Mesalazine Induced Eosinophilic Pneumonia in a Patient with Ulcerative Colitis: A Case Report

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Received: 15 October 2025

Accepted: 6 August 2026

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DOI10.5001/omj.2030.20

Abstract

Mesalazine is a first-line therapy for ulcerative colitis (UC), but it can rarely cause serious pulmonary complications such as eosinophilic pneumonia. We report a case of a 16-year-old female with UC treated with oral and rectal mesalazine, who developed progressive peripheral eosinophilia and respiratory symptoms including fever, dry cough, and dyspnea. Despite multiple courses of broad-spectrum antibiotics, her symptoms persisted. Investigations revealed elevated inflammatory markers, peripheral eosinophilia, and bilateral subpleural infiltrates on high-resolution computed tomography (CT). Bronchoalveolar lavage (BAL) and biopsy confirmed eosinophilic pneumonia. following discontinuation of mesalazine and initiation of systemic corticosteroids, the patient's showed complete clinical, hematological and radiological recover. This case highlights mesalazine-induced eosinophilic pneumonia as an rare but important differential diagnosis in patients with IBD presenting with respiratory symptoms, underscoring the need for prompt recognition, drug withdrawal, and corticosteroid therapy.

Keywords: Pulmonary Eosinophilia, Mesalamine, Colitis, Ulcerative.

Introduction

Inflammatory bowel diseases (IBDs) are chronic immune-mediated conditions affecting the gastrointestinal tract. The two main diseases are: ulcerative colitis (UC), and Crohn's disease (CD). In addition to the gastrointestinal manifestations, IBD is associated with extraintestinal complications including dermatologic, hepatobiliary, musculoskeletal and other systems involvement.

Several effective therapies are available for IBD; however, some are associated with significant adverse effects, including rare pulmonary complications such as eosinophilic pneumonia with the use of mesalazine. Mesalazine (5-aminosalicylate acid, 5-ASA) is used for the treatment of mild to moderate active UC and to maintain remission. Its exact mechanism of action is not fully understood, but it is thought to inhibit prostaglandins and leukotriene synthesis, thereby reducing inflammation.[1]

Mesalazine–induced eosinophilic pneumonia is a rare but clinically important adverse reaction, and its pathogenesis remains incompletely understood. Current evidence suggests that it is predominantly mediated by an idiosyncratic, immune-driven hypersensitivity reaction. A T-cell–mediated mechanism has been proposed, whereby mesalazine or its metabolites act as antigens that trigger lymphocyte activation and cytokine release, particularly interleukin-5, leading to eosinophil proliferation and infiltration into the lungs and alveolar space. This is supported by bronchoalveolar lavage findings demonstrating eosinophilia and lymphocytosis, as well as clinical improvement following drug withdrawal and corticosteroid therapy.[2] In addition, immune-mediated

alveolitis has been described as a key feature of mesalazine-related lung injury. Less well-established mechanisms include direct cytotoxic effects and oxidative injury.

Despite these proposed mechanisms, mesalazine-induced eosinophilic pneumonia remains extremely rare and is reported mainly in case reports and small case series. A 2025 report described mesalazine-associated eosinophilic pneumonia as an uncommon pulmonary complication that can delay diagnosis due to its rarity and non-specific presentation. Similarly, a recent 2026 case highlighted that Mesalazine-induced eosinophilic pneumonitis may occur after prolonged therapy and often mimics infection, contributing to diagnostic difficulty and likely under-recognition. Contemporary case-based evidence from 2024 also emphasises that eosinophilic pulmonary disease in patients with inflammatory bowel disease remains rare and diagnostically challenging. Earlier literature further supports that pulmonary toxicity from Mesalazine is uncommon, partly due to the absence of the sulphapyridine component seen in sulfasalazine. Overall, Mesalazine-induced eosinophilic pneumonia is best understood as a rare, idiosyncratic immune-mediated condition with an unpredictable onset and a likely underestimated incidence in routine clinical practice.[2-5]

Within the spectrum of mesalazine-induced pulmonary toxicity, eosinophilic pneumonia represents one of several recognized patterns of lung injury. Other reported manifestations include interstitial pneumonitis, hypersensitivity pneumonitis, organizing pneumonia, and, less commonly, fibrosing alveolitis, with eosinophilic pneumonia forming a distinct but uncommon subtype characterized by prominent eosinophilic infiltration. This heterogeneity supports the concept that mesalazine-related lung toxicity is not a single disease entity but rather a spectrum of immune-mediated and possibly toxic lung injuries with overlapping clinical features.[4] Eosinophilic pneumonia is classified into acute and chronic forms.

Diagnosis typically relies on the presence of peripheral eosinophilia, compatible clinical features and supportive radiological findings. BAL and lung biopsy may be required for conformation, with biopsy considered the gold standard.

Here, we report a rare case of mesalazine-induced eosinophilic pneumonia in a patient with UC, emphasizing the diagnostic challenges and the therapeutic approach involved, with ethical approval obtained from Royal Hospital Ethical Committee, Muscat, Oman. MOH/CER/CR/26/4.

Case Report

A 16-year-old female patient with UC, was started on oral and rectal mesalazine in November 2023. Her baseline eosinophils count was normal. During follow-up, a gradual increase of eosinophilic counts from 0.1 x 10^9 to a peak of 1.3 x 10^9 (Normal values 0.1-0.5 x 10^9) was noted.

In January 2024, she presented to the emergency department with a one-month history of fever, chills, rigors, dry cough, shortness of breath, and generalized fatigue. She denied experiencing night sweats, hemoptysis, weight loss, joint pain, rashes, recent travel, or contact with sick individuals. A short course of oral amoxicillin-clavulanic acid did not improve her symptoms.

On examination, she was febrile (38.3 ^{0}C), tachycardic (112 beats/minutes), with oxygen saturation of 97% on room air, and blood pressure of 104/61 mmHg. Chest examination revealed bilaterally reduced air entry without crepitations.

Investigations showed elevated inflammatory markers: WBC count at 13.4 x 10^9/L (normal 2.4-9.5 x 10^9/L), neutrophil count at 8.6 x 10^9/L (normal 1-4.8 x 10^9/L), eosinophil count at 1.1 x 10^9/L (0.1-0.5 x 10^9/L), C-reactive protein (CRP) 166 mg/L (Normal < 10mg/L), Erythrocytes Sedimentation Rate (ESR) > 130 mm/h (normal 2-30mm/h), and a positive Cytoplasmic Antineutrophil cytoplasmic antibody (C-ANCA) levels, other tests like anti-nuclear antibody (ANA), anti-Tissue Transglutaminase antibody, hepatitis B and C, Legionella pneumophilia antigen in urine, mycobacterium tuberculosis, respiratory viral screen, and fungal cultures were obtained and turned to be negative/non-reactive. Chest X-ray revealed bilateral interstitial infiltrates. She was initially treated empirically for pneumonia with broad-spectrum antibiotics.

Table 1: Trends on Eosiniphillic count before diagnosis and after initiation of treatment.

Date	November 2023	December 2023	January 2024	January 2024	February 2024	April 2024

Eosinophils count X 10^9 (0.1-0.5 X 10^9)	0.1	0.2	0.8	1.1	0.0	0.1
Mesalazine status	Pre-mesalazine	Mesalazine started	Started to have pneumonia symptoms	At the time of diagnosis and management initaiton	Mesalazine stopped	After stopping mesalazine

Coronal and axial images of chest CT showed bilateral predominantly peripheral upper lobe subpleural air space and peribronchovascular consolidation suggestive of eosinophilic pneumonia (Figure 1).

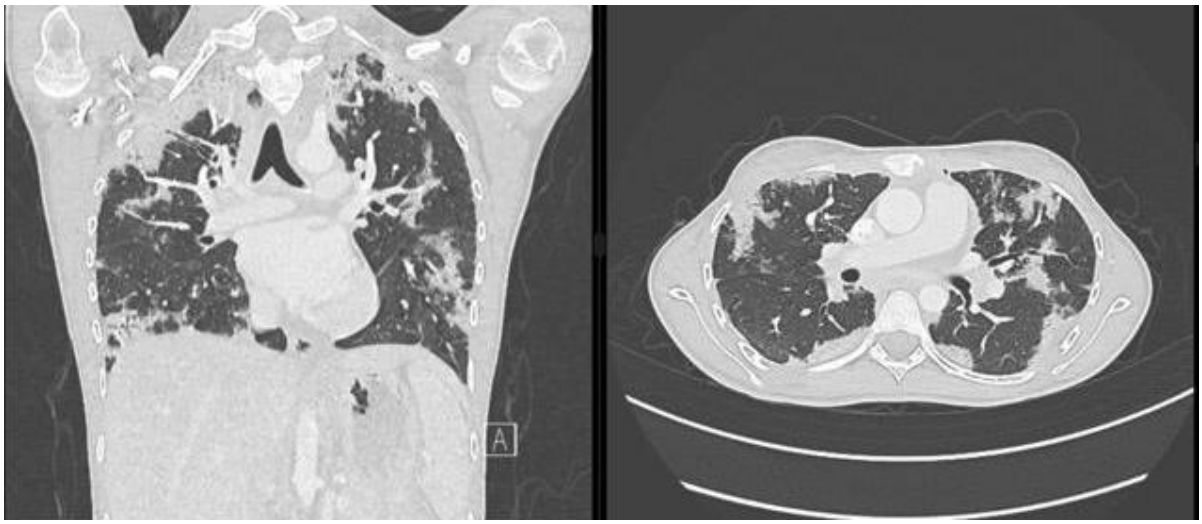
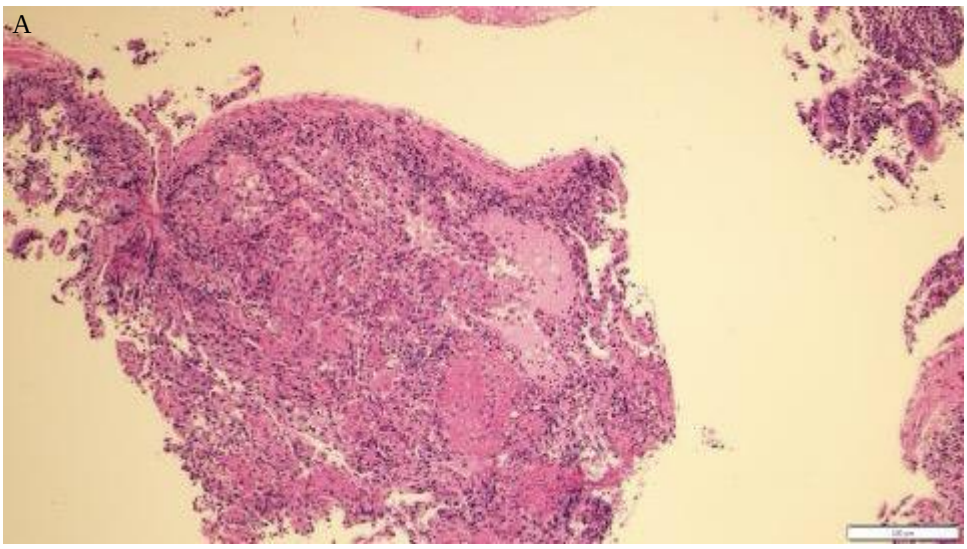


Figure 1: Coronal (A) and axial (B) chest CT lung window showing bilateral predominantly peripheral subpleural air space opacities suggestive of eosinophilic pneumonia

Bronchoscopy with bronchoalveolar lavage (BAL), bronchial cultures, Mycobacterium tuberculosis complex PCR, Pneumocystis jirovecii DNA testing, and transbronchial biopsies obtained from the right upper lobe were performed. The combined findings confirmed the diagnosis of eosinophilic pneumonia.

Histopathology revealed focal alveolar damage and interstitial inflammation with prominent eosinophils (Figure 2).



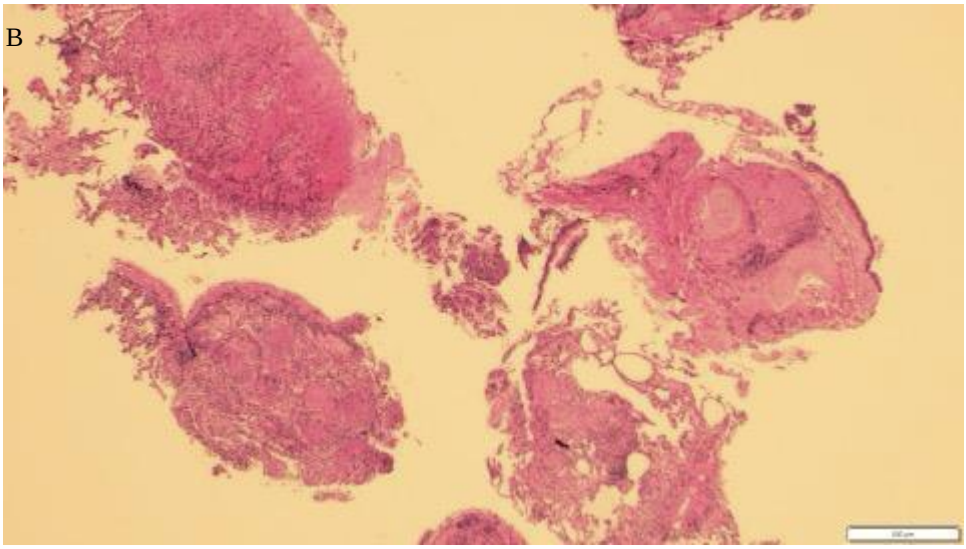


Figure 2: (a) Fragments of lung and bronchial tissue H&E = 2 X. (b) Alveolar spaces filled with eosinophilic secretions H&E = 10 X.

The diagnosis of mesalazine-induced eosinophilic pneumonia was established after excluding other potential causes. Mesalazine was discontinued immediately, and oral prednisolone was initiated at a dose of 0.75 mg/kg/day for 30 days, followed by a gradual tapering regimen (dose reduction by 5 mg every 2 weeks until 10 mg once daily, maintained for 30 days, then reduced to 5 mg once daily for a further 30 days before complete discontinuation).

For the management of ulcerative colitis, the patient was transitioned to vedolizumab. Follow-up demonstrated complete normalization of the eosinophil count (0.0×10^9/L) after initiation of treatment as it is shown in table 1, and repeat imaging showed complete resolution of the pulmonary infiltrates.

Discussion

Mesalazine is widely used in IBD and generally well tolerated, but it has been associated with a rare pulmonary toxicity including eosinophilic pneumonia. A comprehensive review conducted in 2018 analyzed 196 case reports of eosinophilic pneumonia and identified 32 cases attributed to mesalazine use.[6]

The symptoms onset typically ranges from 10 days to 6 months following the initiation of mesalazine therapy.[6-9] Patients are commonly present with non-productive cough, fever, wheezing, and coryzal symptoms. Due to the overlap with common respiratory conditions, particularly asthma, patients are often misdiagnosed and inappropriately managed in emergency settings.[7-10]

Laboratory findings typically include peripheral eosinophilia and elevated inflammatory markers. Infectious etiologies are generally excluded through negative microbiological workups. HRCT of the chest often reveals patchy peripheral ground-glass opacities with interlobular septal thickening, with peripheral predominance.

Diagnostic confirmation is frequently achieved through bronchoscopy with BAL, which reveals an increased eosinophil count and assists in excluding infectious causes. In some cases, lung biopsy is performed. Histopathological examination commonly demonstrates patchy interstitial and intra-alveolar histiocytic infiltration, with numerous eosinophils, scattered neutrophils, and focal areas of organizing fibrosis.[7-10]

Management involves immediate discontinuation of mesalazine and initiation of systemic corticosteroids. Some cases have been managed with intravenous pulse methylprednisolone for three days, followed by a tapering course of oral prednisolone.[7,8] Clinical improvement is usually rapid with full recovery reported within 8 to 14 days in all documented cases, and no evidence of residual pulmonary disease on follow-up.

Compared with previously reported cases, our patient shares several classical features of mesalazine-induced eosinophilic pneumonia, including subacute onset within two months of therapy initiation, peripheral eosinophilia, and bilateral pulmonary infiltrates [Table 2]. However, our case is notable for the younger age at presentation, as most reported cases involve adults. Additionally, the gradual rise in eosinophil count prior to symptom onset and the presence of positive C-ANCA distinguish this case from typical presentations. Similar to the literature, prompt discontinuation of mesalazine combined with corticosteroid therapy resulted in rapid clinical, radiological, and hematological resolution.

Table 2: Cases comparison.

Study/Year	Age/Sex	Disease	Mesalazine route	Time to onset	Eosinophils ($\times 10^9$/L)	Treatment	Outcome
Our case	16 F	UC	Oral + rectal	~2 months	Peak 1.3	Withdrawal + steroids	Complete resolution
Park M (2013) [11]	30 F	UC	Rectal	3 weeks	1.3	Withdrawal + steroids	Full recovery
Kim YJ (~2014) [9]	30 F	UC	Oral	19 days	1.2	Withdrawal + steroids	Full recovery
Zhang M (2016) [5]	56 F	UC	Oral	6 weeks	0.9	Withdrawal only	Recovery
Ferrusquía-Acosta J (2015) [12]	32 M	UC	Oral	12 months	NR	Withdrawal + steroids	Recovery (↓DLCO)
Gupta A (2017) [8]	22 M	UC	Oral	9 months	1.6	Withdrawal + steroids	Full recovery

The rapid resolution after mesalazine withdrawal and corticosteroid therapy highlights the reversible nature of this condition. Switching to another 5-ASA has been reported, it carries a risk of cross-reactivity and recurrence. Therefore, transitioning to a biologic such as vedolizumab, as in this case, is considered a safer approach, allowing effective disease control while avoiding re-exposure to the offending drug class.[13,14]

The prognosis of mesalazine-induced eosinophilic pneumonia is generally excellent, with most patients showing rapid clinical improvement after drug discontinuation. Symptoms and eosinophilia typically resolve within days to weeks, while radiological abnormalities may take several weeks to fully clear. Corticosteroids are often used in moderate to severe cases and can accelerate recovery, as observed in our patient. Follow-up should include clinical assessment, serial eosinophil counts, and repeat chest imaging to confirm complete resolution.

Rechallenge with mesalazine is not recommended due to the risk of recurrence, which may be more severe upon re-exposure. Recent literature supports permanent discontinuation and transition to alternative therapies.[13] In our case, rechallenge was avoided, and the patient remained well after switching to vedolizumab.

Conclusion

Mesalazine-induced eosinophilic pneumonia is a rare but important complication of IBD therapy. Early recognition, prompt drug withdrawal, and corticosteroid therapy lead to complete recovery. Clinicians should maintain a high index of suspicion in patients presenting with respiratory symptoms and eosinophilia while on mesalazine.

References

1. Nakashima J, Patel P, Preuss CV. Mesalamine (USAN) [Updated 2024 Feb 15]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK551714/.

2. Nasim S, Zaalouk TM, Bocus A, Kerols M. Late-Onset Mesalazine-Induced Eosinophilic Pneumonitis Presenting as Non-Resolving Pneumonia: A Diagnostic Pitfall in Ulcerative Colitis. Clin Case Rep 2026 Feb;14(2):e72029.

3. Rajendram H, Al-Taie HA, Mokoka MC. Breathless From Treatment: A Rare Case of Mesalazine-induced Eosinophilic Pneumonia in Ulcerative Colitis (abstract). Am J Respir Crit Care Med 2025;211:A6054.

4. Li S, Fang M, Guo H, Yu T, Wang J, Li W, et al. Eosinophilic pulmonary disease with ulcerative colitis: A case report. Medicine (Baltimore) 2024 Apr;103(17):e37851.

5. Zhang Y, Luo L, Wang X, Liu X, Wang X, Ding Y. Mesalazine-induced eosinophilic pneumonia with bone marrow infiltration: a case report and literature review. Ther Clin Risk Manag 2016 Jun;12:975-981.

6. Bartal C, Sagy I, Barski L. Drug-induced eosinophilic pneumonia: A review of 196 case reports. Medicine (Baltimore) 2018 Jan;97(4):e9688.

7. Patel KB, Robbins MM, Simon ML, Amorosa JK. Eosinophilic Pneumonia in a Patient with Ulcerative Colitis. Radiol Case Rep 2015 Dec;2(4):49.

8. Gupta A, Gulati S. Mesalamine induced eosinophilic pneumonia. Respir Med Case Rep 2017 Apr;21:116-117.

9. Kim JH, Lee JH, Koh ES, Park SW, Jang AS, Kim D, et al. Acute eosinophilic pneumonia related to a mesalazine suppository. Asia Pac Allergy 2013 Apr;3(2):136-139.

10. Oi H, Suzuki A, Yamano Y, Yokoyama T, Matsuda T, Kataoka K, et al. Mesalazine-induced lung injury with severe respiratory failure successfully treated with steroids and non-invasive positive pressure ventilation. Respir Med Case Rep 2020 Aug;31:101157.

11. Park M, Lee J, Kang SB, Park Y. Recurrent Eosinophilic Pneumonia Associated with Mesalazine Suppository in a Patient with Ulcerative Colitis. The Korean Journal of Gastroenterology = Taehan Sohwagi Hakhoe chi. 2019 Apr;73(4):225-229.

12. Ferrusquía J, Pérez-Martínez I, Gómez de la Torre R, Fernández-Almira ML, de Francisco R, Rodrigo L, et al. Gastroenterology case report of mesalazine-induced cardiopulmonary hypersensitivity. World J Gastroenterol 2015 Apr;21(13):4069-4077.

13. Skeoch S, Weatherley N, Swift AJ, Oldroyd A, Johns C, Hayton C, et al. Drug-Induced Interstitial Lung Disease: A Systematic Review. J Clin Med 2018 Oct;7(10):356.

14. Huang PH, Kuo CJ, Lin CW, Cheng YM, Hu HC, Lin CY, Su MY, Chiu CT. Mesalazine-related lung disease in a patient with ulcerative colitis: A case report. Medicine (Baltimore). 2018 Nov;97(48):e13242.