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Case Report

Reactive Infectious Mucocutaneous Eruption Secondary to *Mycoplasma pneumoniae*: A Case Report

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INTRODUCTION

Reactive Infectious Mucocutaneous Eruption (RIME) is a mucocutaneous reaction that primarily affects the pediatric population following a bacterial or viral illness, most commonly *Mycoplasma pneumoniae*.[1-3] This is a recently adopted term, replacing *Mycoplasma pneumoniae*-Induced Rash and Mucositis (MIRM),[4] to reflect a broader range of causes, including *Chlamydia pneumoniae*, parainfluenza virus, and others.

RIME typically presents with severe mucositis, particularly in the oral cavity (up to 94% of cases) and eyes (up to 82%), accompanied by sparse cutaneous lesions. These symptoms are generally preceded by fever, cough, and malaise about one week prior.[5]

Given the recent rise in *Mycoplasma pneumoniae* cases among children, and increased reports of RIME in some regions,[6,7] it is important to distinguish RIME from more severe conditions such as Stevens-Johnson syndrome (SJS), erythema multiforme, and toxic epidermal necrolysis (TEN). RIME differs from SJS and TEN by its prominent mucosal involvement, minimal skin involvement, and greater prevalence among adolescent males. It also carries a significantly lower mortality rate.[5,8]

The authors of this paper present the case of a patient who arrived at the emergency department with marked oral lesions and bilateral conjunctivitis, following an upper respiratory infection.

CASE REPORT

We present the case of a previously healthy 14-year-old male admitted with worsening oral mucositis and bilateral conjunctivitis following an upper respiratory infection (URI). His symptoms began 10 days prior with cough, sore throat, and nasal congestion, which progressed to painful oral lesions, conjunctival injection with a foreign body sensation, and skin lesions. Despite initial outpatient treatment with azithromycin, prednisone, and codeine, his condition deteriorated, prompting transfer from an outside emergency department for further evaluation and management.

On admission, he exhibited significant oral mucosal ulcerations, bilateral conjunctivitis with non-purulent discharge, facial and periorbital swelling, and transient urticarial skin lesions across the torso, extremities, and groin. Laboratory evaluation revealed colonization with Group C *Streptococcus* and a non–SARS-CoV-2 coronavirus. While initial nasopharyngeal polymerase chain reaction (PCR) testing was negative for *Mycoplasma pneumoniae*, subsequent serologies were positive for Immunoglobulin M (IgM) and Immunoglobulin G (IgG).

The patient was treated with methylprednisolone (0.5 mg/kg twice daily), intravenous (IV) fluids, ocular lubricants, topical ofloxacin, and pain control using IV ketorolac and morphine. Despite severe oral pain, he was motivated to avoid nasogastric (NG) tube feeding. Oral swish therapies, including viscous lidocaine and a compounded solution of diphenhydramine, lidocaine, aluminum hydroxide, magnesium hydroxide, and simethicone, enabled him to tolerate some liquid meal replacements.

His condition gradually improved, with resolution of new skin lesions, healing of oral mucosa, reduction in ocular and facial swelling, and effective pain control. He was discharged on hospital day seven to complete an eight-day steroid course and instructed to follow-up with his primary care physician and optometrist.

DISCUSSION

RIME is a rare, immune-mediated condition that typically follows a viral or bacterial infection.[1-3] Previously referred to as *Mycoplasma pneumoniae*-Induced Rash and Mucositis (MIRM),[4] the term RIME was adopted to reflect a broader range of infectious triggers beyond *Mycoplasma pneumoniae*. RIME often presents with mucositis, conjunctivitis, and a diffuse erythematous rash. The underlying pathophysiology is believed to involve an exaggerated immune response to an infectious agent, resulting in widespread mucocutaneous inflammation.

In the case of the 14-year-old male described above, the progression from a URI to painful oral mucositis and conjunctival inflammation, along with positive *Mycoplasma pneumoniae* IgM serology, strongly supports a diagnosis of RIME. Alternative diagnoses such as Herpes Simplex Virus (HSV), SJS, and TEN were considered and excluded based on clinical features and laboratory results. HSV infection would typically be confirmed by a positive PCR from a lesion swab. SJS and TEN are marked by more extensive epidermal necrosis and skin involvement than is seen in RIME. RIME also is more common in adolescent males and tends to show more prominent mucosal involvement.[5,8]

Management of RIME largely is supportive, with pain control being central to treatment. Although there is no established therapy, antibiotics, corticosteroids, and intravenous immunoglobulin (IVIG) have been used in case reports and series, but no randomized controlled trials have evaluated their efficacy.[5,8] In our patient, IV corticosteroids appeared to halt disease progression, as no new mucocutaneous lesions developed after initiation. Treatment with IV analgesics, hydration, and oral swish-and-spit solutions enabled adequate symptom control throughout the illness. His clinical improvement and increasing ability to tolerate oral intake highlight the potential benefit of supportive care

and corticosteroids in RIME.

The patient particularly was motivated to avoid NG feeding, enduring significant pain to maintain minimal oral caloric intake. With support from the dietary team, he was able to identify tolerable foods. Ultimately, inadequate oral hydration became the primary barrier to discharge. This issue may be even more pronounced in younger pediatric patients, reinforcing the need for a multidisciplinary care approach.

As with systemic treatment, there is no standardized regimen for managing ocular involvement in RIME. Our patient experienced bilateral conjunctivitis, foreign body sensation, and intermittent blurry vision. Haseeb et al.[9] propose a severity-based approach to ocular management, ranging from artificial tears to topical antibiotics, steroids, or even amniotic membrane application. While our patient improved with ocular lubrication and topical antibiotics in addition to systemic steroids, the possibility remains that further ophthalmologic interventions may have enhanced his recovery.

This case also underscores the importance of combining PCR and serologic testing in the diagnosis of *Mycoplasma pneumoniae* infection. Given that our patient presented more than seven days after symptom onset, PCR sensitivity is reduced, with estimates as low as 62% in some studies.[10] Serologic testing is thus essential for accurate diagnosis, particularly in cases of suspected RIME.

Distinguishing RIME from SJS and TEN is important for both prognosis and management. Reported in-hospital mortality rates for SJS, SJS/TEN overlap, and TEN are 4.8%, 19.4%, and 14.8%, respectively, while mortality from RIME is exceedingly rare.[8] A 2014 systematic review identified only four RIME-related fatalities, all occurring in the 1940s.[5] RIME typically does not require burn unit care, which often is necessary for SJS and TEN. Furthermore, antibiotic treatment such as azithromycin can help eliminate the triggering antigen(s) in RIME.

CONCLUSIONS

This case highlights the importance of recognizing RIME as a distinct clinical entity in the differential diagnosis of post-infectious mucocutaneous eruptions, particularly in pediatric patients. Early recognition and appropriate supportive care, including corticosteroids and symptom-specific management, can lead to favorable outcomes. The recurrence of similar cases at our institution over the past year underscores the need for standardized treatment protocols to guide clinicians in the effective management of RIME.

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