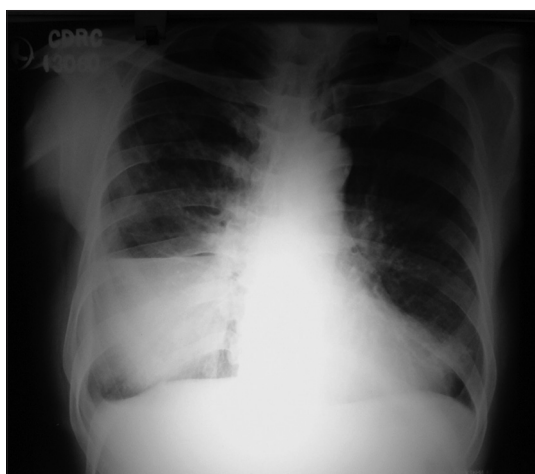


Figure 3: Chest X-ray (August 2012) showing air-fluid level with encysted pleural effusion on the right side

was 90 mm/1st h. In September 2012, chest X-ray showed bilateral consolidation with pleural effusion. He was started on oral Moxifloxacin and then referred to our hospital.

On September 15, 2012, when he came to our hospital, sputum was sent for bacterial culture, AFB culture, and fungal culture. We received an early morning sputum sample for culture. The sputum sample was purulent and foul-smelling. Gram-stain showed plenty of pus cells, Gram-positive branching bacilli and normal flora was absent. Modified acid-fast staining showed no AFB.

Culture was done on blood agar, chocolate agar, MacConkey agar and Lowenstein–Jensens media and incubated at 37°C. Blood agar was kept in candle jar at 37°C. Anaerobic culture was done on blood agar using alkaline pyrogallol method. Sputum was inoculated on Sabouraud's dextrose agar and incubated at 37°C and at room temperature. After overnight incubation, blood agar showed predominant growth of moist glistening colonies with α haemolysis enhanced on the anaerobic culture. Chocolate agar also showed a similar growth. MacConkey agar showed no growth. There was no growth on Tellurite blood agar.

Gram-staining of the colonies showed Gram-positive bacilli in a bird in the flight pattern. The isolate was non-motile. Biochemical reactions of the isolate were as follows:

Catalase test was positive. Oxidase test was negative. Indole was not produced nitrate was not reduced, aesculin was not hydrolysed and glucose and sucrose fermented with acid only.

Antibiotic sensitivity pattern of the isolate on Mueller-Hinton agar by Kirby–Bauer disc diffusion method showed sensitivity to Penicillin, Gentamicin, Amikacin, Cotrimoxazole, Clindamycin, Imipenem, Tetracycline and Levofloxacin and resistance to Erythromycin, Cephalosporins, Vancomycin, Ciprofloxacin and Teicoplanin Sputum culture was repeated after 2 days, and the same isolate was obtained with same sensitivity pattern. The isolate was identified as *Propionibacterium* species based on microscopy and biochemical features.

The patient was treated with parenteral Penicillin for 5 days and continued with oral Penicillin 400 mg 4 times daily for 4 weeks. AFB and fungal culture were negative. The patient improved symptomatically and culture repeated after 2 months was negative. Chest X-ray taken after 2 months of treatment showed clearing of the lung fields [Figure 4].

Branger *et al.* in 1987 reported a case of septicaemia caused by *P. granulosum* in a compromised patient which was successfully treated by Penicillin.^[1] Dworniczek *et al.*

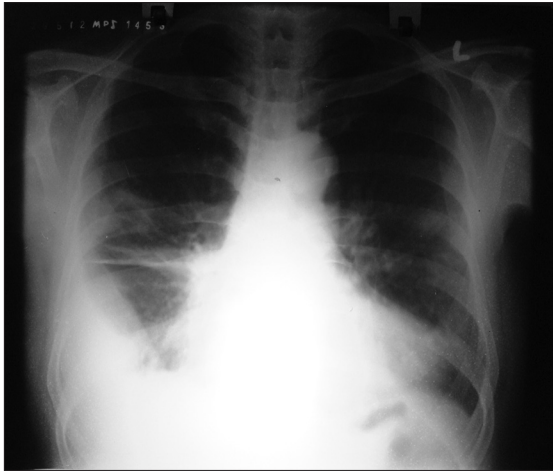


Figure 4: Chest X-ray taken after 2 months of treatment showing clearing of the lung fields

published three cases of invasive infection caused by *Propionibacterium* spp. in which he emphasised the need for keeping blood culture samples for prolonged incubation.^[2] Veitch reported lung abscess in a 29-year-old transplant recipient caused by *P. acnes* treated by Cotrimoxazole and Co-amoxiclav.^[3]

This case highlights the fact that though *Propionibacterium* is commonly isolated as a contaminant, on certain occasions, significant isolates can cause serious infection. Appropriate treatment can save the patient. This report also highlights the importance of culture and the usefulness of Penicillin even in this era of antibiotic resistance.

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Conflicts of interest

There are no conflicts of interest.

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