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Case Report

Paediatrics Section

Familial Occurrence of *Mycoplasma*-induced Rash and Mucositis: A Case Report of Two Siblings

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ABSTRACT

Mycoplasma pneumoniae is a common pathogen responsible for respiratory infections, including community-acquired pneumonia, and up to 25% of patients develop extrapulmonary complications. Mycoplasma-Induced Rash and Mucositis (MIRM) is a recently identified clinical entity typically preceded by pneumonia-like symptoms such as fever and cough. The differential diagnoses for MIRM include Erythema Multiforme (EM), Stevens-Johnson Syndrome (SJS), Herpetic gingivostomatitis, Kawasaki disease and Toxic Epidermal Necrolysis (TEN). This condition primarily affects children and adolescents, with a mean age of 12 years and shows a male predominance. The authors report a rare occurrence of MIRM in two siblings, underscoring the condition's rarity and clinical importance. The combination of prominent mucosal involvement at two sites, with sparse cutaneous findings, preceded by a prodrome of respiratory symptoms and the absence of a drug history, raised suspicion of *Mycoplasma* infection, which was confirmed by positive *Mycoplasma* IgM antibodies. Both siblings recovered well with a macrolide antibiotic and a short course of corticosteroids. While sporadic cases of MIRM are reported, familial occurrences in siblings highlight a genetic or environmental predisposition. Early recognition is crucial, as demonstrated by its occurrence in siblings, where prompt diagnosis led to favourable outcomes. Increased awareness among physicians can aid in accurate diagnosis, appropriate management and effective counselling.

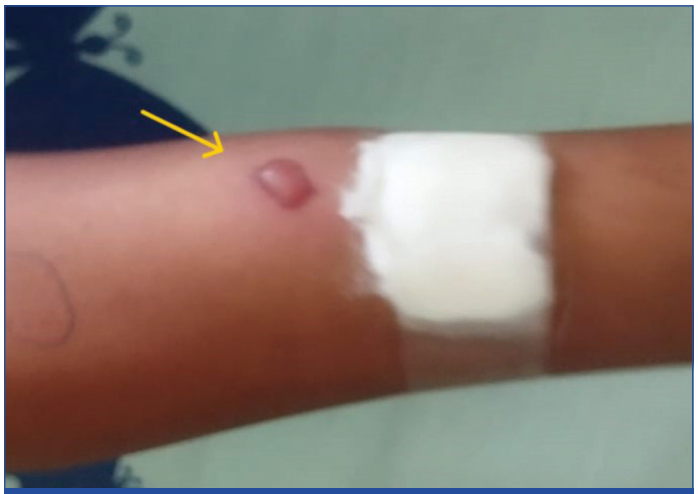
Keywords: Macrolides, Oral ulcers, Pneumonia, Steroids, Target lesions, Vesicles

CASE REPORT

An 11-year-old boy presented to the outpatient department with a history of low-grade fever and dry cough for two days. A chest radiograph showed patchy infiltrates in both lungs, suggestive of pneumonia. He was diagnosed with a lower respiratory tract infection and prescribed oral amoxicillin. He then presented to the emergency department with a 5-day history of dry cough and fever (100.7°F). There was no history of any other drug intake, prior herpetic infection, or similar complaints in the family.

Clinical examination revealed painful erosions on the lips and oral mucosa, partially covered with haemorrhagic crusts, indicative of mucositis [Table/Fig-1]. Additionally, erythema and oedema of the glans penis were noted, with no ocular involvement. On day 3, the oral lesions worsened and he developed a solitary vesiculobullous lesion on the volar aspect of the left forearm, while the rest of the skin appeared normal [Table/Fig-2]. In view of the extensive mucocutaneous lesions accompanied by odynophagia, he was admitted for further evaluation.

[Table/Fig-1]: Extensive mucosal erosions of lips and oral mucosa.
Mucosal erosions with bleeding (yellow arrow), sparing keratinised skin of the outer lip (blue arrow)



[Table/Fig-2]: Vesiculobullous lesion.
Solitary vesiculobullous lesion on volar aspect of forearm (Arrow)

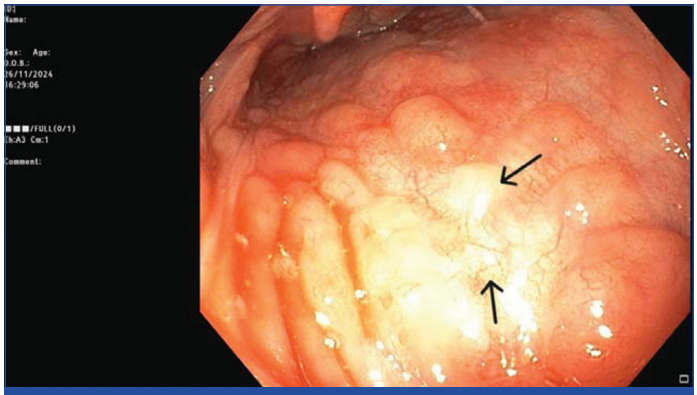
EM, SJS, Herpetic gingivostomatitis, Kawasaki disease and TEN were considered in the differential diagnosis. The combination of prominent mucosal involvement at two sites, with sparse and localised cutaneous findings-preceded by a prodrome of respiratory symptoms and the absence of a drug history-raised suspicion of *Mycoplasma* infection. Laboratory investigations revealed leucocytosis (17.4×10^3/µL) with neutrophilia (76%) and elevated C-Reactive Protein (CRP) levels (34 mg/L). Serological tests for herpes simplex virus were negative [Table/Fig-3]. *Mycoplasma* IgM antibodies were positive, suggestive of a recent *Mycoplasma pneumoniae* infection. The predominant mucosal involvement, along with sparse cutaneous lesions and positive *Mycoplasma* IgM antibodies, confirmed the diagnosis of MIRM.

Given the severity of the oral lesions, the patient underwent upper gastrointestinal endoscopy, which revealed mild ulcerations in the mid and distal oesophagus, suggestive of oesophagitis [Table/Fig-4]. The child was treated with azithromycin (10 mg/kg/day once daily for 5 days) and oral prednisolone (1 mg/kg/day in two divided doses

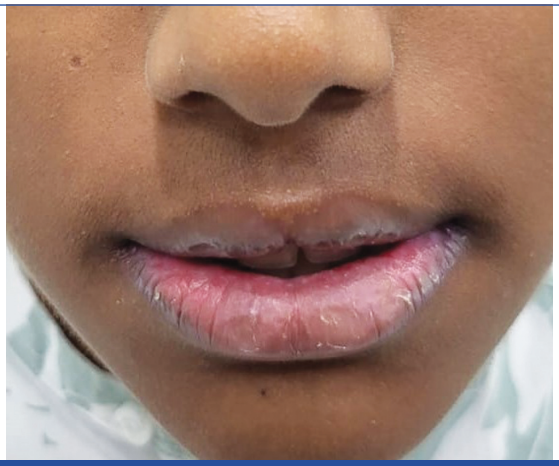
for 5 days), along with pain management (paracetamol), parenteral fluids (maintenance fluid of 0.45% dextrose saline), and mucosal care using a topical gel containing lidocaine and choline salicylate. He remained afebrile, his respiratory symptoms resolved, his cough subsided and there were no abnormal lung signs on examination. The patient demonstrated significant clinical improvement and was discharged after five days of hospitalisation with lansoprazole (30 mg once daily) and sucralfate (500 mg thrice daily) prescribed for a week [Table/Fig-5].

Parameter	Patient 1	Patient 2	Reference values
Age (years), Gender	11, Male	8, Female	-
Haemoglobin (g/dL)	14.7	13.2	11.5-15.5
WBC (per cu.mm)	17,400	8200	5000-13000
Neutrophils (%)	76	62	40-62
Lymphocytes (%)	21	24	20-38
C-reactive protein (mg/L)	34	19	<10
SGOT (U/L)	20	14	<45
SGPT (U/L)	38	15	<45
Mycoplasma Ig M antibodies	Positive	Positive	NA
Urine: WBC per HPF	10-12	2-3	0-5
Urine: RBC per HPF	12 -15	2-3	<4
Urine culture	No growth	No growth	-
Mucosa involved	Oral, oesophagus, genital	Oral	-
Treatment	Azithromycin, prednisolone	Azithromycin	-
Duration of hospitalisation	5 days	Nil	-
Sequelae	None	None	-

[Table/Fig-3]: Laboratory tests and clinical characteristics of the siblings.
SGOT: Serum glutamic-oxaloacetic transaminase; SGPT: Serum glutamic-pyruvic transaminase; WBC: White blood cells; RBC: Red blood cells; NA: Not applicable

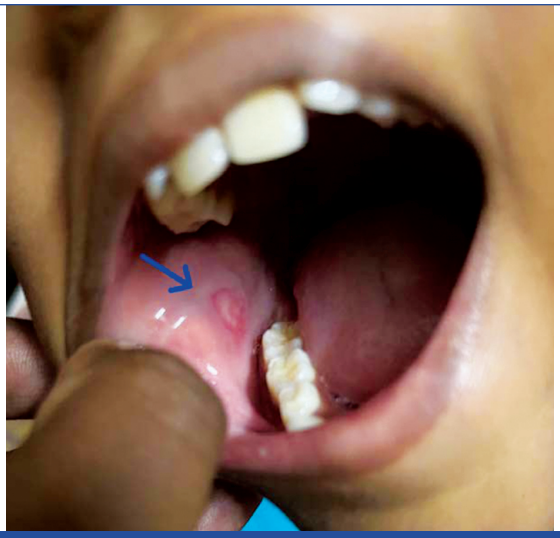


[Table/Fig-4]: Upper GI endoscopy image of lower oesophagus.
Ulcerations seen in distal oesophagus (Arrows)



[Table/Fig-5]: Clinical improvement at the time of discharge.

Three days later, his eight-year-old sister presented with a five-day history of low-grade fever and intermittent dry cough. She also exhibited oral lesions on the buccal mucosa, though less severe than those of her elder sibling [Table/Fig-6]. Her laboratory tests are shown in [Table/Fig-3]. There was no evidence of ocular or genital involvement. Given the similar clinical presentation suggestive of MIRM, a macrolide antibiotic was started. Both siblings made a full recovery, with no sequelae or recurrence observed during the six-month follow-up period. Written consent was obtained from the parents for the publication of the case report.



[Table/Fig-6]: Oral lesion in eight-year-old girl.
Arrow shows buccal mucosal lesion

DISCUSSION

Mycoplasma pneumoniae is the leading infectious agent linked to acute epidermolytic dermopathies and respiratory infections, with up to 25% of cases developing extrapulmonary complications [1,2]. The dermatological manifestations include Raynaud's phenomenon, erythema nodosum, Kawasaki disease, EM, SJS, and TEN [1,3]. MIRM mainly affects children and adolescents, averaging 12 years of age and shows a male predominance in about two-thirds of cases [4].

MIRM should be considered in a child with mucosal or mucocutaneous eruptions, preceded by a prodrome of fever, malaise, or respiratory symptoms occurring approximately a week before the onset of the rash [2,4]. Canavan TN et al., described MIRM as a new entity following *Mycoplasma pneumoniae* infection, which presents with mucosal findings similar to SJS but with minimal or no cutaneous involvement [4]. The key distinguishing features of MIRM include a younger age, associated atypical pneumonia, minimal skin involvement and a better prognosis compared to EM and SJS/TEN, which have severe skin manifestations [5,6].

The diagnostic criteria for MIRM include a mucocutaneous eruption involving less than 10% of the body surface area and involvement of at least two mucosal surfaces, such as the oral, ocular, or genital mucosa. Cutaneous involvement is typically mild, with around 50% of cases displaying only a few scattered lesions, while one-third of cases present without any skin rash [4]. Skin lesions typically have an acral distribution and may include vesiculobullous lesions (77%), targetoid lesions (48%), papules (14%), and macules (12%) [4,6].

The oral mucosa is involved in the majority of cases (94%), ranging from isolated erosions to widespread denudation of the entire buccal mucosa. Ocular involvement (82%) typically presents as bilateral purulent conjunctivitis. Genital mucosal involvement (63%) is characterised by vesiculobullous lesions and ulcerations [6]. Clinical and laboratory evidence of *Mycoplasma pneumoniae* infection, confirmed through serology by enzyme immunoassay, Polymerase Chain Reaction (PCR), or other diagnostic tests, is essential for diagnosis.

MIRM lacks pathognomonic histopathological features, making clinical correlation essential for diagnosis [3,4]. MIRM is considered an immune-mediated hypersensitivity reaction triggered by *Mycoplasma* infection [4,7]. Antibodies produced against bacterial P1-adhesion molecules cross-react with keratinocyte antigens, forming immune complexes that cause tissue damage, leading to mucocutaneous lesions [8].

There are no standardised treatment guidelines for MIRM [4,7,9]. However, most cases are managed with a combination of antibiotics, systemic corticosteroids, Intravenous Immunoglobulin (IVIG), cyclosporine and supportive care [10,11]. MIRM generally has a favourable prognosis, with most patients recovering without sequelae and recurrence is rare (approximately 8%) [12]. Complications may include synechiae in the ocular, oral, or genital regions and, rarely, persistent cutaneous lesions or B-cell lymphopenia [4,7,9].

EM and SJS/TEN are thought to involve a type IV delayed-type hypersensitivity reaction mediated through the Fas-ligand mechanism [4,5]. Although the mucosal involvement initially raised suspicion for SJS, the limited cutaneous involvement, along with clinical and radiological evidence of atypical pneumonia and elevated *Mycoplasma pneumoniae* IgM antibodies, established the diagnosis of MIRM.

Oesophageal involvement in MIRM has been described in a few cases, as endoscopic evaluation is not routinely performed in these instances [13]. The elder sibling had endoscopic confirmation of oesophagitis, which illustrates the extent to which the oesophageal mucosa can be affected in MIRM. In the past, these cases were often diagnosed as 'incomplete' SJS, which carries a much poorer prognosis compared to MIRM, highlighting the importance of accurate diagnosis for proper management and prognosis [14]. The younger sibling did not develop genital or ocular lesions, as she was initiated on macrolide antibiotics early in the course of her illness, demonstrating the importance of prompt diagnosis.

Song H et al., reported a case of MIRM in a father and his son, suggesting the possibility of genetic susceptibility [15]. While close contact may be an underlying factor, familial occurrences are rarely reported, emphasising the likelihood of genetic predisposition, potentially linked to an altered immune response, as the cause of MIRM [12,15]. Notably, this is the first documented instance of MIRM occurring in two siblings. Given the potential for recurrence, long-term follow-up is essential for these siblings to monitor and manage any future episodes effectively.

CONCLUSION(S)

MIRM is an extrapulmonary complication of *Mycoplasma pneumoniae* infection, primarily affecting children and adolescents. It presents with significant mucositis, especially in the oral and urogenital regions, often accompanied by few or no scattered skin lesions. Steroid therapy, combined with macrolides, may help shorten the disease course. MIRM has a favourable prognosis and should be differentiated from EM, SJS, Herpetic gingivostomatitis, Kawasaki disease, and TEN. Clinicians should diagnose MIRM based on the clinical history, mucosal involvement, a preceding respiratory prodrome, absence of a drug history and laboratory confirmation of *Mycoplasma pneumoniae* infection.

REFERENCES

[1] Santos RP, Silva M, Vieira AP, Brito C. *Mycoplasma pneumoniae*-induced rash and mucositis: A recently described entity. BMJ Case Rep. 2017;2017:bcr2017220768. Doi: 10.1136/bcr-2017-220768.

[2] Narita M. Classification of extrapulmonary manifestations due to *Mycoplasma pneumoniae* infection on the basis of possible pathogenesis. Front Microbiol. 2016;7:23. Doi:10.3389/fmicb.2016.00023.

[3] Meyer Sauteur PM, Theiler M, Buettcher M, Seiler M, Weibel L, Berger C. Frequency and clinical presentation of mucocutaneous disease due to *Mycoplasma pneumoniae* infection in children with community-acquired pneumoniae. JAMA Dermatol. 2020;156(2):144-50. Doi: 10.1001/jamadermatol.2019.3602.

[4] Canavan TN, Mathes EF, Frieden I, Shinkai K. *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. Doi: 10.1016/j.jaad.2014.06.026.

[5] Sassolas B, Haddad C, Mockenhaupt M, Dunant A, Liss Y, Bork K, et al. ALDEN, an algorithm for assessment of drug causality in Stevens-Johnson syndrome and toxic epidermal necrolysis: Comparison with case-control analysis. Clin Pharmacol Ther. 2010;88(1):60-68. Doi:10.1038/clpt.2009.252

[6] Amode R, Ingen-Housz-Oro S, Ortonne N, Bounfour T, Pereyre S, Schlemmer F, et al. Clinical and histologic features of *Mycoplasma pneumoniae*-related erythema multiforme: A single-center series of 33 cases compared with 100 cases induced by other causes. J Am Acad Dermatol. 2018;79(1):110-17. Doi: 10.1016/j.jaad.2018.03.013.

[7] Chen N, Li M. Case report and literature review: Clinical characteristics of 10 children with *Mycoplasma pneumoniae*-induced rash and mucositis. Front Pediatr. 2022;10:823376. Doi: 10.3389/fped.2022.823376.

[8] Simecka JW, Ross SE, Cassell GH, Davis JK. Interactions of mycoplasmas with B cells: Antibody production and nonspecific effects. Clin Infect Dis. 1993;17 Suppl 1:S176-S182. Doi: 10.1093/clinids/17.supplement_1.s176.

[9] Lofgren D, Lenkeit C. *Mycoplasma pneumoniae*-induced rash and mucositis: A systematic review of the literature. SMRJ. 2021;6(2)25284. Doi: 10.51894/001c.25284.

[10] Zipitis CS, Thalange N. Intravenous immunoglobulins for the management of Stevens-Johnson syndrome with minimal skin manifestations. Eur J Pediatr. 2007;166(6):585-88. Doi: 10.1007/s00431-006-0287-9.

[11] Li HOY, Colantonio S, Ramien ML. Treatment of *Mycoplasma pneumoniae*-induced rash and mucositis with cyclosporine. J Cutan Med Surg. 2019;23(6):608-12. Doi: 10.1177/1203475419874444.

[12] Mazori DR, Nagarajan S, Glick SA. Recurrent reactive Infectious Mucocutaneous Eruption (RIME): Insights from a child with three episodes. Pediatr Dermatol. 2020;37:545-47. Doi: 10.1111/pde.14142.

[13] Loh K, Puscasiu E, Khan S. A rare case of esophagitis associated with mycoplasma-induced rash and mucositis in a 16-year-old male: 1768. American Journal of Gastroenterology. 2018;113(supplement):p S1008-S1009. Doi: 10.14309/00000434-201810001-01768.

[14] Li K, Haber RM. Stevens-Johnson syndrome without skin lesions (Fuchs syndrome): A literature review of adult cases with *Mycoplasma* cause. Arch Dermatol. 2012;148(8):963-64. Doi:10.1001/archdermatol.2012.681.

[15] Song H, Huang JT, Tan JK. *Mycoplasma*-induced rash and mucositis in a father and son: A case report. Pediatr Infect Dis J. 2018;37(7):e205-e206. Doi: 10.1097/INF.0000000000001881.

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