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# Shadows of Uncertainty: When Pneumonia Isn't Pneumonia

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***Abstract***

*Pneumonia is a common medical condition encountered in hospitalized patients and remains a cause of morbidity worldwide. Identifying and initiating appropriate treatment in febrile patients who present with respiratory symptoms and radiographic infiltrates reduce hospital stay, minimize complications, and lower healthcare costs. However, the assumption that every pulmonary infiltrate or opacity seen on a radiological imaging represents an infectious process, such as pneumonia, can lead to misdiagnosis, unnecessary investigations, prolonged hospital admissions, and inappropriate use of antibiotics. A wide range of noninfectious pulmonary conditions can produce radiologic findings that closely resemble pneumonia, making accurate diagnosis challenging. This report presents the case of a 52-year-old man who arrived with complaints of progressive exertional dyspnea and a persistent nonproductive cough. Based on his clinical presentation and initial imaging findings, he was diagnosed with community-acquired pneumonia and started on broad-spectrum antibiotic therapy. Despite adequate treatment, his symptoms failed to improve, and repeat evaluations showed no significant clinical or radiological resolution. Chest radiography revealed dense, coalescent opacities involving nearly the entire right lung, raising concern for an alternative underlying pathology. To further investigate the cause of his non-resolving condition, flexible bronchoscopy with transbronchial lung biopsy was performed. Histopathological examination ultimately confirmed the diagnosis of cryptogenic organizing pneumonia, a rare inflammatory lung disorder that can closely mimic infectious pneumonia in both symptoms and imaging appearance. Following initiation of appropriate corticosteroid therapy, the patient demonstrated marked clinical and radiological improvement. This case emphasizes the importance of reconsidering the diagnosis in patients who do not respond to standard antimicrobial therapy. It highlights that cryptogenic organizing pneumonia and other noninfectious pulmonary diseases should be included in the differential diagnosis of presumed pneumonia, particularly when the clinical course is atypical or unresponsive to treatment. Early recognition and appropriate diagnostic evaluation are essential to ensure timely and effective management.*

**Keywords:** Bronchiolitis obliterans organizing pneumonia, case report, cryptogenic organizing pneumonia, diagnostic work-up, treatment

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## INTRODUCTION

Cryptogenic organizing pneumonia (COP), previously known as bronchiolitis obliterans organizing pneumonia, is a distinctive and relatively rare form of diffuse interstitial lung disease. It is classified as an idiopathic condition because, in most cases, no definite underlying cause can be identified. The disorder is characterized by inflammation and abnormal organization of lung tissue, particularly within the small airways and alveolar spaces. Although cop is considered idiopathic, it has been linked in some instances to prior respiratory infections, exposure to environmental toxins, certain medications, and

 

autoimmune disorders. Patients commonly present with nonspecific respiratory symptoms, such as persistent cough, shortness of breath, along with fever, and fatigue, which often resemble those of infective pneumonia. This case describes a patient who initially presented with clinical and radiological features suggestive of community-acquired pneumonia. Despite receiving appropriate broad-spectrum antibiotic therapy, the patient showed little to no clinical improvement [1]. Further diagnostic evaluation, including imaging studies and histopathological examination, ultimately led to the diagnosis of cryptogenic organizing pneumonia. This case highlights the importance of considering cop in patients with pneumonia-like symptoms who do not respond to conventional treatment, as early recognition and appropriate management can significantly improve clinical outcomes (Figures 1–6).

**PRESENTATION**

52-year-old male patient, with a medical history of diabetes mellitus and hypertension managed with medication, and employed in agriculture, presented with a fever after traveling to Chhattisgarh. The patient self-administered paracetamol 650 mg for 3–4 days, but as symptoms persisted, he was admitted to a local hospital. Upon admission, outside hospital the patient exhibited only a fever, with no other symptoms associated. A chest X-ray was done as part of the diagnostic evaluation, identified a right-sided consolidated patch [2].

The patient's chest CT scan revealed consolidations of varying sizes, mixed ground-glass opacities, and small nodules, predominantly in the right upper lobe, along with multiple subcentimeter supraclavicular and axillary lymph nodes. Initial treatment involved meropenem, aztreonam, and minocycline. Given the CT findings, a bronchoscopy was performed. Gram stain results indicated the presence of pus cells and abundant gram-negative bacilli, with no acid-fast bacilli observed. Cytology was negative, suggesting an acute infective process. KOH testing yielded negative results. Bronchoalveolar lavage (BAL) culture identified *E. coli* – XDR(extensively drug resistant), which was sensitive to colistin. After the BAL culture results, polymyxin B was started into the treatment regimen. Despite comprehensive antimicrobial therapy throughout the hospitalization, the patient's fever persisted, leading to their transfer to our hospital.

Upon admission , the patient continued polymyxin-b, meropenem, and minocycline, necessitating oxygen support. Laboratory results indicated a CBC of Hb- 7.9, WBC-8470 (N-83.1%, L-8.1%), Platelet -4.2 lakh, an elevated C-reactive protein (CRP) of 262, and liver function tests within normal parameters. As Patient was not able to expectorate sputum, so bronchoscopy was performed. Gram stain of the bronchoalveolar lavage (BAL) revealed a moderate presence of Gram-negative bacilli, while ZN and Calcofluor stains were negative. The Xpert- MTB -RIF PCR test yielded a negative result, as did ZN staining post-concentration. BAL culture identified Klebsiella pneumoniae. Multiplex PCR (Biofire Pneumonia Panel) detected Acinetobacter baumannii, Klebsiella pneumoniae with resistance markers CTXM, NDM, and OXA 48, and human rhinovirus. Treatment was commenced with ceftazidime–avibactam and aztreonam, with continued administration of minocycline. Despite this regimen, the patient's fever persisted. The subsequent CT chest scan revealed consolidations with multiple minute areas of necrosis in the anterior and posterior segments of the right upper lobe, along with fibroatelectatic changes and scattered foci of calcification within the consolidation in the posterior segment of the right upper lobe. Additionally, a tree-in-bud appearance was noted in the lateral segment of the right middle lobe and the anterior segment of the right upper lobe, accompanied by mild centriacinar emphysematous changes in the left upper lobe and a minimal right pleural effusion with underlying consolidation [3].

Looking at imaging findings and clinical symptoms had planned CT-guided biopsy.

Gram stain analysis of the biopsy tissue indicated the presence of a limited number of polymorphonuclear cells, with no discernible organisms. Xpert-MTB-RIF PCR and culture results from the biopsy were both negative. The patient's fever curve showed improvement following treatment with ceftazidime–avibactam and aztreonam. Subsequently, the patient was discharged while continuing the prescribed regimen.

 

During a follow-up examination conducted five days post-discharge, the patient reported experiencing one to two febrile episodes, with a peak temperature of 100.5°F. The antimicrobial regimen, originally scheduled for a duration of three to four weeks, was maintained, and C-reactive protein (CRP) and complete blood count (CBC) tests were ordered on the same day. The patient's CRP levels did not show improvement. Histopathological analysis performed the following day revealed an acute-on-chronic inflammatory infiltrate within the inter-stitium, characterized by the presence of polymorphonuclear cells, lymphocytes, and plasma cells, alongside mild-to-moderate focal interstitial fibrosis. Macrophages and fibroblastic plugs were observed within several alveolar lumens, and isolated epithelioid cells were focally noted in the inter-stitium. The histopathological findings indicate organizing pneumonitis with acute-on-chronic inflammation, focal necrosis, and focal interstitial fibrosis. Fungal elements, well-formed granulomas, and malignancy were not observed. Following this report, the patient commenced glucocorticoid therapy, initiating with prednisone at 0.5 mg/kg and gradually tapering the dosage over a six-week period [4].

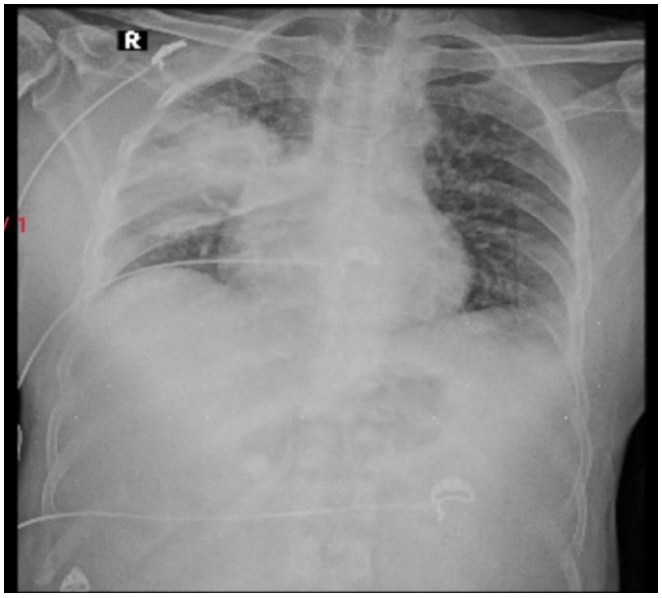


**Figure 1.** Chest X-ray on day of admission.

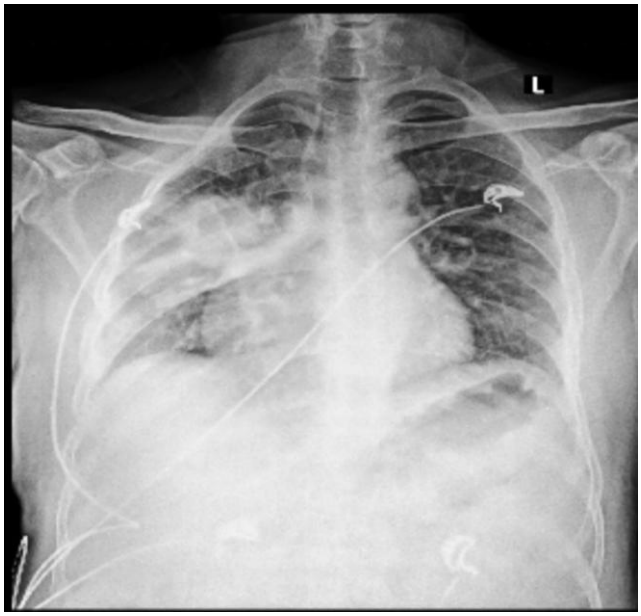


**Figure 2.** Chest X-ray on day 3 post admission.

 

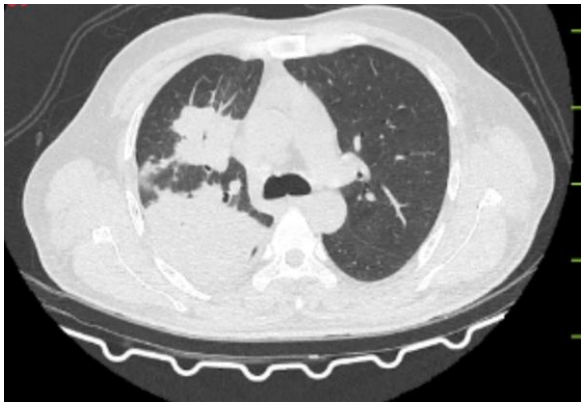

**Figure 3.** CT chest scan showing – consolidations with multiple minute areas of necrosis in the anterior and posterior segments of the right upper lobe.

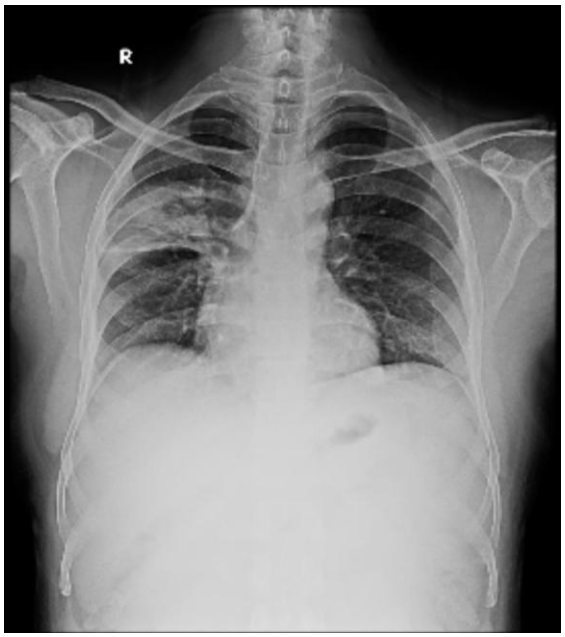


**Figure 4.** Chest X-ray after 2 weeks of glucocorticoid.

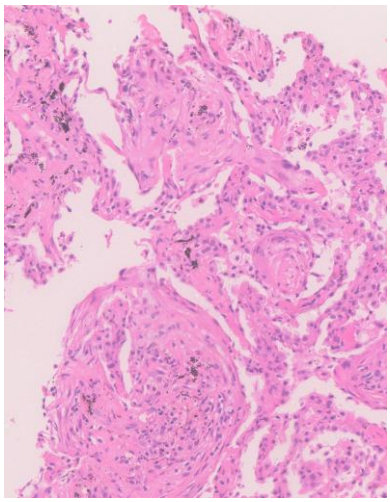

**Figure 5.** Histopathology image showing – polymorphonuclear cells, lymphocytes, and plasma cells, alongside mild-to-moderate focal interstitial fibrosis. Macrophages and fibroblastic plugs were observed within several alveolar lumens, and isolated epithelioid cells were focally noted in the inter-stitium.

 

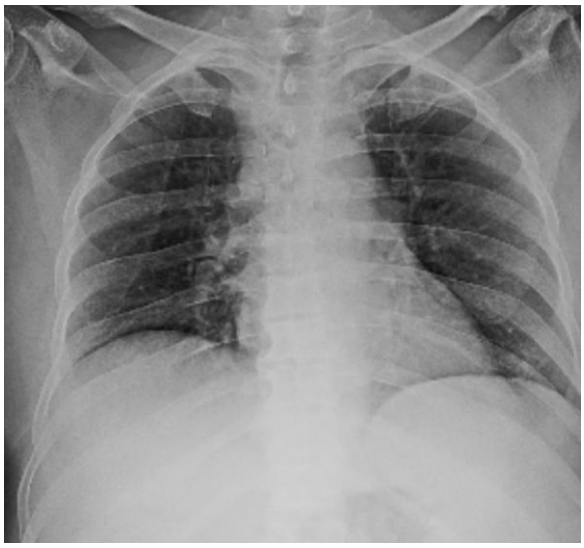

**Figure 6.** Chest X-ray after 6 weeks of glucocorticoid.

## DISCUSSION

Organizing pneumonia (COP) is an uncommon interstitial lung disease. COP is characterized by an acute inflammatory and proliferative process, specifically reversible intra-alveolar fibrous proliferation, which is often responsive to immunosuppressive and anti-inflammatory therapy, and thereby distinguishes it from other fibrotic interstitial lung disorders [1]. Initial evaluation for COP generally includes chest radiography and high-resolution CT, which typically demonstrate patchy or diffuse consolidations – often bilateral, peripheral, and lower-lobe predominant – and may show ground-glass opacities. Bronchoscopy with bronchoalveolar lavage (BAL), and when feasible bronchial or surgical lung biopsy, is used to support a definitive diagnosis; wedge biopsies are preferably obtained from at least two radiologically involved lobes, although in patients with compelling clinical and radiologic features, treatment may be initiated without surgical biopsy after careful discussion of risks and benefits with the patient [4].

There have been no controlled trials directly comparing specific medications or treatment durations for Cryptogenic Organizing Pneumonia (COP), so current therapeutic strategies are derived from expert consensus guidelines that primarily recommend glucocorticoids [5], with or without adjunctive macrolide antibiotics. Glucocorticoids are effective in COP, which represents an acute inflammatory reaction to external pulmonary injury, by binding to intracellular nuclear receptors and downregulating the transcription of proinflammatory mediators; symptomatic improvement is often seen within 24–72 hours, and radiographic abnormalities typically resolve within approximately three months [6, 7]. The usual approach is to maintain the initial glucocorticoid dose for two to four weeks, followed by a slow taper over 6–12 months to minimize the risk of adrenal insufficiency and disease relapse [6–11].

## CONCLUSIONS

Case report focuses on the clinical presentation and radiologic characteristics of cryptogenic organizing pneumonia (COP), an uncommon and often underrecognized form of interstitial lung disease. COP is an important condition to consider in patients who are initially diagnosed with pneumonia but fail to show clinical improvement despite receiving appropriate and adequate antimicrobial therapy. Because its symptoms and imaging findings frequently resemble those of infectious pneumonia, the diagnosis of COP is often delayed or overlooked. This report emphasizes the need for clinicians to maintain a high level of suspicion for COP, particularly in cases with persistent respiratory symptoms and non-resolving pulmonary infiltrates.

In addition, the report highlights the challenges associated with the management of COP. At present, there is a limited amount of high-quality evidence to guide treatment decisions, and most therapeutic

 

recommendations are based on expert opinion and clinical experience rather than large-controlled trials. Glucocorticoid therapy remains the cornerstone of treatment and is generally associated with significant clinical and radiological improvement. This case further demonstrates the favorable response to steroid therapy and underscores the importance of timely diagnosis and appropriate intervention to achieve optimal patient outcomes.

## REFERENCES


1. Alasaly K, Muller N, Ostrow DN, Champion P, FitzGerald JM. Cryptogenic organizing pneumonia: A report of 25 cases and review of the literature. Medicine (Baltimore). 1995;74(4):201–211. doi: 10.1097/00005792-199507000-00004.
2. American Thoracic Society; European Respiratory Society. American Thoracic Society/European Respiratory Society international multidisciplinary consensus classification of the idiopathic interstitial pneumonias. Am J Respir Crit Care Med. 2002;165(2):277–304. doi: 10.1164/ajrccm.165.2.ats01.
3. Chandra D, Maini R, Hershberger DM. Cryptogenic organizing pneumonia. In: Chandra D, editor. StatPearls [Internet]. 1st ed. Treasure Island (FL): StatPearls Publishing; 2021. p. 1–20.
4. King TE Jr, Lee JS. Cryptogenic organizing pneumonia. N Engl J Med. 2022;386(11):1058–1069. doi: 10.1056/NEJMra2116777.
5. Zhang Y, Li N, Li Q, et al. Analysis of the clinical characteristics of 176 patients with pathologically confirmed cryptogenic organizing pneumonia. Ann Transl Med. 2020;8(12):763. doi: 10.21037/atm-20-4490.
6. Lohr RH, Boland BJ, Douglas WW, et al. Organizing pneumonia: Features and prognosis of cryptogenic, secondary, and focal variants. Arch Intern Med. 1997;157(12):1323–1329. doi: 10.1001/archinte.157.12.1323.
7. Stover DE, Mangino D. Macrolides: A treatment alternative for bronchiolitis obliterans organizing pneumonia? Chest. 2005;128(5):3611–3617. doi: 10.1378/chest.128.5.3611.
8. Ichikawa Y, Ninomiya H, Katsuki M, Hotta M, Tanaka M, Oizumi K. Low-dose long-term erythromycin for treatment of bronchiolitis obliterans organizing pneumonia (BOOP). Kurume Med J. 1993;40(2):65–67. doi: 10.2739/kurumemedj.40.65.
9. Zhou Y, Wang L, Huang M, et al. A long-term retrospective study of patients with biopsy-proven cryptogenic organizing pneumonia. Chronic Respir Dis. 2019;16:1479973119853829. doi: 10.1177/1479973119853829.
10. Cordier JF. Organising pneumonia. Thorax. 2000;55(4):318–328. doi: 10.1136/thorax.55.4.318.
11. Drakopanagiotakis F, Polychronopoulos V, Judson MA. Organizing pneumonia. Am J Med Sci. 2011;341(1):34–39. doi: 10.1097/MAJ.0b013e3181f1.


 