

## Ocular Manifestations of Mycoplasma-induced Rash and Mucositis

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### Abstract

A 13-year-old girl presented with a 5-day history of fever and cough followed by a new onset of oral ulcers and conjunctival injection. Clinical examination revealed bilateral 360-degree subconjunctival hemorrhages, which later evolved to corneal epithelial defects, pseudo-membrane formation, and extensive oral mucosal ulceration. *Mycoplasma pneumoniae* serum IgG and IgM were positive. Treatment with topical prednisolone acetate, moxifloxacin, preservative-free artificial tears, and erythromycin ointment was initiated. A self-retaining amniotic membrane was placed. The ocular and oral lesions resolved within two weeks of treatment and the patient's vision returned to baseline. *Mycoplasma*-induced rash and mucositis is a newly defined entity that mainly affects children and has a favorable prognosis with early detection and treatment.

### History

A 13-year-old Hispanic girl was admitted to the pediatrics service at the University of Oklahoma Health Sciences Center for fever and cough for 5 days followed by a new-onset of bilateral conjunctival injection, blurry vision, and oral ulceration (Figure 1). She had no significant past medical or ocular history. There were no prior episodes of ocular or oral lesions and no history of trauma. Her two siblings had recently recovered from a similar upper respiratory illness without oral or ocular manifestations. The patient was started on supportive therapy and oral azithromycin for a presumed diagnosis of pneumonia. Twelve-point review of system was notable for fever, cough, fatigue, loss of appetite, blurry vision, ocular and oral discomfort.

### Examination

Visual acuity with pinhole at near was 20/20 in each eye. Pupils were round and reactive, with no relative afferent pupillary defect. Extraocular movements were full without strabismus or nystagmus. Intraocular pressure was 15 mmHg in each eye. Anterior examination revealed bilateral 360-degree subconjunctival hemorrhage without follicular or papillary changes; there was no membranous formation. There were short fluorescein-staining strands of mucus adherent to the anterior surface of the cornea and conjunctiva bilaterally. The remainder of the anterior segment evaluation as well as the dilated fundus examination were within normal limits. Physical examination was positive for bilateral diffuse wheezing and two erythematous, sub-centimeter targetoid lesions on the right radial palm. A chest radiograph showed bilateral upper lobe alveolar opacity consistent with multifocal infectious process without effusion or pneumothorax.

### Diagnosis and treatment

The initial infectious workup was negative, which included blood culture, Group A *Streptococcus* rapid antigen screen, and nasopharyngeal swab PCR testing for adenovirus, coronavirus, human metapneumovirus, rhinovirus, influenza A, influenza B, parainfluenza, respiratory syncytial virus, *Bordetella pertussis*, *Chlamydia pneumoniae*, and *Mycoplasma*

*pneumoniae*. A presumed diagnosis of bilateral viral hemorrhagic conjunctivitis was made and the patient was started on preservative-free artificial tears and erythromycin ointment.

On day 3 of hospitalization, the patient reported worsening of both ocular and oral pain and decreased uncorrected near visual acuity to 20/40 (pinhole 20/20) right eye and 20/800 (pinhole 20/200) left eye. There were new corneal epithelial defects in addition to the previously documented filaments. The inferior 20% of the right cornea was involved and the left had a larger central and inferior defect involving 80% of the cornea. No corneal infiltrates were noted. Pseudo-membranes were found in the inferior fornices bilaterally and were carefully peeled. Conjunctival swab testing for HSV PCR and coxsackieviruses cultures were sent at this point and were negative. Topical prednisolone acetate 1% four times daily and moxifloxacin 0.5% four times daily were added to the existing treatment regimen. A PROKERA® amniotic membrane was placed over the left eye for 6 days to help with comfort and to aid corneal re-epithelization. A repeat infectious workup revealed elevated *Mycoplasma pneumoniae* IgG (1893 U/mL, negative range < 100 U/mL) and IgM (5662 U/mL, negative range < 770 U/mL) serum titers.

The patient reported significant improvement in her ocular symptoms after the amniotic membrane placement. On day 10 of hospitalization, her visual acuity improved to 20/25 and 20/30 in the right and left eyes respectively, and corneal epithelial defects had completely resolved without filamentous deposits. The patient was discharged from the hospital on day 13. Two months after the initial hospitalization, the subconjunctival hemorrhage and oral ulceration had completely resolved (Figure 2) and the visual acuity returned to her previous baseline.

## Discussion

*Mycoplasma pneumoniae* is a common cause of upper respiratory infection in the pediatric population. Up to 94% of the *Mycoplasma*-associated infections may produce extrapulmonary manifestations which most commonly involve the mucous membranes (94% oral, 82% ocular, and 63% urogenital mucositis) <sup>1,2</sup> The term *Mycoplasma*-induced rash and mucositis (MIRM) was first introduced by Canavan *et al* in 2015 as a distinct clinical entity to differentiate it from other causes of infectious or medication-related mucocutaneous lesions such as Stevens-Johnson syndrome/toxic epidermal necrolysis.<sup>2</sup>

MIRM and SJS/TEN can have similar clinical presentations, namely mucocutaneous eruptions involving the ocular, oral, and genitourinary mucosal surfaces. However, MIRM differs from SJS/TEN in that the former is more commonly seen in children (mean age: 11.9; 66% male) and is associated with mucositis alone, or prominent mucositis with minimal cutaneous involvement.<sup>2,3</sup> When the skin is involved, the rash in MIRM is typically sparse and is characterized by vesicubullous or targetoid cutaneous lesions. In contrast, SJS/TEN often present in adults (mean age: 47.1; 66% female) with large, widespread, purpuric, coalescing bullous lesions that progress to sloughing and necrosis.<sup>2,3,4</sup>

Initially, our patient's *Mycoplasma* antibody testing was negative. This could be secondary to the temporal profile of disease process, since *Mycoplasma* IgM is typically produced within a week of initial infection and peaks at 3-6 weeks.<sup>5</sup> The patient's otherwise negative infectious workup along with the atypical oculomucocutaneous findings warranted a repeat infectious laboratory at

one week into hospitalization, which yielded highly positive *Mycoplasma pneumoniae* IgG and IgM titers.

Of the reported cases of MIRM in the literature, the mean age of presentation was 21.4 years (range 8-46), and all had conjunctival involvement without corneal involvement except for the one patient reported by Santos *et al.*<sup>5, 6, 7, 8, 9, 10</sup> Santos *et al* treated the patient with ocular occlusion, topic oxytetracycline ointment, and intravenous immunoglobulins at a dosage of 1 g/kg/day for 3 days with a rapid improvement.<sup>8</sup> None of the reported cases required amniotic membrane transplant and all recovered without ocular sequelae except for one with eyelid margin scar affecting the meibomian glands.<sup>9</sup>

### **Conclusion**

There have been no established treatment guidelines for ocular involvement of MRIM; however, aggressive lubrication combined with topical steroids and antibiotics often leads to a complete recovery. In more severe cases, amniotic membrane transplantation can afford patient symptomatic pain relief and aid in visual recovery.

Pediatricians and ophthalmologists should be familiar with this disease entity and consider amniotic membrane transplantation as an additional treatment option when the patient's clinical course worsens while on topical therapy.



Figure 1. External photo showing bilateral conjunctival injection and oral ulceration during initial hospitalization.



Figure 2. External photo demonstrating complete resolution of the corneal epithelial defects, subconjunctival hemorrhages, and oral ulceration two months later.

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