SARS-CoV-2 (COVID-19) associated reactive infectious mucocutaneous eruption with prolonged and treatment-refractory clinical course
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CASE PRESENTATION

- 36-year-old female presented to the ED
- 24 hours of fever (up to 103 degrees F)
- Pruritic papular rash on the trunk
- Edematous erosive plaques on lips and labia minora
- Ulcerative plaques on posterior oropharynx
- Painful photophobic conjunctivitis
- Additional symptoms: mild dyspnea, cough, rhinorrhea, mild dysuria, vaginal pruritus
- History of positive COVID-19 PCR 10 days prior, treated with 5-day course of prednisone
- Previously vaccinated/boosted for COVID-19
- See Figure 1 for clinical photographs

CLINICAL PHOTOGRAPHS

Figure 1. Photographs from time of initial clinical presentation.

Figure 2. Punch biopsy findings, consistent with COVID-19 associated RIME.

Figure 3. Photographs from acneiform eruption secondary to cyclosporine.

Figure 4. Photographs following cessation of immunosuppressive therapy.

MEDICAL HISTORY

Past medical history:
- Treated latent tuberculosis

Recent medications prescribed at outside emergency department for symptoms:
- Doxycycline
- Ibuprofen
- Acetaminophen
- Prednisone

LABORATORY FINDINGS

Relevant abnormal findings:
- Platelets 132 (remainder of CBC normal)
- Potassium 3.3 (remainder of BMP normal)
- Positive Mycoplasma IgG (negative IgM)

Negative tests:
- Respiratory viral panel
- Mononucleosis
- Group A Streptococcus
- Herpes simplex virus
- Uremia
- Autoimmune work up (dsDNA, C3, C4, ANA)

BIOPSY & INITIAL TREATMENT

Clinical presentation and pathologic findings are most consistent with COVID-19 associated RIME (reactive infectious mucocutaneous eruption)

Punch biopsies from the chest and back: acute interface dermatitis with many necrotic keratinocytes and prominent adnexal involvement (Figure 2)

Initial treatment in the hospital:
- Consultants: dermatology, ophthalmology, gynecology, otorhinolaryngology
- IV methylprednisolone (1-1.5 mg/kg) for first 2 weeks
- 10-day course of fluconazole for oral thrush
- Topicals for skin/mucous membranes: clotetasol 0.05%, clobetasol 0.05%, dexamethasone swish and spit, lidocaine 4% ointment
- Amnestic membranes in eyes for corneal epithelial defects

CLINICAL PHOTOGRAPHS

Figure 2. Punch biopsy findings, consistent with COVID-19 associated RIME.

Figure 3. Photographs from acneiform eruption secondary to cyclosporine.

Figure 4. Photographs following cessation of immunosuppressive therapy.

- Following hospital discharge, tapering patient’s prednisone to lower than 40 mg daily would flare either cutaneous or ocular symptoms
- Cyclosporine was initiated 1 month after discharge, complicated by a severe acneiform drug eruption (therefore was discontinued) (Figure 3)
- 3 months after discharge, IVig infusions 4 days/months with prednisone were started, which improved mucosal symptoms
- 3 weeks after starting IVig, mycophenolate was added to the regimen and titrated up to 2500 mg daily
- 6 months after symptom onset, prednisone was tapered off
- 8 months after symptom onset, last dose of immunosuppression was given
- Patient is currently being treated for persistent and recalcitrant post-inflammatory hyperpigmentation and acne scarring (Figure 4)

DISCUSSION

RIME = a parainfectious inflammatory mucositis classically involving 2 or more surfaces (e.g. oral, ocular, anogenital) with limited skin involvement and evidence of an infectious prodrome

- Infectious agents known to cause RIME include:<sup>1,2</sup>
  - Mycoplasma
  - Chlamydia pneumoniae
  - Metapneumovirus
  - Parainfluenza virus 2
  - Adenovirus
  - Group A Streptococcus
  - Rhinovirus
  - Influenza A/B
  - Enterovirus
  - SARS-CoV-2

- COVID-19 associated RIME findings typically occur 3 days to 2 weeks post infection, and resolve 5 days to 3 months after diagnosis<sup>3</sup>
- Vaccination status does not prevent patients from experiencing RIME related to COVID-19
- This case is unique in that our patient developed chronic persistent and highly treatment-refractory COVID-19 associated RIME, which has not been well-reported
- Chronic COVID-19 associated RIME may result in major medical morbidity such as ocular scarring, and in rare cases such as this, significant facial scarring
- Interestingly, the patient’s facial involvement and biopsy findings both closely mimicked findings typical of acute cutaneous lupus erythematosus
  - Careful evaluation for underlying connective tissue disease (CTD) was performed, with an entirely negative CTD workup

TREATMENT OPTIONS

Treatment options for COVID-19 associated RIME are limited in the literature, and include supportive care, systemic corticosteroids, cyclosporine, and IVig<sup>4</sup>

The use of mycophenolate mofetil specifically in COVID-19 associated RIME has not been reported in the literature, though was proven successful in tapering our patient off her immunosuppression

REFERENCES

The authors SAK, PD, and DDM have no relevant disclosures to make.