Mycoplasma pneumoniae, more than a lung disease

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Abstract

Mycoplasma pneumoniae-induced rash and mucositis (MIRM) is a recently described clinical entity and should be considered in children who present with oral (94% of patients), ocular (82% of patients), and urogenital lesions (63% of patients). MIRM was first described as a distinct clinical entity from Stevens Johnson syndrome/Toxic epidermal necrolysis (SJS)/(TEN) in 2015 [1]. As a new, uncommon diagnosis it frequently poses a diagnostic and therapeutic challenge for pediatricians and dermatologists. We report a case of MIRM in a previously healthy 15-year-old boy.

Keywords: oral mucosa, pediatric dermatology, infectious diseases of the skin

Introduction

Mycoplasma pneumoniae is a common pediatric infection, which affects the respiratory tract and classically has been associated with mucocutaneous eruptions resembling erythema multiforme (EM) or Steven Johnson Syndrome (SJS). Recently, *Mycoplasma pneumoniae*-induced rash and mucositis (MIRM) was described as a distinct clinical entity from these diseases in 2015 on the basis of its unique clinical features [1]. As a new, uncommon diagnosis it frequently poses a diagnostic challenge for pediatricians and dermatologists.

Case Synopsis

We report the case of a previously healthy 15-year-old boy who presented with a four-day history of progressive conjunctivitis and mucositis. He developed fatigue, subjective fever, and decreased appetite approximately ten days earlier, followed by worsening cough, non-bloody diarrhea, and inability to tolerate food. Physical examination was notable for hemorrhagic conjunctivitis and diffuse erosions of the tongue, oropharynx, and lips, with superimposed crusting (**Figure 1**). There was scant crusting at the urethra. Rare erythematous papulovesicles were scattered on the forehead, wrist, and abdomen (**Figure 2**). Chest X-ray demonstrated

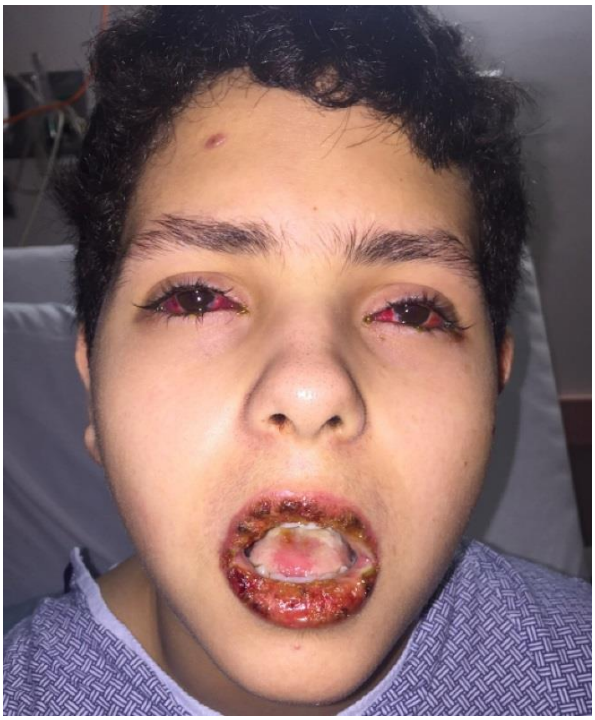

Figure 1. *Hemorrhagic conjunctivitis and diffuse erosions of the tongue, oropharynx, and lips with superimposed crusting. Patient consent for publication is on file at the Author's institution, and publisher.*

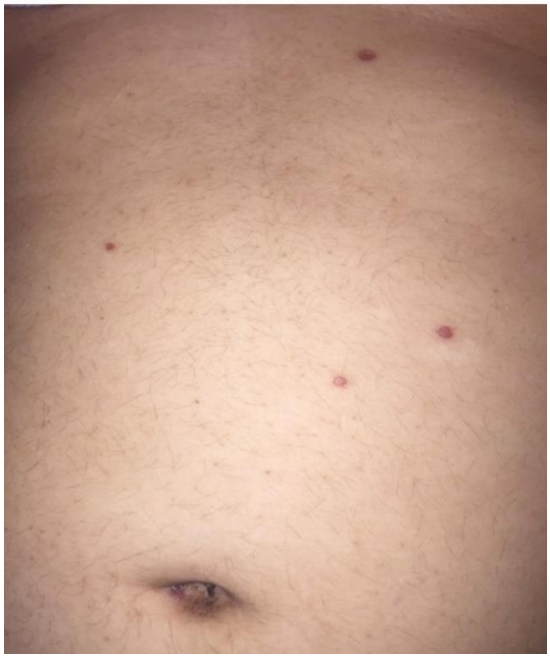

Figure 2. *Scattered erythematous papulovesicles on the forehead, wrist, and abdomen.*

small airway inflammation and bibasilar reticulo-nodular opacities; urinalysis showed trace blood. Laboratory examination revealed a markedly positive *Mycoplasma pneumoniae* IgM titer of 6.76 (positive value >1.1). The patient was diagnosed with *Mycoplasma pneumoniae*-induced rash and mucositis (MIRM). He was treated with azithromycin and supportive care, with gradual improvement over the following days.

Case Discussion

Mycoplasma pneumoniae is a common cause of respiratory tract infections, with 25% of patients also experiencing extra-pulmonary complications, such as mucocutaneous symptoms [1]. Mucocutaneous eruptions associated with *Mycoplasma pneumoniae* are often diverse, making it a diagnostic challenge. Prior to 2015, given its similarities to Stevens Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN), it was frequently classified as part of the SJS/TEN spectrum, but also existed in the literature as atypical SJS, erythema multiforme spectrum disease, Fuchs syndrome, and *Mycoplasma pneumoniae* associated mucositis (MPAM), [1-3].

In 2015, Canavan and colleagues established criteria to distinguish MIRM from SJS/TEN [1]. Clinical and diagnostic features described in MIRM included 1) a predilection for young patients (males > females) as opposed to SJS/TEN, which occurs across a broader age range, 2) a predominance of mucosal involvement, with oral mucosal involvement almost ubiquitous among patients (94%), followed by ocular (82%) and urogenital involvement (63%), and 3) variable although relatively sparse cutaneous involvement, with the most common cutaneous lesions being vesiculobullous (77%) and targetoid (48%); less frequently papules (14%), macules (12%), or a morbilliform eruption (9%) are described [1]. Furthermore, in MIRM, it is not uncommon for mucositis to occur in the absence of any cutaneous findings [1, 4, 5]. As highlighted in our patient, his mucositis was much more prominent than his cutaneous lesions.

MIRM should be distinguished from other mucocutaneous diseases because it carries a distinct clinical course often requiring less aggressive intervention. Unlike SJS or TEN, MIRM has a low mortality rate, with the only reported fatalities occurring related to pulmonary complications of pneumonia in the pre antibiotic era [1, 3, 4]. Additionally, patients with MIRM usually recover fully and have a lower risk for recurrence [6]. Additionally, clinical phenotypes consistent with MIRM have been reported with *Chlamydia* species, another common cause of atypical pneumonia in the pediatric population [7].

Currently, there are no evidence-based guidelines regarding treatment for MIRM. Antibiotics and supportive care, as used in our patient, appear to be the most universally accepted therapies. *Mycoplasma pneumoniae* and MIRM are commonly susceptible to macrolides antibiotics and azithromycin is the most commonly used treatment in the United States [8]. In other regions, particularly Asia, *Mycoplasma pneumoniae* species exhibit greater degrees of macrolide resistance, which may influence the optimal antibiotic selection. Other therapeutic approaches to MIRM are based around treatments for SJS/TEN and include systemic steroids or intravenous immunoglobulin (IVIG), [1, 3, 6].

Conclusion

In conclusion, MIRM is a relatively new clinical entity and should be considered in children who present with oral, ocular, or urogenital lesions. When considering MIRM as a diagnosis, clinicians should obtain a mycoplasma PCR or IgM level in addition to a chest X-ray. At sites where these tests are not readily available it has been proposed that empiric treatment with a macrolide antibiotic poses little threat with potential benefit [9].

References

1. 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.e4. [PMID: 25592340].
2. Ravin KA, Rappaport LD, Zuckerbraun NS, Wadowsky RM, Wald ER, Michaels MM. Mycoplasma pneumoniae and Atypical Stevens-Johnson Syndrome: A Case Series. *Pediatrics*. 2007;119(4):e1002-e5. [PMID: 17353300].
3. Meyer Sauteur PM, Goetschel P, Lautenschlager S. Mycoplasma pneumoniae and mucositis--part of the Stevens-Johnson syndrome spectrum. *J Dtsch Dermatol Ges : JDDG*. 2012;10(10):740-6. [PMID: 22672205].
4. Schalock PC, Dinulos JG. Mycoplasma pneumoniae-induced cutaneous disease. *Int J Dermatol*. 2009;48(7):673-80; quiz 80-1. [PMID: 19570071].
5. Bowling M, Schmutzler T, Glick S. Mycoplasma pneumoniae-induced mucositis without rash in an 11-year-old boy. *Clin Case Rep*. 2018;6(3):551-2. [PMID: 29531742].
6. Finkelstein Y, Soon GS, Acuna P, George M, Pope E, Ito S, Shear NH, Koren G, Shannon MW, Garcia-Bournissen F. Recurrence and Outcomes of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in Children. *Pediatrics*. 2011;128(4):723. [PMID: 21890829].
7. Mayor-Ibarguren A, Feito-Rodriguez M, Gonzalez-Ramos J, Del Rosal-Rabes T, Gonzalez-Sainz FJ, Sanchez-Orta A, de Lucas-Laguna R. Mucositis Secondary to Chlamydia pneumoniae Infection: Expanding the Mycoplasma pneumoniae-Induced Rash and Mucositis Concept. *Pediatr Dermatol*. 2017;34(4):465-72. [PMID: 28568680].
8. Watkins LKF, Olson D, Diaz MH, Lin X, Demirjian A, Benitez AJ, Winchell JM, Robinson CC, Bol KA, Glode MP, Dominguez SR, Miller LA, Kutty PK. Epidemiology and Molecular Characteristics of Mycoplasma pneumoniae During an Outbreak of M. pneumoniae-associated Stevens-Johnson Syndrome. *Pediatr Infect Dis J*. 2017;36(6):564-71. [PMID: 28060039].
9. Norton SA. Diagnosing Mycoplasma pneumoniae-induced rash and mucositis (MIRM) in the emergency room. *J Am Acad Dermatol*. 2015;73(2):e67. [PMID: 26184002].