

Suspected Case of Reactive Infectious Mucocutaneous Eruption (RIME): From Eastern Part of Ethiopia: LMIC

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Abstract

Background: Mucocutaneous eruptions are pathologies that affect mainly skin and mucous membranes. Based on clinical examinations and causes they can be categorized as erythema multiform (EMF), Stevens Johnson syndrome (SJS), drug reactions and Infectious causes of mucocutaneous eruptions. More appropriate broader term reactive infectious mucocutaneous eruption (RIME), which also includes *Mycoplasma pneumoniae*-induced rash and mucositis (MIRM), is among the recently recognized infectious cause in the published reports.

Case Presentation: This is 9-year-old male with cough and low grade fever of 8 days followed by skin rash involving the perioral region, back of trunk and tip of his penis of 3 days duration. Physical findings include: painful erosions/ulcers on the lips and oral mucosa with hemorrhagic crusts mainly on the upper lip and conjunctival hyperemia with sticky blepharitis. He had also maculopapular rash and atypical target lesions on the posterior trunk. Chest x-ray showed pneumonia and with suspected case of RIME he was admitted and treated with ceftriaxone, azithromycin, steroids and discharged improved after 8 days of ward stay.

Conclusion: We recommend that any case with mucocutaneous eruptions from LMIC with severe mucosal and discrete cutaneous involvements should be evaluated for possible RIME (early diagnosis and treatment is very important for the patient) due to limited availability of important investigations (serology and PCR).

Keywords: Eastern Part of Ethiopia; LMIC; Pediatric Dermatology; Infectious Disease; Reactive Infectious Mucocutaneous Eruption

Abbreviations

BSA: Body Surface Area; CBC: Complete Blood Count; CXR: Chest X-Ray; DEN: Drug-Induced Epidermal Necrolysis; EMF: Erythema Multiform; ECCM: Emergency and Critical Care; ESR: Erythrocyte Sedimentation Rate; HIV: Human Immunodeficiency Viruses; IV: Intravenous; LMIC: Low and Middle Income Countries; MIRM: *Mycoplasma* Induced Rash and Mucositis; MP: *Mycoplasma pneumoniae*; OPD: Outpatient Department; PCR: Polymerase Chain Reaction; RIME: Reactive Infectious Mucocutaneous Eruptions; SJS: Steven Johnson Syndrome; TEN: Toxic Epidermal Necrolysis; WBC: White Blood Cells

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Background

Mucocutaneous eruptions are pathologies that affect mainly skin and mucous membranes. Based on clinical examinations and causes they can be categorized as erythema multiform (EMF), Stevens Johnson syndrome (SJS)/toxic epidermal necrolysis (TEN), drug reactions and Infectious (respiratory) causes of mucocutaneous eruptions. More appropriate broader term reactive infectious mucocutaneous eruption (RIME), which also includes *Mycoplasma pneumoniae*-induced rash and mucositis (MIRM), is among the recently recognized infectious cause of mucocutaneous eruptions in the literatures. RIME is severe form of mucocutaneous eruption which is caused by either various bacterial or viral infections (most common trigger is *M. pneumoniae*) and that mainly affects children and adolescents. Prominent mucositis with sparse or absent skin involvement are typical features of RIME [1-5]. Here we describe suspected case report of RIME patient who was not having PCR or serology tests for possible triggering factors screening due to resource limitations from Ethiopia, LMIC.

Case Presentation

Nine years old male case presented with cough and low grade fever of 8 days duration followed by progressive skin rash involving the perioral region, back of trunk and tip of his penis of 3 days duration. Otherwise, no prior history of any drug intake for the last 1 month.

On physical examinations: painful erosions/ulcers on the lips and oral mucosa with hemorrhagic crusts mainly on the upper lip (Figure 1) as well as ophthalmologist evaluation showed bilateral conjunctival hyperemia with sticky blepharitis (Figure 2). Erythematous and edematous changes over the glans penis (Figure 3). Sparsely distributed red maculopapular rash, with one vesicular lesion and atypical target lesions were seen symmetrically on the posterior trunk (Figure 3). The limbs, feet and palms were unaffected. Unremarkable systemic examinations except fever (T-37.7-38°C).



Figure 1: Erosions on the lips and oral mucosa covered by hemorrhagic crusts.



Figure 2: Right (not shown here) and left eyes conjunctival hyperemia with sticky blepharitis respectively as shown on the picture.

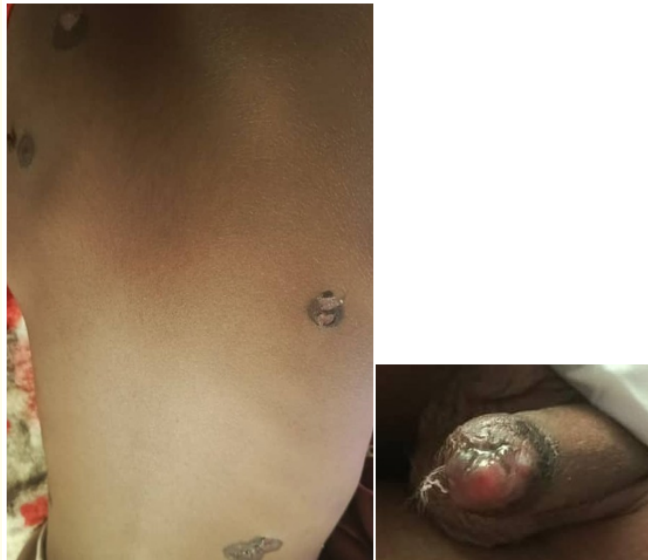


Figure 3: Targetoid lesions and discrete vesicles over right upper and left lower posterior trunk (one ruptured vesicle seen on the left posterior trunk) and Erythematous and edematous glans penis (figure on the right side).

Investigations

CBC: WBC count-11,630 with neutrophil of 67.4% and ESR -60 mm/hr. Renal, liver function, HIV tests were normal. Skin biopsy, PCR and serologic tests at least for MP and HSV were not done due to limited availabilities of resources.

CxR showed an ill-defined opacities involving bilateral perihilar and paracardiac regions more prominent on the right side (Figure 4). Community acquired pneumonia with *Mycoplasma* induced rash and mucositis (MIRM) was considered at emergency OPD but serology and PCR tests for MP were not done (the likely triggering factor for our case could be *M. pneumoniae* (MP) infection).



Figure 4: Ill-defined opacities involving bilateral perihilar and paracardiac regions more prominent on the right side.

After admission to ward based on clinical features and CxR findings, possible diagnosis of reactive infectious mucocutaneous eruptions (RIME) with atypical community acquired pneumonia was considered. Treatment was started with IV maintenance fluid, anti-pain, topical steroids, ceftriaxone and azithromycin for seven and five days respectively. On the second day of admission, IV dexamethasone was given for two days since he was unable to take per os due to severe mucositis and then switched to prednisolone 1 mg/kg/day for 5 days. After 8 days of ward stay, he was discharged with improvement and appointed to follow up clinic to come after 1 week.

Discussion and Conclusion

Canavan, *et al.* mentioned MIRM as a separate clinical condition affecting children and adolescents with severe mucosal and sparse or no cutaneous involvement, and excellent prognosis. Cases can have variety of cutaneous lesions like erythematous macules, atypical target lesions and vesiculobullous lesions, mainly affecting acral areas. They can have oral, ocular, and urogenital mucosa lesions [2].

RIME is eruptive mucositis with variable degree of cutaneous involvement due to immune mediated reaction to various infectious etiologies [3]. Ramien, *et al.* had reported that apart from *M. pneumoniae*, other infectious triggers can cause clinical picture similar to MIRM, which made them propose the term RIME, which would include MIRM as well [4]. Recently, there are many reports of “reactive infectious mucocutaneous eruption” associated with COVID-19 infection [5]. Martinez-Cabriaes, *et al.* PROMISE study had two broad categories of various severe cutaneous adverse reactions: RIME and drug-induced epidermal necrolysis (DEN). In RIME cases, *M. pneumoniae* was most common trigger, and in DEN cases, anticonvulsants played leading roles [6].

Treatment approach for RIME include supportive cares and antimicrobials administrations. Macrolides (azithromycin), tetracycline, and quinolones can be used if *M. pneumoniae* is isolated. In case of severe mucosal involvement, immunosuppressive therapies (steroids, intravenous immunoglobulin or TNF inhibitors) can be used [4,5,7].

Coming to our case, he was not taking any medication (drug related eruptions), no previous history suggestive of herpes infection (erythema multiform), retroviral screening is negative and the whole clinical presentation of the patient fulfills criteria for RIME (mucocutaneous eruption involving one or more sites with <10% BSA, presence of few vesiculobullous lesions or scattered, atypical targetoid lesions on skin, Noncontributory medication history, history of prodromal symptoms (cough, fever) in the previous 7 - 10 days, clinical, radiographic or laboratory evidence of infectious trigger and young age) [2,8,9].

What we aren't sure about our case is the possible triggering effect of *M. pneumoniae* to cause MIRM since there was no serology and PCR tests in our setting. But *M. pneumoniae* is the most common infectious triggering factor for RIME (MIRM is one of the spectrums of RIME). So based on clinical and imaging findings, probably our case was having *M. pneumoniae* induced RIME/MIRM.

We recommend that any case with mucocutaneous eruptions from LMIC with severe mucosal and discrete cutaneous involvements should be evaluated for possible RIME (early diagnosis and treatment is very important for the patient). Based on the above discussion the term RIME would be more appropriate than MIRM especially for LMIC where some important investigation modalities (like serology and PCR) are not available for confirmations. Such type of rare case reports make contribution to medical knowledge and play important role for educational activities in LMIC.

Authors' Contributions

AAY, WB and TY collected and analyzed the clinical data, and drafted the manuscript. AAY and WB also contributed to the clinical management of the patient and revised the manuscript and gave final approval of the version to be submitted. All the authors read and approved the final manuscript.

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Ethics Approval and Consent to Participate

Written informed consent was obtained from parents at admission for use of the personal data for case report in relevant journal sites. All procedures performed in this report were in accordance with ethical standards.

Competing Interests

The authors declare that they have no competing interests.

Consent for Publication

Written informed consent was taken from parents for publication.

Availability of Data and Materials

The dataset used and analyzed during the current study are available from the corresponding author on reasonable request.

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