JACOBS PUBLISHERS

OPEN ACCESS

Jacobs Journal of Clinical Case Reports

Case Report

Acute Eosinophilic Pneumonia in a Patient with Inflammatory Bowel Disease

Jacqueline N. Chu*, BA and Errol Ozdalga, MD

Stanford University School of Medicine, USA

**Corresponding author: Ms. Jacqueline N. Chu, Stanford University School of Medicine, Dept of Medicine, 300 Pasteur Dr, Room S102, MC, 5110, Stanford CA 94305, Tel: (703) 581-9224; E-mail: jnchu@stanford.edu*

Received: 05-19-2014

Accepted: 12-16-2014

Published: 12-22-2014

Abstract

Acute eosinophilic pneumonia (AEP) is an uncommon respiratory disease characterized by increased eosinophilis in bronchoalveolar lavage fluid. It may be triggered by a drug, infection, or dust. The etiology may also be idiopathic, in which case the patient is usually a young, previously healthy smoker. We report a case of AEP in an elderly non-smoking patient with ulcerative colitis, treated with a total colectomy one decade prior to presentation. Though cases of AEP have been reported in association with anti-metabolite therapy for inflammatory bowel disease, our patient was not taking any such medications. He also did not have exposure to any other known triggers of AEP, and did not fit the usual clinical picture of idiopathic AEP. Therefore, we suspect that this case of AEP was a complication of the patient's inflammatory bowel disease itself.

Keywords: Acute Eosinophilic Pneumonia; Inflammatory Bowel Disease; Ulcerative Colitis; Crohn's Disease

Abbreviations

AEP	:	Acute Eosinophilic Pneumonia;
IBD	:	Inflammatory Bowel Disease;
UC	:	Ulcerative Colitis

Introduction

Pulmonary manifestations of inflammatory bowel disease (IBD) have been recognized as a rare complication since initially described in 1976, but are varied in presentation and pathology, making the diagnosis difficult. Acute eosinophilic pneumonia has been described a subtype of IBD lung disease, but previous case reports are limited to IBD drug therapy-induced eosinophilic pneumonia. Here we report a case of acute eosinophilic pneumonia in a patient with ulcerative colitis, independent of drug therapy, followed by a review of the literature on IBD-associated lung disease.

Case report

A 77-year-old Korean man with a history of ulcerative colitis presented to our hospital with four days of a new cough, associated with dyspnea, weakness, and low-grade fevers. The cough was nonproductive and not associated with other upper respiratory illness symptoms, weight loss, night sweats, or hemoptysis. He did have a 6 year history of a chronic productive cough, thought to be related to chronic sinusitis, but the patient felt this acute cough was more severe. His past medical history was notable for chronic sinusitis, obstructive sleep apnea, ulcerative colitis (diagnosed and treated with total colectomy ten years prior), hypertension, hyperlipidemia, gout, benign prostatic hyperplasia, and duodenal ulcer. Medications included: ipratropium, fluticasone, losartan, atorvastatin, allopurinol, tamsulosin, finasteride, pantoprazole, and CPAP. He denied taking any anti-metabolite drugs such as sulfasalazine, mesalamine, or methotrexate. He had not started any new medications recently. Family history was negative for lung disease. Social history was negative for new exposures including significant dust, travel, or sick contacts. The patient was retired and did not have new or regular contact with smoke, chemicals, or animals. He had never smoked and did not drink alcohol.

On presentation, the patient was afebrile, with pulse of

103, blood pressure 125/66, respiratory rate of 22, SpO_2 93% on 2 liters per minute nasal cannula. He was a thin, well appearing man in no acute distress. Ears, nose, and throat exam revealed clear nares and oropharynx. Lung exam was notable for coarse breath sounds in all lung fields. Abdominal exam was notable for an intact ostomy with soft green-brown stool. The rest of the physical exam was unremarkable. White blood cell count was 17.1 with a neutrophilic predominance and no eosinophilia. Chest radiograph revealed bilateral patchy infiltrates. The patient was diagnosed with community-acquired pneumonia and started on ceftriaxone and azithromycin.

However, over the next two days, the patient did not note improvement in his cough and continued to have coarse breath sounds on exam and leukocytosis. On the third day of treatment, he began to spike new fevers to 38 degrees C, prompting re-imaging. His repeat CXR showed worsening of the bilateral infiltrates, and a chest CT revealed consolidative and ground glass opacities in the dependent areas of the lung, suggestive of aspiration pneumonia. Interestingly, the patient did not have known risk factors for aspiration; he did not have neurologic deficits or an esophageal abnormality and was not an alcoholic. A swallow study was performed and was normal. However, the patient did have a chronic very productive cough and used a CPAP for obstructive sleep apnea; therefore, we suspected that he was aspirating on his chronic secretions while sleeping. His antibiotic therapy was thus broadened to piperacillin-tazobactam for anaerobic coverage, in addition to continuation of azithromycin for atypical coverage. Aspiration precautions were initiated. A viral panel came back negative.

Over the next seven days, the patient's acute cough persisted, his lung exam remained congested, and he continued to have leukocytosis. Repeat CT on the eighth day of piperacillin-tazobactam showed worsening of the bilateral infiltrates, again in a pattern consistent with aspiration. Bilateral pleural effusions were now present. Given the patient's lack of response to piperacillin-tazobactam and azithromycin, an unusual pathogen such as tuberculosis or other fungal infection, or other lung disease such as a vasculitis, sarcoidosis, or interstitial lung disease were suspected. Quantiferon test, coccidiomycosis complement fixation and immunodiffusion tests were negative. The patient then underwent a bronchoalveolar lavage (BAL), which revealed 57% eosinophils. Cytology showed no malignant cells or viral inclusions and Gram stain was negative. Bacterial, fungal, and AFB cultures were negative.

The patient met diagnostic criteria for acute eosinophilic pneumonia: acute onset with febrile respiratory manifestations, bilateral infiltrates on imaging, oxygen saturation <90% on room air, lung eosinophilia with >25% eosinophilis in BAL fluid, and absence of causes such as infection, drugs, smoking, and inhaled dusts [1]. He was started on oral prednisone 40mg daily with an improved lung exam, resolution of leukocytosis, and improved CXR within three days. He was discharged from the hospital and kept on prednisone 40mg daily for six weeks, followed by a nine week taper for a total course of 15 weeks with full resolution of his disease.

Discussion

Acute eosinophilic pneumonia (AEP) is an acute febrile respiratory illness that often masquerades as infectious pneumonia or acute respiratory distress syndrome [1]. Diagnostic features of AEP include: acute onset (< 1 month, more commonly < 7 days) with febrile respiratory manifestations, bilateral diffuse infiltrates on imaging, severe hypoxia (PaO_2 on room air ≤ 50 mmHg, or PaO_2/FiO_2 ≤ 300 mmHg, or oxygen saturation on room air < 90%), and lung eosinophilia with ≥ 25% eosinophils in BAL fluid [1]. Causes of AEP include infection (especially parasitic), many drugs (most notably NSAIDs; antibiotics, especially minocycline and nitrofurantoin; captopril, carbamazepine, and GM-CSF), and significant dust exposure [1-3]. AEP is otherwise idiopathic in etiology. While we initially included AEP in our differential, our patient did not have the exposures listed above. Moreover, idiopathic AEP typically occurs in previously healthy young adults (average age of 30 years) [1]; our patient was 77 years old and had multiple comorbidities. Two-thirds of patients with idiopathic AEP are smokers [1]; our patient was a never-smoker. Idiopathic AEP frequently causes acute respiratory failure requiring intensive care unit admission and mechanical ventilation [1]; though our patient was significantly hypoxic with oxygen saturation of about 90% on room air, he did not require intensive care. Given these discrepancies, we performed a literature search and discovered the rarely reported association between IBD and pulmonary disease, including acute eosinophilic pneumonia.

Pulmonary manifestations of inflammatory bowel disease were first described in 1976 in a case series of six patients [4]. Since then, there have been more accounts of IBD-associated lung disease, more commonly in ulcerative colitis than Crohn's disease [5], though the diagnosis continues to be rare. One contributing factor to the infrequency of the diagnosis is that such lung disease is difficult to diagnose. According to Camus et al., lung disease presents on average 9 years following onset of inflammatory bowel disease [5]. Additionally, about 30% of patients are post-colectomy, and 90% have inactive disease [5]. Because the relationship between the patient's IBD and their acute lung disease is so remote, clinicians rarely consider the diagnosis of IBD-related lung disease, and the prevalence is likely under-recognized. Another challenging aspect of diagnosis is the varied pathology of IBD-associated lung disease. Roughly 60% of cases are respiratory disease involving the airways and parenchyma; the majority of these are bronchiec-

tasis, chronic bronchitis, and interstitial lung disease [5]. About 40% of cases are serositis, such as myocarditis, pericarditis, and pleuropericarditis [5]. Regardless of the specific pathology, patients respond very well to steroids, either systemic or inhaled (for airway disease) [5]. There are several theories as to pathogenesis of lung disease in IBD. One theory is cross-reactivity between autoantibodies against bowel antigens and antigens in the lungs; the common embryologic origin of the gastrointestinal tract and the lungs make both organs similarly susceptible to the inflammatory process underlying IBD [6,7]. Another theory suggests that inflammatory cells, induced by chronic inflammation in the bowel in IBD, aberrantly home to the lungs and cause respiratory disease [8]. Genetic susceptibility may also play a role, with high concordance between twins in extra-intestinal manifestations of IBD in general [7].

AEP has been described in association with IBD, though almost always as a drug reaction from anti-metabolites for IBD (specifically mesalamine, sulfasalazine, and methotrexate) [9]. Though reviews report occurrences of eosinophilic pneumonia in patients not taking such drugs [9,10], we could not find specific case reports of AEP in the literature. We therefore believe that this is the first case report of a patient with IBD developing AEP as a direct result of his inflammatory disease, rather than as a drug side effect. Our patient did not fit the clinical picture of idiopathic AEP; rather, he fit the profile of IBD-associated lung disease as described above: our patient had ulcerative colitis rather than Crohn's disease, he developed his lung disease 10 years after the onset of his ulcerative colitis, and he had inactive disease following a total colectomy. Additionally, IBD-associated lung disease is more indolent and subtle [6]; though our patient presented with an acute eosinophilic pneumonia, his course was much more benign than usual cases of idiopathic AEP, which may require mechanical ventilation.

Based on the similarity of our patient's clinical presentation to that of other cases of IBD-associated lung disease, we suspect that this case represents a novel example of acute eosinophilic pneumonia associated with IBD itself, independent of a drug effect.

Acknowledgements

This case was presented at the Society of General Internal Medicine California-Hawaii 2014 Meeting on January 31, 2014. The authors have no conflicts of interest.

References

1. Cottin V, Cordier J. Eosinophilic lung diseases. Immunol Allergy Clin N Am. 2012, 32(4): 557- 586.

2. Janz DR, O'Neal HR, Ely EW. Acute eosinophilic pneumonia: a case report and review of the literature. Crit Care Med. 2009, 37(4): 1470-1474.

3. Campos LEM, Pereira LFF. Pulmonary eosinophilia. J Bras Pneumol. 2009, 35(6): 561-573.

4. Kraft SC, Earle RH, Roesler M, Esterly JR. Unexplained bronchopulmonary disease with inflammatory bowel disease. Arch Intern Med. 1976, 136: 454-459.

5. Camus P, Paird F, Ashcroft T, Gal AA, Colby TV. The lung in inflammatory bowel disease. Medicine (Baltimore). 1993, 72(3): 151-183.

6. D'Andrea N, Vigliarolo R, Sanguinetti CM. Respiratory involvement in inflammatory bowel diseases. Multidscip Respir M. 2010, 5(3): 173-182.

7. Trikudanathan G, Venkatesh PGK, Navaneethan U. Diagnosis and therapeutic management of extra-intestinal manifestations of inflammatory bowel disease. Drugs. 2012, 72(18): 2333-2349.

8. Birring SS, Brightling CE, Symon FA, Barlow SG, Wardlaw AJ et al. Idiopathic chronic cough: association with organ specific autoimmune disease and bronchoalveolar lymphocytosis. Thorax. 2003, 58(12): 1066-1070.

9. Storch I, Sachar D, Katz S. Pulmonary manifestations of inflammatory bowel disease. Inflamm Bowel Dis. 2003, 9(2): 104-115.

10. Sostegni R, Daperno M, Pera A. Pulmonary manifestations of inflammatory bowel disease. Dig Liver Dis. 2007, 39(3): 239-241.