



***Mycoplasma Pneumoniae*-Induced Rash and Mucositis in an Adult Male from Saudi Arabia: A Case Report and Literature Review**

Authors:	Shatha AlKhawajah, ¹ Razan Alshaikh Saleh, ¹ Mohamed Abdalla, ¹ *Abdul Gafoor Mohammed Fareeth ¹ 1. Internal Medicine Unit, National Guard Hospital, Al-Mubarraz, Saudi Arabia *Correspondence to fareethab@mngaha.med.sa
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Abstract

Mycoplasma pneumoniae (MP) is a well-known respiratory pathogen that can lead to various extrapulmonary complications, including a rare form of MP-induced rash and mucositis. This case report discusses a 24-year-old male who presented with symptoms of oral mucosal swelling, sore throat, cough, and dysphagia following a recent tooth extraction. He received initial empirical therapy with amoxicillin-clavulanate, which failed to alleviate symptoms, necessitating further workup. This case initially raised concerns about other potential causes of oral ulcers (e.g., viral infections, Stevens–Johnson syndrome). However, the diagnosis was established by means of PCR testing for MP on a throat swab specimen, while blood cultures for Group A *Streptococcus* were negative. The patient subsequently received azithromycin with metronidazole and was advised to use nystatin mouthwash. Remarkably, he experienced complete resolution of mucositis symptoms within 2 weeks, with only mild residual pigmentation noted on follow-up. This case underscores the importance of recognising MP-induced mucositis, which can be easily misdiagnosed as Stevens–Johnson syndrome. It highlights the necessity for precise diagnostic methods and timely intervention to ensure optimal patient outcomes.

Key Points

1. *Mycoplasma pneumoniae*-induced rash and mucositis (MIRM) is a rare but important differential for severe mucocutaneous eruptions. Accurate differentiation from Stevens–Johnson syndrome is crucial, as MIRM has a distinct infectious trigger and a more favourable prognosis.

2. MIRM is characterised by prominent mucosal involvement with limited skin detachment. This case, diagnosed using established clinical criteria and PCR testing, demonstrated rapid improvement with macrolide therapy. PCR testing for *M. pneumoniae* is essential for diagnosis in patients presenting with severe mucositis, even without radiographic pneumonia.

3. While most patients with MIRM recover fully, mucosal sequelae can occur. The authors' patient achieved complete mucosal healing within 2 weeks, with only transient hyperpigmentation. MIRM typically follows a benign course with macrolide treatment, but follow-up is recommended to monitor potential ocular or genital complications.

CASE PRESENTATION

A 24-year-old male with no history of immune deficiency, diabetes, or drug allergies presented to the emergency department. He experienced oral swelling and a dry cough. He denied any recent travel. His symptoms began 4 days earlier with a sore throat, dry cough, tooth pain, and whitish mucus in his mouth. The oral swelling, which was mild at first, gradually worsened and caused dysphagia. Notably, he had a tooth extraction a week prior without prophylactic antibiotics. In the emergency department, he was empirically covered with broad-spectrum amoxicillin-clavulanate, along with acetaminophen for symptom relief, pending further diagnostic

evaluation. On examination, the patient was alert, oriented, and febrile (38.3 °C), with a heart rate of 92 bpm and a blood pressure of 120/70 mmHg. No significant signs of systemic involvement, such as hypotension or tachycardia, were observed. Oral examination revealed congested mucosa, a whitish membrane over the tonsils, and an oral ulcer with black discolouration, as shown in Figure 1.

INVESTIGATIONS

The white blood cell (WBC) count was mildly elevated (13.7×10^9 /L), and the C-reactive protein (CRP) level was 79.1 mg/L (reference: <5 mg/L), indicating a significant inflammatory response consistent with

Figure 1: Oral mucosal ulcerations on the buccal mucosa and tongue, consistent with *Mycoplasma pneumoniae*-induced mucositis.



The oral mucosa appeared congested, with erythematous patches, ulcerative lesions, and areas covered by a whitish pseudomembrane (Day 1). The patient presented with erythematous patches and ulcerative lesions that gradually improved following treatment with azithromycin.

infection. Liver and renal function tests were within normal limits. Blood and throat cultures were negative for Group A *Streptococcus*; however, PCR testing of a throat swab confirmed the presence of *Mycoplasma pneumoniae* (MP). The chest X-ray was unremarkable, with no evidence of consolidation.

TREATMENT

The patient was admitted to the general medical ward and was started on treatment. Blood and throat cultures were ordered, and amoxicillin-clavulanate was discontinued as the authors decided to wait for the culture results before starting antibiotics. Acetaminophen was administered as needed, and an urgent dermatologist consultation was arranged. Once the PCR test results for MP on a throat swab specimen returned positive, the patient was commenced on intravenous (IV) azithromycin 500 mg daily for 5 days. Additionally, metronidazole 500 mg three times daily was prescribed for 5 days due to the possibility of secondary anaerobic infection following the patient's recent dental procedure, although no confirmed bacterial superinfection was identified. Nystatin mouthwash was also initiated empirically to cover potential fungal infection.

FOLLOW-UP AND OUTCOMES

The patient demonstrated rapid clinical improvement, with complete resolution of mucositis symptoms within 2 weeks, evidenced by the disappearance of oral ulcers and pseudomembranous ulcers. Mild post-inflammatory hyperpigmentation persisted as the only residual finding. Laboratory markers showed significant improvement: CRP levels normalised from 79.1 mg/L to 8.2 mg/L, while the WBC count decreased from 13.7×10^9 /L to 11.5×10^9 /L. During the 4-week follow-up, both inflammatory markers had completely normalised (CRP: <5 mg/L; WBC: 5.2×10^9 /L), with no evidence of active mucosal lesions.

Follow-up diagnostics revealed normal findings, including the resolution of the previously noted oral mucosal ulcers and a return to baseline appearance of the throat and buccal mucosa. No signs of active infection or new lesions were observed (Figure 2).

During the 4-week follow-up, mild pigmentation was noted on the buccal mucosa. This was attributed to the healing process and was not associated with scarring. The pigmentation was considered a normal variation following mucosal ulceration and did not require further monitoring (Figure 3).

DISCUSSION

MP is a well-known respiratory pathogen that can lead to various intrapulmonary and extrapulmonary complications, including a rare mucocutaneous entity termed MP-induced rash and mucositis (MIRM).^{1,2} Extrapulmonary complications occur in approximately 25% of MP infections, and can affect multiple systems, including dermatological, gastrointestinal, cardiovascular, neurological, haematological, and musculoskeletal systems.³ Among these, dermatological complications are relatively rare, accounting for only 1–5% of cases.⁴ Common cutaneous manifestations include exanthematous eruptions, erythema nodosum, urticaria, and erythema multiforme major or Stevens–Johnson syndrome (SJS).^{5,6} Less frequently, bullous erythema multiforme, pityriasis rosea, toxic epidermal necrolysis (TEN), and mucositis are observed.⁷ Both cutaneous and mucosal involvement have been reported in MIRM, though mucosal manifestations, such as oral ulcers and erythematous patches, are commonly observed. Cutaneous findings like rash and lesions may accompany mucosal involvement but are less frequently observed in the absence of systemic involvement.

The authors' patient developed oral mucosa swelling concurrently with cough and sore throat. The swelling was progressive and associated with dysphagia. An oral ulcer

Figure 2: Mild oral pigmentation during mucositis healing.



At the 2-week follow-up, mild pigmentation was observed on the buccal mucosa. This residual pigmentation was a normal finding in the healing process of oral mucositis and did not suggest scarring or further complications.

Figure 3: Complete resolution of mucositis buccal mucosa.



with a black, reddish spot developed. There was no involvement of the ocular, genital, or skin mucosa. The patient's presentation raised initial concern for SJS, prompting microbiological testing. The testing, including a respiratory panel multiplex PCR, was positive for MP, confirming the diagnosis of MIRM. The patient started as an inpatient on IV azithromycin 500 mg, nystatin, IV fluid, and acetaminophen.

He was discharged with 500 mg of azithromycin for an additional 2 days to complete a 5-day course of antibiotics. He was educated about good oral hygiene, and 2 weeks later was followed as an outpatient. He showed complete recovery of the swelling and ulcers, with only mild pigmentation seen following these lesions. This case exemplifies several classic features of MIRM: predominant mucosal

Table 1: Treatment timeline and laboratory trends.

Time point	Treatment	CRP (mg/L)	WBC count (×10 ⁹ /L)	Clinical findings
Day 1	Amoxicillin-clavulanate	79.1	13.7	Oral ulcers and fever
Day 3	Azithromycin IV	45.2	12.1	Mild improvement
Week 2	Oral azithromycin	8.2	11.5	Ulcers healed

CRP: C-reactive protein; IV: intravenous; WBC: white blood cell.

involvement without significant cutaneous lesions, a clear infectious trigger (MP), rapid response to macrolide therapy, and complete resolution.

MIRM was established as a distinct clinical entity from erythema multiforme and SJS/TEN in 2015 by Canavan et al.² It primarily involves mucosal sites, especially oral (94%), ocular (82%), and genital (63%) mucosa.^{2,8} Unlike SJS/TEN, MIRM typically presents in younger males and lacks significant skin involvement. Cutaneous findings, if present, are pleomorphic and commonly consist of vesicles or bullous lesions (77%), targetoid lesions (48%), and, less frequently, papular, macular, or morbilliform lesions.⁹ Accurate differentiation between MIRM and other mucocutaneous disorders, such as SJS/TEN, is vital due to differences in prognosis and management.¹⁰ SJS/TEN typically presents in adult females, with large purpuric necrotic lesions triggered by drugs such as allopurinol, lamotrigine, anticonvulsants, sulfonamides, and non-steroidal anti-inflammatory drugs.¹¹ In contrast, MIRM is associated with direct infectious triggers and an immunopathogenesis involving immune complex deposition, complement activation, or molecular mimicry.¹²

Canavan et al.² proposed diagnostic criteria for MIRM, which include: 1) <10% body surface area skin detachment; 2)

involvement of two or more mucosal sites; 3) limited vesiculobullous or targetoid skin lesions; and 4) confirmed MP infection via IgM serology or PCR.² Recent recognition of MIRM has led to updates in diagnostic and therapeutic recommendations. A 2023 systematic review highlighted the broad spectrum of MP-related extrapulmonary complications, including MIRM. MIRM represents one of the most clinically significant extrapulmonary presentations, often mimicking other mucocutaneous disorders (e.g., SJS). This review emphasised the diagnostic complexity of atypical presentations (e.g., isolated mucositis without rash or pneumoniae).¹³ In parallel, the 2022 international consensus guidelines defined refined diagnostic parameters for MIRM, emphasising the importance of laboratory confirmation (e.g., PCR) and the exclusion of drug-induced aetiologies.⁴

Treatment remains primarily supportive. While systemic corticosteroids, IV Ig, plasmapheresis, and TNF-α inhibitors have been used, data supporting their routine use are limited.^{7,14} Most patients respond well to macrolides such as azithromycin or clarithromycin, although there are reports of relapses or inadequate responses.^{14,15}

Generally, MIRM has a favourable prognosis, with complete resolution reported in 81% of patients. However, approximately 11% may experience mucosal

sequelae such as pigmentary changes (hyperpigmentation), synechiae, and recurrent pseudomembranous conjunctivitis or ulceration. A systematic review analysed 119 cases of MIRM and found that approximately 81% of patients achieved full recovery without long-term complications.¹⁶ This strengthens the evidence supporting the treatment response observed in the authors' case.

The remaining cases exhibited varying degrees of residual effects, such as skin scarring or ocular sequelae (recurrent pseudomembranous or conjunctival ulceration).¹³ One case report described severe complications, including herpes simplex virus dissemination and bacteraemia (e.g., *Staphylococcus epidermidis*), highlighting the need for vigilant follow-up.¹²

CONCLUSION

This case has a few limitations. The authors conclude that a mucosal biopsy could have given a histopathological correlation, but it was postponed because of rapid clinical improvement. Furthermore, the use of metronidazole and nystatin, while clinically justified, might have complicated the evaluation of azithromycin's effectiveness. This article reports on the potential impact on patient care, scientific integrity, and the inclusion of pertinent information intended to evoke critical inquiry and further investigation into MIRM, which serves to enrich discourse and deepen understanding within the field.

References

- Poddighe D. Extra-pulmonary diseases related to *Mycoplasma pneumoniae* in children: recent insights into the pathogenesis. *Curr Opin Rheumatol*. 2018;30(4):380-7.
- Canavan TN et al. *Mycoplasma pneumoniae*-induced rash and mucositis as a syndrome distinct from Stevens-Johnson syndrome and erythema multiforme: a systematic review. *J Am Acad Dermatol*. 2015;72(2):239-45.
- Bajantri B et al. *Mycoplasma pneumoniae*: a potentially severe infection. *J Clin Med Res*. 2018;10(7):535-44.
- Ramien ML. Reactive infectious mucocutaneous eruption: *Mycoplasma pneumoniae*-induced rash and mucositis, and other parainfectious eruptions. *Clin Exp Dermatol*. 2021;46(3):420-9.
- Vanfleteren I et al. Stevens-Johnson syndrome: a diagnostic challenge in the absence of skin lesions. *Pediatr Dermatol*. 2003;20(1):52-6.
- Lerch M et al. Current perspectives on Stevens-Johnson syndrome and toxic epidermal necrolysis. *Clin Rev Allergy Immunol*. 2018;54(1):147-76.
- Santos RP et al. *Mycoplasma pneumoniae*-induced rash and mucositis: a recently described entity. *BMJ Case Rep*. 2017;DOI:10.1136/bcr-2017-220768.
- Amode R et al. Clinical and histologic features of *Mycoplasma pneumoniae*-related erythema multiforme: a single-centre series of 33 cases compared with 100 cases induced by other causes. *J Am Acad Dermatol*. 2018;79(1):110-7.
- Ramien ML, Bruckner AL. Mucocutaneous eruptions in acutely ill pediatric patients-think of *Mycoplasma pneumoniae* (and other infections) first. *JAMA Dermatol*. 2020;156(2):124-5.
- Trapp LW et al. A 13-year-old boy with pharyngitis, oral ulcers, and dehydration. *Mycoplasma pneumoniae*-associated mucositis. *Pediatr Ann*. 2013;42(4):148-50.
- Shah PR et al. Ophthalmic manifestations of *mycoplasma*-induced rash and mucositis. *Cornea*. 2019;38(10):1305-8.
- Agnihotri G et al. *Mycoplasma pneumoniae*-associated mucositis complicated by herpes simplex virus dissemination and *Staphylococcus Epidermidis* bacteremia. *Pediatr Dermatol*. 2020;37(4):769-70.
- Haseeb A et al. Ocular involvement in *mycoplasma* induced rash and mucositis: a systematic review of the literature. *Ocul Surf*. 2023;28:1-10.
- Bukhari EE et al. *Mycoplasma pneumoniae*-associated mucositis syndrome: a rare and clinically challenging disease in a Saudi child. *J Taibah Univ Med Sci*. 2017;12(4):356-9.
- Gonçalves R et al. *Mycoplasma pneumoniae*-associated mucositis. *BMJ Case Rep*. 2021;14(4):e239086.
- Meyer Sauter PM, Beeton ML; European Society of Clinical Microbiology and Infectious Diseases (ESCMID) Study Group for *Mycoplasma* and *Chlamydia* Infections (ESGMAC), ESGMAC *Mycoplasma pneumoniae* Surveillance (MAPS) study group. *Mycoplasma pneumoniae*: delayed re-emergence after COVID-19 pandemic restrictions. *Lancet Microbe*. 2024;5(2):e100-1.