Future of Pediatrics: Blisters, Hives and Other Tales from the Emergency Room
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Disclosures

I have no relevant financial relationships to disclose.

I will be discussing off-label use of medication.
Objectives

(1) To identify common pediatric rashes that feature hives or blisters.

(2) To treat urticarial and blistering rashes that present urgently to the clinic or emergency room.
Case 1

- 14-year-old previously healthy male returning from Spanish camp with rash, fever, mucositis and conjunctivitis

Meds: None
PMH: Fully vaccinated
Imaging: Left lower lobe opacity on CXR
Mycoplasma-induced Rash and Mucositis (MIRM)

• Patients are predominantly young and male
• Prodrome nearly universal
• Cutaneous involvement variable
  – Mucositis without rash
  – Mucositis + scant rash
  – Mucositis + extensive rash (SJS-like)
• Excellent prognosis

Treatment

• Early consultation of dermatology, ophthalmology, urology
• Supportive care
• Antibiotics
  – Prevent neurologic and pulmonary sequelae
  – Effect on mucocutaneous complications unknown
• Immunosuppression
  – Corticosteroids, IVIG, Cyclosporine
# MIRM: Take Home Points

<table>
<thead>
<tr>
<th></th>
<th>EM</th>
<th>SJS/TEN</th>
<th>MIRM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
<td>Young, Male</td>
<td>Adult</td>
<td>Young, Male</td>
</tr>
<tr>
<td><strong>Trigger</strong></td>
<td>HSV</td>
<td>Drug</td>
<td>Mycoplasma</td>
</tr>
<tr>
<td><strong>Distribution</strong></td>
<td>Acral</td>
<td>Generalized</td>
<td>Varies</td>
</tr>
<tr>
<td><strong>Morphology</strong></td>
<td>Targets</td>
<td>Atypical Targets</td>
<td>Polymorphous</td>
</tr>
<tr>
<td><strong>Mucositis</strong></td>
<td>Rare</td>
<td>Always</td>
<td>Always</td>
</tr>
<tr>
<td><strong>Sloughing</strong></td>
<td>No</td>
<td>Always</td>
<td>Rare</td>
</tr>
<tr>
<td><strong>Recurrence</strong></td>
<td>Common</td>
<td>Rare</td>
<td>Occasional (8%)</td>
</tr>
<tr>
<td><strong>Prognosis</strong></td>
<td>Excellent</td>
<td>Mortality: Adults: 5-15% Children: 2%</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

**Prognosis:** Excellent

**Mortality:**
- Adults: 5-15%
- Children: 2%
Case 2

• 8-year-old female with a history of otitis media treated with amoxicillin
• She presents with fever, acral and facial edema and a skin rash

Meds: Amoxicillin
PMH: Fully vaccinated
Urticaria Multiforme

- Acute, annular urticaria
- Often misdiagnosed as **erythema multiforme** or less commonly **serum sickness-like reaction**
- Dusky central hue resembles purpura but resolves with anti-histamines
- Associated angioedema of the face, hands, and feet represents subcutaneous vascular leak with resultant dermal edema
<table>
<thead>
<tr>
<th></th>
<th>Urticaria Multiforme</th>
<th>Erythema Multiforme</th>
<th>Serum Sickness-Like Reaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance of Lesions</td>
<td>Annular + polycyclic, +/- purpura</td>
<td>Classic targets</td>
<td>Annular + polycyclic, +/- purpura</td>
</tr>
<tr>
<td>Location</td>
<td>Trunk, Extremities, Face</td>
<td>Acral</td>
<td>Trunk, Extremities, Face</td>
</tr>
<tr>
<td>Fixed</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mucous Membranes</td>
<td>Oral edema, No erosions</td>
<td>+/- Erosions, mucositis</td>
<td>Oral edema, No erosions</td>
</tr>
<tr>
<td>Facial or Acral Edema</td>
<td>Common</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Associated Sx</td>
<td>Pruritus</td>
<td>Pruritus Rare</td>
<td>Myalgia, Arthralgia</td>
</tr>
<tr>
<td>Trigger</td>
<td>Viral illness, Antibiotics, Immunizations</td>
<td>HSV</td>
<td>Antibiotics</td>
</tr>
</tbody>
</table>

Treatment

• Discontinue unnecessary antibiotics
• H1 + H2 antihistaminies
• Corticosteroids only in refractory or severely symptomatic cases
Case 3

• 13-year-old male who is afebrile, feels well and is eating and drinking with a diffuse crusted and blistering rash
• Several classmates have had a rash recently
PMH: Fully vaccinated
Meds: None
Atypical Coxsackie Exanthem

- Coxsackie A6
- Cases first reported in Asia in 2008 and now endemic worldwide
- Widespread distribution of vesiculobullous lesions +/- typical acral and oral lesions
- Adults can have serious infections
- Onychomadesis following infection is common
<table>
<thead>
<tr>
<th></th>
<th>Classic</th>
<th>Atypical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt;5 years</td>
<td>Rare *</td>
<td>+</td>
</tr>
<tr>
<td>Temperatures &gt;38°C</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Intraoral rash</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Rash on palms and soles</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Rash on dorsal hands and feet</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Rash on calves and forearms</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Rash on neck and trunk</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Rash ulcerates and scabs</td>
<td>Rare *</td>
<td>+++</td>
</tr>
<tr>
<td>Bullae present</td>
<td>Rare *</td>
<td>++</td>
</tr>
<tr>
<td>Onychomadesis</td>
<td>+</td>
<td>++</td>
</tr>
</tbody>
</table>

Workup & Treatment

• PCR from an intact vesicle for HSV, VZV and Enterovirus panel
• Empiric acyclovir until results of HSV/VZV PCR are available
• Supportive care
Onychomadesis
Case 4

• 7-year-old female treated for poison ivy with oral prednisolone then with clindamycin for periorbital cellulitis
• Referred to ophtho for worsening periorbital swelling
• Meds: Prednisolone, Clindamycin
• PMH: Fully vaccinated
Herpes Zoster (Shingles)

- Rare in children
- Can be due to reactivation of wild type virus or vaccine Oka strain virus
  - Send VZV PCR to CDC
- Delay in diagnosis can result in complications
- Treatment: acyclovir 80mg/kg/day divided 4 times daily for 7 days
Summary

• Mycoplasma-induced rash and mucositis may be distinct from SJS
  – Mucocutaneous predominance, scant skin lesions

• Urticaria multiforme is NOT EM
  – Skin lesions are NOT fixed
  – Responds to anti-histamines

• Atypical coxsackie may now be typical
  – Diffuse skin lesions + often onychomadesis

• Herpes zoster occurs in healthy kids
Questions?

• Email: akirkori@childrensnational.org