



Case report

HIV adult with fever and shortness of breath: Influenza B misdiagnosed as *Pneumocystis (carinii) jiroveci* pneumonia (PCP)



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ABSTRACT

Clinical correlation is essential in assessing the relevance of the patient's history and physical findings in making a clinical presumptive diagnosis. False diagnostic associations may result in misdiagnosis.

We present a case of an elderly female with HIV on HAART who presented with shortness of breath assumed to have *Pneumocystis (carinii) jiroveci* pneumonia (PCP) even though she had a clinical diagnosis of influenza B. She was thought to have PCP only because she had HIV. Tests for PCP were negative including BAL staining. Influenza B present in her respiratory secretions by PCR and was also cultured from BAL fluid. Diagnostic associations are helpful in suggesting diagnostic possibilities but must be supported by clinical correlation of characteristic clinical features.

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Introduction

Often, presumptive diagnosis is based on reflex associations, e.g., pneumonia in HIV patients is most likely due to *Pneumocystis (carinii) jiroveci* pneumonia (PCP). However, the clinical features of PCP must be present to be included in the differential diagnosis (DDx). Implicit in the clinical diagnostic approach is that findings attributed to PCP must not be ascribed to another cause of community acquired pneumonia (CAP), e.g., viral pneumonia [1–3].

PCP usually presents increasing shortness of breath (SOB) over several days, made worse on exertion. In contrast to viral pneumonias, e.g., influenza and the influenza like illnesses (ILIs), PCP has little or no fever with chills and no extra-pulmonary findings. On presentation PCP, SOB may be accompanied by dry cough. Physical examination is unremarkable in PCP. Importantly, in early PCP, auscultation of the lungs is remarkable for decreased breath sounds without rales or wheezing and patients are hypoxemic on room air, which is worsened by exertion.

PCP laboratory abnormalities, excluding findings attributable to HIV, typically includes mild leukocytosis and an elevated LDH. The chest x-ray (CXR) early shows clear lung fields, and later shows bilateral patchy infiltrates without consolidation or pleural effusions.

Spontaneous pneumothorax when present, is a clue to the diagnosis of PCP confirmed by demonstrating an elevated β 1,3 glucan level (BG) or by diagnostic bronchoscopy which reveals an abundant eosinophilic exudate which is silver stain, positive for PCP [4–7].

Chest CT scan typically shows ground glass opacities (GGO) bilaterally with upper lobe predominance, but GGO are not specific for PCP. Most often PCP is mimicked radiologically by influenza pneumonia. Like PCP, early influenza pneumonia CXR show clear lung fields \pm basilar atelectasis/small pleural effusions. Days later, bilateral patchy infiltrates \pm consolidation are usual. On chest CT scans, GGO are common in influenza pneumonia. Prior to admission, fever, chills, malaise and fatigue are prominent with influenza. In adult influenza, common non-specific laboratory abnormalities include mild leukocytosis or leukopenia, an elevated CPK, and an elevated LDH [8–10].

The diagnosis of an ILI or influenza in an hospitalized adult is based on culture or respiratory viral PCR of nasal/oropharyngeal specimen. Alternately, diagnosis may be confirmed by culture or PCR of the virus from BAL fluid or lung tissue.

We present a case a misdiagnosis of PCP based on reflex diagnostic assumptions, e.g., CAP in HIV must be due to PCP.

Case report

A 71 year old female presented with 2 day history of SOB and dry cough. She complained of fever, chills, myalgias and profound malaise. Her past medical history included diabetes mellitus, COPD

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and HIV on HAART therapy. Recent CD₄ count was 258 with an undetectable viral load.

On admission, she appeared to be in respiratory distress with a temperature was of 100°F. Her physical examination was unremarkable except for rhonchi bilaterally and diffuse wheezing. For her COPD related wheezing, she was started on high dose methylprednisolone.

Laboratory studies on admission included a WBC count of 22.8 K/uL with 4% lymphocytes (n=21–51% and 7% monocytes (n=0–10%). Her platelet count was 301 K/uL (n=160–392 K/uL), Serum LDH was 436 IU/L (n=100–250 IU/L) and serum ferritin was 46 ng/mL (n=10–187 ng/ml). Procalcitonin (PCT) was highly elevated at 38.42 ng/mL (n = < 0.50 mg/mL). Blood cultures were positive for MSSA (source unclear) and she was started on meropenem. Her CXR was unremarkable. Chest CT scan showed patchy peribronchial infiltrates in the right upper lobe with right middle lobe consolidation. Based on the CT scan findings, there was concern for septic emboli secondary to possible acute bacterial endocarditis (ABE), but transthoracic echocardiogram (TTE) was negative for vegetations. Viral PCR film array (Biofire, Salt Lake City, Utah) was positive for influenza B and she was started on oseltamavir. Her A-a gradient was 59 (n ≤ 30). Her CD₄ count was 125 and her HIV viral load remained undetectable. She was continued on HAART therapy.

SOB continued and she required supplemental oxygen during her hospital stay. As her steroids were tapered, her symptoms worsened. Repeat chest CT scan showed new areas of ground glass and opacities (GGO) and right upper lobe infiltrates with associated cystic foci, on hospital day #2, she was started on trimethoprim-sulfamethoxazole (TMP-SMX) (20 mg/kg/day) for PCP.

She underwent diagnostic bronchoscopy with bronchoalveolar lavage (BAL) which showed atypical squamous cells and non-eosinophilic cellular debris. Grocott Silver stain was positive for “fungal elements morphologically suggestive of *Aspergillus sp.*,” but was “non-diagnostic for PCP”. Serum β 1,3 D- glucan (BG) was negative < 31 pg/mL (n = < 80 pg/mL) x 3. *Aspergillus galactomannan* (GM) was negative, i.e., 0.05 (n=0.00 – 0.49 index). BAL viral culture was also positive for influenza B.

Discussion

This case illustrates several teaching points. Although coinfections may rarely occur, if the clinical presentation can be fully explained by one diagnosis (influenza), there is no need to search for an alternate diagnosis (PCP). The case presented was that of an elderly female with COPD and influenza B pneumonia with little to suggest an alternate diagnosis since PCP not accompanied by no fever, chills, myalgias, or profound malaise. Anyone, including HIV patients, may acquire influenza particularly during influenza season as was the case here. The chills, myalgias and profound fatigue were clues to the diagnosis of influenza pneumonia. Except for her past medical history of HIV on HAART, clinically there was little to suggest PCP (Table 1).

Since the patient had HIV undue diagnostic weight was given to the patient's elevated LDH and BAL findings. Diagnostically, over reliance on non-specific chest CT scan findings of GGOs did not favor the diagnosis of PCP and GGOs are more common in influenza pneumonia. BAL findings were non-specific with “fungal elements suggestive of *Aspergillus sp.*” HIV patients rarely have *aspergillus* pneumonia and, if present, *aspergillus* pneumonia has a very different appearance on CXR and chest CT scans than was the case here. Furthermore, serum GM levels increased in *aspergillus* pneumonia were unelevated. The exudate obtained by BAL was not the “typical eosinophilic exudate” of PCP and silver staining was negative for PCP. BAL aside, the most important test to rule in or out PCP is the β 1,3 glucan (BG), which was negative x 3. The correct

Table 1
Differential Diagnostic Features of Influenza and PCP.

	Influenza	PCP
Symptoms		
Sore throat	+	–
Shortness of breath	+	+
DOE	–	+
Profound fatigue	+	–
Chills	+	–
Severe myalgias	+	–
Signs		
Fevers	+	–
Non-exudative pharyngitis	+	–
Rales	–	–
Laboratory Tests		
↑ A-a gradient > 30	+	+
Leukocytosis	+	+
Relative lymphopenia	+	+*
Thrombocytopenia	+	–
↑ LDH	+	+
↑ CPK	+	–
↑ AST/ALT	+	–
β 1,3 glucan (BG)	–	+
Respiratory PCR + influenza	+	–
Imaging Studies		
Chest film	–†	–†
Negative chest CT scan (GGO)	+	+

* May be present due to HIV, transplants, steroids, immunosuppressives.

† Negative early, late bilateral patchy infiltrates ± consolidation.

PCP = Pneumocystis (carinii) jirovecii pneumonia.

GGO = ground glass opacities.

diagnosis was made by demonstrating influenza B by PCR in respiratory secretions and in BAL fluid culture.

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Ethical approval

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Conflict of interest

All authors have no conflict of interest.

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