Case Study

Is Mycoplasma Induced Rash And Mucositis Real Among Children? It's Happening

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Background

There has been a surge in paediatric Mycoplasma pneumoniae infection internationally in the last twelve months. While skin lesions are a well-known association with viral infection, some cases have acute epidermolytic lesions and mucositis which has raised differential diagnoses including Stephens Johnson Syndrome (SJS), Erythema Multiforme, and infection from other causes. However, this specific symptom complex, now known as Mycoplasma Induced Rash and Mucositis (MIRM).This symptom seems to represent an immunological response to mycoplasma with favourable outcomes following treatment. Even though pathogenesis is still unclear, but MIRM is being treated with IV antibiotics, systemic corticosteroid and intravenous Immunoglobulin, as the differential in the initial presentation includes SJS, erythema multiforme, and infection from other causes. This report of two cases aims to highlight the clinical characteristic of MIRM.

Observation

We report 2 cases of previously well children aged 6 and 9 years. Both presented with a history of being unwell with cough, fever, and sore throat and then developed the extensive mouth and corneal ulceration, in the first case and in the second case mucosal and genital ulceration following pneumoniae symptom. The children had abnormal Chest X-rays showing consolidation, and positive mycoplasma serology. Both were treated with azithromycin and iv steroids and had full recovery. The clinical and laboratory findings and subsequent course were in keeping with the proposed MIRM diagnostic criteria of Canavan.

Conclusions

A clinical presentation with acute epidermolytic lesions and mucositis and laboratory confirmed mycoplasma infection can be considered as having MIRM.As MIRM has similar presentations and a potentially more severe course with other diseases therefore it needs to be identified specifically and correctly.

Introduction

Mycoplasma pneumoniae (MP) is one of the cause for respiratory illness which has been seen more frequently in children in this era and involvement of acute epidermolytic lesion and mucositis spectrum proved that MIRM can be diagnosed among children It is noted that about 25% of patients diagnosed with MP experience extrapulmonary manifestations.[1] Eventhough M. Pneumoniae is the one of the infectious agent known to be associated with dermatology involvement especially in children but this involvement less commonly described.

Therefore previously dermatology related mycoplasma infection were labelled with different diagnosis along the spectrum of erythema multiforme (EM), Stevens-Johnson syndrome (SJS), and toxic epidermal necrolysis (TEN) based on the varied presentations . MIRM was established in 2015 with proposed diagnostic criteria of Canavan et al aids in diagnosis of the MIRM disease spectrum which help in distinguishing this from its more worrying differentials. [2].

Case report 1

A 9 year old boy, previously well and fully immunised, presented with a one week history of being unwell with cough and fever, associated with sore throat and extensive excoriative mouth ulceration. History described reduced oral intake for three days. He also had conjunctivitis with blurring of vision for two days. On the day of presentation he was experiencing increased work of breathing. There was no history of cough, rash, or antibiotic usage. There were no signs or symptoms of anaphylaxis. On examination the boy was hemodynamically stable and had extensive exudative mucocutaneous ulceration of both lips, with associated swelling, mal odour, and limited mouth opening. The lesion was initially diagnosed as SJS (Steven Johnston Syndrome) but there is no usage of drugs /antibiotic prior to the symptom. There was reduced air entry at the left lower lung zone, with SaO2 95%. Fluorescein examination of the eyes demonstrated bilateral corneal ulcerations and extensive conjunctival injection. Chest X-ray showed right lower lobe consolidation. Genital involvement was also demonstrated with ulceration at the tip of his penis and at the anus. Blood investigation showed TWBC 14.4/PLT 323/CRP 14. LFT function were deranged AST 65 and electrolytes normal. With given history and presentation of severe mucositis with conjunctival and genital involvement this child was considered to have Mycoplasma Induced Rash and Mucositis (MIRM). Patient was diagnosed possible for MIRM infection with aids of proposed diagnostic criteria of Canavan et al . Patient was admitted to PICU and treated with supportive care, IV azithromycin and IV gamma globulin. Mycoplasma Total AB was sent, resulted with reading of >1280 which supported our diagnosis. Respiratory swab also taken which positive for Human Metapneumovirus detected. He was admitted in PICU for about 10 days and another 25 days in ward for the lesion to improves, discharged well with follow up under dermatology and Infectious disease clinic.

Case report 2

A 6 year old boy, previously well and fully immunised, presented after being retrieved from Bali after 2 weeks of illness. This had begun with a few days of cough and then fever, when he was admitted to hospital and treated with IV Ceftriaxone. On day 5 of illness he developed mouth and genital ulceration and had reduced oral intake. He was initially diagnosed as Pneumoniae with HSV infection .While he was in warded in Bali Hospital his condition deteriorated whereby he was then admitted in PICU, IV acyclovir, IV methylprednisolone and IV immunoglobulin were added to his treatment and he was retrieved to Queensland Children's Hospital on day 14. On admission he had improved oral intake and some improvement in sores at the penis and anus There was residual mucositis at the lips and mucosal excoriation on the side of the tongue and the soft palate. He also had

bilateral conjunctivitis which was resolving. He was hemodynamically stable with normal systemic review. Investigation showed Mycoplasma total AB >1280, CRP 4.1, WBC 9.9 with normal renal and liver profile. Chest imaging taken in Bali showed Left perihilar thickening. He was started on oral azithromycin in QCH hospital and continued to recover and discharged after 5 days with improvement in oral intake. Final diagnosis was given as Mycoplasma induced mucositis in view of mycoplasma pneumoniae with mucositis involvement at conjunctiva, mouth and genitalia. This diagnosis also was supported with positive Mycoplasma serology and improvement after starting treatment.

Discussion

Mycoplasma pneumoniae is one of the common pathogen that related to acute epidermolytic dermopathies particularly in children Making the diagnosis of MIRM was challenging till the proposed diagnostic criteria of Canavan et al came to aid in diagnosing MIRM disease spectrum. In Ning et al studies its noted that about 10 patients whom presented with respiratory symptoms and noted to have mucosal and ocular involvement was studied retrospectively ,in which fall into the diagnosis of MIRM.[8]Daniel et al noted that the

hallmark of MIRM is mucosal involvement with the highest percentage for oral cavity involvement and second highest was ocular involvement.[5]

The pathophysiology of MIRM is very complex and not well explored as its correlated to immune system. A few proposed theory have been concluded with relation to immune response to M. Pneumoniae which cause the mucocutaneous damage [3]. Meanwhile pathophysiology for extrapulmonary manifestation of Mycoplasma Pneumoniae classified into three categories; first one was cytokines induced theory, the second one was immune modulation related and third is due to vascular occlusion with or without hypercoagulable state [4] This is the reason of Mycoplasma Pneumoniae is rarely isolated in non-pulmonary samples.[5] The proposed diagnostic criteria by Canavan et al for classic MIRM includes clinical and laboratory evidence of atypical Mycoplasma pneumoniae infection Its stated that should involve ≥ 2 mucosal sites, less than 10% involved cutaneous surface area, few vesiculobullous lesions or atypical scattered targets with or without targetoid lesions.[6] There are two proposed variants of MIRM called severe MIRM and MIRM sine (without) rash. Severe MIRM involve atypical targetoid lesions or blisters while MIRM sine usually involve multiple vesicles. It is noted that patient presenting with MIRM sine had higher rates of mucosal involvement.[6] Extrapulmonary MIRM manifestation noted to have longer interval between the prodromal symptom and mucosal/rash manifestation comparatively to other dermatological spectrum such as Erythema multiforme and SJS [7] In correlation with its pathophysiology in MIRM ,the inflammatory markers such as the erythrocyte sedimentation rate, C-reactive protein, lactate dehydrogenase, and D- dimer were significantly elevated [8] The management in majority of cases are with antibiotics, systemic corticosteroids, intravenous immunoglobulins and supportive care as this category of patients recover without sequels and the recurrences are rare [2]In view of different designations of M. Pneumoniae infection is along the spectrum of SJS/Erythema multiforme(EM and toxic epidermal necrolysis

treatment guidelines for those can be applied as currently there is no standardized treatment regimen for patients with MIRM [9]. It is noticed that concomitant treatment of glucocorticoids and/or IVIG with macrolides may shorten the duration of fever and accelerate the clinical recovery. [9] A macrolide or tetracycline antibiotic is usually effective as first-line treatment of mycoplasma infections in both uncomplicated and more severe community-acquired pneumonia. [10]. Some cases with delayed treatment and macrolide-resistant strains appear to be associated with increased extrapulmonary manifestations. [11]

Conclusion

While MIRM has previously been described, and considered as an uncommon symptom complex in relation to Mycoplasma pneumoniae infection. Currently it is no longer rare as we have known the pathogenesis of this diseases, development of rashes and mucositis following acute clinical M. pneumoniae infection can be expected as a sequelae of Mycoplasma Pneumoniae infection. As Mucosal involvement in MIRM usually presents in delayed manner compared with clinical illness which in keeping with an immunological manifestation. This can be distinguished from SJS by the predominance of mucosal versus dermatological manifestation [10] MIRM has an overall good prognosis comparatively with other dermatological spectrum of diseases As majority of patients recover without any sequelae and MIRM recurrence's are rare. These clinical characteristics and out comes provide clinicians with new ideas and perspectives for identification MIRM so as to a proper treatment.

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