Case

12-year-old previously healthy boy with bullae

- Tense non-inflammatory bullae on arms and legs
- Few edematous, erythematous papules on posterior neck

Notes to review (after ARS answer session)

Next best step?

1. Skin biopsy
2. Antihistamines and high-potency topical corticosteroids
3. Oral dapsone
4. Oral cephalexin
5. Genetic testing

- No fever
- No pain
- + intense itch
- Early lesions start as “bumps”
- No medication exposures
- “same thing happened last year”
- No mucosal involvement
**Next best step?**

1. Skin biopsy
2. Antihistamines and high-potency topical corticosteroids
3. Oral dapsone
4. Oral cephalixin
5. Genetic testing

**Bullous arthropod bite reaction**

**Diagnostic clues**
- Very itchy !!!
- Localized preferentially on extremities
- Happened before around 1 year ago (e.g. "the same season of year ")

**Bullous arthropod**

**Treatment**
- Antihistamines
- Cool compresses
- Clobetasol 0.05% ointment twice daily to pruritic areas on extremities

**Prevention**
- Protective clothing
- Insect repellent

**Bullous arthropod**

Cannot distinguish the offending insect from skin findings
- Mosquitos
- Fleas
- Ants
- Bed bugs
- Midges

**Bullous bite reaction to bed bugs**

Bullous arthropod bite reaction

- Bullous arthropod bite reactions have been noted in adults with Chronic Lymphocytic Leukemia (CLL)
  - Reaction may be secondary to the underlying lymphoproliferative disorder

-Rosen, LB et al, JAAD, 1986, 943–950

Pearls: Bullous Insect Bite Reaction

- Itchy!
- Location: exposed skin, extremities
- History: recurs annually (e.g., with season change)
- Most parents are certain that there has been no bug exposure!
- Treatment: Antihistamines, Clobetasol oint, cool compresses
- Prevention: protective clothing, insect repellant
- In adults, consider underlying diagnosis of CLL
- In healthy, growing children, bullous insect bite reactions are not concerning

Case

2-year old with edematous coalescing plaques

Edematous hands/feet
Difficulty walking
Fever 101 F
No preceding antibiotics or other medications
No lymphadenopathy of head/neck

Most likely diagnosis?

1. Serum sickness
2. Serum sickness-like reaction
3. Urticaria
4. Erythema multiforme

Most likely diagnosis?

1. Serum sickness
2. Serum sickness-like reaction
3. Urticaria
4. Erythema multiforme
**Pediatrics May 2007; 119:5 e1177**

• AKA: Giant urticaria, Annular urticaria
  - Common
  - Benign dermal hypersensitivity reaction
  - Annular, arcuate, & polycyclic urticarial lesions
  - Lesions may clear centrally or have dusky centers
  - +/- acral soft-tissue edema
  - +/- dermatographism
  - Sometimes mistaken for erythema multiforme and serum sickness-like reaction

---

**“Urticaria multiforme”: treatment**

- Stop any unnecessary medications
- Cetirizine 2.5-5 mg by mouth every AM (weight, age based)
- Ranitidine 3-5 mg/kg/day by mouth divided twice daily
- Diphenhydramine q 6-8 hours as needed
- Self-limited
- Once “hive free” x 1-2 days, withdraw 1 antihistamine at a time

---

**“Urticaria multiforme”: Case**

- 18-month-old previously healthy girl with rough petechial patches accentuated in folds and in perianal area
- PMHx: gastroesophageal reflux
- Medications:
  - esomeprazole 10 mg daily
- FMHx: no skin disease
- ROS: no itch, no pain, no fever, no diarrhea, gaining weight well, meeting milestones
- Labs:
  - CBC w/L, including platelets
  - Alkaline phosphatase - 62 (129 - 291 U/L)

---

**Annular Urticaria vs Serum-Sickness Like Reaction**

<table>
<thead>
<tr>
<th>Characteristic Features</th>
<th>Annular Urticaria</th>
<th>Serum-Sickness Like Reaction</th>
<th>Erythema multiforme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphology</td>
<td>Polycyclic wheals +/- ecchymotic centers</td>
<td>Polycyclic wheals +/- ecchymotic centers</td>
<td>Classic small target lesions</td>
</tr>
<tr>
<td>Fixed lesions</td>
<td>No</td>
<td>Yes</td>
<td>+/- acral</td>
</tr>
<tr>
<td>Facial/acral edema</td>
<td>Common</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Dermatographism</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Mucosal erosions</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Duration</td>
<td>2 -12 days</td>
<td>1 - 6 weeks</td>
<td>2 - 3 weeks</td>
</tr>
<tr>
<td>Low-grade fever</td>
<td>-</td>
<td>High-grade fever</td>
<td>+/-</td>
</tr>
<tr>
<td>Viral infection</td>
<td>-</td>
<td>Sick appearing</td>
<td></td>
</tr>
<tr>
<td>Arthritis</td>
<td>-</td>
<td>Lymphadenopathy</td>
<td></td>
</tr>
<tr>
<td>Antibiotic exposure</td>
<td>-</td>
<td>HSV infection</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Shah, K et al. Pediatrics 2007

“Urticaria multiforme”: treatment

- Stop any unnecessary medications
- Cetirizine 2.5-5 mg by mouth every AM (weight, age based)
- Ranitidine 3-5 mg/kg/day by mouth divided twice daily
- Diphenhydramine q 6-8 hours as needed
- Self-limited
- Once “hive free” x 1-2 days, withdraw 1 antihistamine at a time

---
## Skin eruptions due to what deficiency may be seen in patients taking proton pump inhibitors?

1. Selenium
2. Magnesium
3. Pyridoxine
4. Niacin
5. Zinc

### Zinc
- **18 (60-120 mcg/dl)**
- **Treatment:**
  - Zinc 20 mg elemental by mouth twice daily (~2 mg/kg/day)
- **Eruption cleared in 1 month**
- **Repeat zinc at 1 month**
  - **100 (60-120 mcg/dl)**

### Proton pump inhibitors (PPI)
- **Increase pH in gastroduodenum**
- **Decreased zinc absorption**
- **On normal diet, PPI users 28% lower plasma zinc levels than healthy controls (p<0.005)**
- **Active zinc supplementation**
  - Healthy controls: zinc plasma level increased by 126%
  - PPI users: zinc plasma level increased by 37%

## Acquired Zinc Deficiency: Medications

- Penicillamine
- EDTA
- Proton pump inhibitors

## Inherited zinc deficiency: Acrodermatitis enteropathica


### Acquired Zinc Deficiency Dermatitis

- Eroded erythematous plaques
  - Sharply demarcated
- Crusting and desquamation
- Distribution
  - Perioral
  - Perianal
  - Acral
- Low alkaline phosphatase level
- Low zinc level
- Treatment: zinc supplementation

### Case

**4-week-old boy with perianal flat-topped and eroded papules**

- Perianal eruption started at age 2-weeks
- Fussy with diaper soiling
- Full term healthy baby
- Born SVD
- Mother with documented genital warts at time of delivery
- No improvement with zinc oxide cream (13%) over the counter

### What is the most likely explanation for this neonatal perianal eruption?

1. Vertical transmission of human papillomavirus
2. Allergic contact dermatitis to diaper cream
3. Chronic loose stools
4. Congenital syphilis
5. Child abuse

---

### Pseudoverrucous papules and nodules

- 2- to 8-mm shiny, smooth, red, moist, flat-topped, round lesions
- Biopsy: reactive acanthosis or psoriasiform spongiotic dermatitis
- Reaction pattern to chronic irritation from urine or stool
- Lesions improve when skin protected from urine/stool irritant

Pseudoverrucous papules and nodules

- Risk factors
  - fecal or urinary incontinence
  - Stoma site leakage
- Cases have raised concern for sexual abuse

Douri T and A Shawaf. Dermatology Online Journal 18 (4): 14

Cholestyramine ointment

- Cholestyramine 5-20% compounded in petrolatum ointment
  - Bile acid sequestrant
- Indications
  - Diaper rash from chronic loose stools
  - G-tube site rash


Pseudoverrucous papules and nodules

- Reaction pattern to chronic irritation from urine or stool
- Lesions improve when skin protected from urine/stool irritant
- Combination therapy:
  - Barrier protection (e.g. zinc oxide, petrolatum)
  - Compounded cholestyramine (5-20%)
  - Topical corticosteroids


Treatment course

- ED called dermatology. We recommended:
  - Cholestyramine 10% ointment every diaper change

Clinic presentation

- Mometasone 0.1% oint twice daily + Cholestyramine 10% oint every diaper change

- Rash clear

2 days

3 weeks

Rash clear

Case

14-year-old girl with thick-walled bullous lesion on upper back

- Started as “blue bruise-mark” ~ 6 weeks before
- Rapidly enlarged
- Non-tender
- No history of trauma
- No bleeding
- No drainage/discharge
1. Bullous morphea
2. Inflamed epidermoid cyst
3. Myiasis
4. Bullous pilomatixoma
5. Bullous insect bite reaction

**Most likely diagnosis?**

1. Bullous morphea
2. Inflamed epidermoid cyst
3. Myiasis
4. **Bullous pilomatixoma**
5. Bullous insect bite reaction

**Bullous pilomatixoma**

Clinical diagnosis
- Thick-walled bullae which is compressible
- Underlying subcutaneous disc-like nodule (e.g. "tent sign", "teeter-totter sign")

Treatment
- Excision

Disease associations
- None