Wild Things: Cutaneous Conundrums in Travel Medicine for the Primary Care PA

Part I: Wilderness Dermatology
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- Phytophotodermatoses
- Bites and stings
- Marine dermatoses
- Acute sunburn

Phytodermatoses

- Allergic contact dermatitis to plants
  - Toxicodendrons
  - Phytophotodermatitis
  - Mechanical Irritant Dermatitis
Phytodermatoses: Case One

History

- 25 year old CM with PMH Allergic rhinitis presents with intense itching and blisters on his right forearm and shin 3 days after returning from a hike in the Pacific Northwest. He tried applying OTC hydrocortisone 1% topical cream once daily with only mild benefit.

- Allergies: PCN
- Medications: OTC Hydrocortisone 1% topical cream
- FHx: noncontributory
- SHx: single, Former smoker (5 pack year hx) - now uses vaporized Tobacco x 1 year, 1 heterosexual partner
- ROS: insomnia 2/2 pruritus

Skin Exam

Morphology

- erythematous papules and weeping vesicles coalescing into larger, somewhat linear plaques and bullae on right forearm and distal fibia

Allergic Contact Dermatitis - Plants

- Most common cause is Rhus dermatitis from toxiodendron exposure (poison ivy/oak/sumac)
- Direct or secondary contact with urishiol elicits delayed Type IV hypersensitivity reaction
- Sensitization requires 10-14 days (subsequent episodes may occur as early as 4 hours, usually within 2 days)
- May last 10-21 days depending on severity
- Initial episode is the longest (up to 6 weeks!)
"Leaves of three - let them be"

- Poison Ivy
  - 3-15cm leaves
  - Notched edges
  - Groups of 3s

- Poison Oak
  - 3-7cm leaves
  - Lobulated notched edges
  - Groups of 3, 5, or 7

Treatment

He c/o insomnia 2/2 pruritus and has not had relief of symptoms with OTC topical hydrocortisone 1% cream. What treatment will you recommend?

a) Topical mupirocin ointment applied BID X 7 days
b) Desoximetasone 0.05% cream applied BID and PO hydroxyzine 10mg q 6 hours PRN
c) Methylprednisolone dose pack 6 day treatment and Domeboro compresses
d) Two-week taper of oral prednisone
Treatment/Prevention

- **Treatment**
  - Most patients respond to topical corticosteroids for localized involvement
  - Oral antihistamines for pruritus
  - Oatmeal bath
  - Domeboro soaks
  - Severe involvement may require PO corticosteroids (do not give short bursts, patients may relapse)

- **Prevention**
  - Avoidance!!
  - Wash clothing, shoes within 10 min of exposure
  - Protective clothing
  - Barrier creams
    - Bemisquam (by Block 8)
    - Linoleic acid dimers
    - Petrolatum ointment

Phytodermatoses: Case Two

- 29 year old HF with no PMH presents with a 2 day history of burning rash with hyperpigmentation on bilateral hands and forearms after returning from a camping/boating trip at the lake over Labor Day weekend. There is some blistering but no pruritus. She has not tried any topical/oral treatments.
- Allergies = none
- Medications = none
- FHx = atopic dermatitis
- SHx = married, two children, non-smoker, sexually active with 1 partner. 1 glass of wine per week (except this past weekend admits to 3-4 home-made margaritas per day while boating on the lake)
- ROS = otherwise negative

Skin Exam

- **Morphology**
  - Large hyperpigmented patches arranged in linear streaks with overlying vesicles and bullae and islands of normal skin
  - Distribution over bilateral dorsal hands and dorsal/ventral forearms
Phytophotodermatitis (Berloque Dermatitis)

- Non-immunologic (it can happen to anyone!)
- Need UVA light plus topical/oral contact with photosensitizer
- Furocoumarins are most common agents (psoralen sources)
  - Apiaceae family – celery, fennel, rhubarb, parsnip
  - Rutaceae family – citrus
- Limes, celery, and rue are most common causes
- Cutaneous sensitivity to UV light peaks 30-120 min after contact with furocoumarins
- Erythema, edema, and bullae appear after 24 and peak at 72 hours
- Often painful but non-pruritic
- Hyperpigmentation appears 1-2 weeks later and lasts months to years

Berloque Dermatitis

Treatment

Given her history and physical findings, what treatment will you recommend?

a) Topical corticosteroids
b) Oral corticosteroids
c) Oral antihistamines
d) Domeboro® soaks BID-TID until bullae resolved and daily sunscreen, discussion of future preventive measures
e) Both a and d
Treatment

Given her history and physical findings, what treatment will you recommend?

a) Topical corticosteroids
b) Oral corticosteroids

c) Oral antihistamines
d) Domeboro® soaks BID-TID until bullae resolved and daily sunscreen, discussion of future preventive measures
e) Both a and d

Treatment

- Prevention is the best treatment
- Educate patient regarding furocoumarin-containing plants = AVOIDANCE!
- Prompt washing with soap and water following contact
- Topical corticosteroids may provide anti-inflammatory benefit (and some lightening of PIH)
- Astringents (aluminum sulfate/calcium acetate = Domeboro®) applied locally to vesicles/bulla
- Daily sunscreen to avoid worsening of PIH

Other Phytodermatoses:

Mechanical Irritant Dermatitis

- Large spines and thorns cause penetrating injuries and secondary infection
- Glochids act like small fishhooks and embed in skin
- Glochid dermatitis
  - Cactus
  - Prickly pear
  - Rose thorns
Other Phytodermatoses: Mechanical Irritant Dermatitis

- Clinical features
  - Morphology: small pruritic papules distributed on areas of contact with offending glochid
  - May be transferred from clothing to others
  - Potential for inoculation of microorganisms
    - *Clostridium tetani* (spines and thorns)
    - *Staphylococcus aureus* (spines and thorns)
    - *Mycobacterium kansasi* (blackberries)
    - *M. marinum* (cactus spines)
    - *Sporothrix schenckii* (roses = Sporotrichosis)

Sporotrichosis

- Subcutaneous mycosis caused by *Sporothrix schenckii*
- *S. schenckii* present in soil – endemic to Mexico, Central/South America
- Gardeners at high risk
- Single papule at location of injury (onset several weeks after inoculation) → erosion/ulceration with purulent drainage → dermal & subcutaneous nodules and ulcers along path of lymphatic drainage “sporotrichoid” pattern

Treatment

- Sporotrichosis
  - Itraconazole 100-200mg/day x 3-6 mos
  - Amphotericin B in severe/disseminated disease

- Glochid dermatitis
  - Mechanical removal of glochids
  - Warm wax
  - Forceps
  - Tape
Photodermatoses

- Acute sunburn
- PMLE
- Solar Urticaria
- Lupus variants
  -ACLE
  -DLE
  -SCLE

Acute Sunburn

- Two types of clinically significant UV rays involved: UVA and UVB
- UVA rays penetrate the skin most deeply and contribute to cancer risk
- UVB acts more superficially, but plays a larger role in sunburn formation
  - Ability to induce sunburn inversely proportional to increasing wavelength
- More than 95% of the sun’s UV radiation that reaches Earth is UVA
- Fair-skinned individuals most susceptible - melanin is protective (though darkest skin types still at risk for MM/NMSC)

Pathophysiology

- Local blood vessels dilate in response to UV radiation → proinflammatory cascade (histamine release)
- Delayed development of erythema (2-6 hours after exposure)
- Long-term effects = cellular DNA damage → failure of cell to self-regulate → cancer

Acute Sunburn

- **Morphology**
  - Clinically obvious
  - Acute, painful erythema in photo-distributed patches, usually with vesicles/bullae

- **Treatment**
  - Low to medium potency topical corticosteroids
  - Pain control (OTC sufficient)
  - Cool compresses
  - Avoid wound healing (bleaches) to collapsed/eroded bullae
  - Emollients or aloe vera
  - Patient education - sun protection

Polymorphous Light Eruption (PMLE)

- Most common photodermatosis
- Affects men and women of all races/ages - most commonly 20s-30s

- **Morphology**
  - Papules, vesicles, or plaques within hours of sun exposure & lasts for days
  - Spring and early summer
PMLE

- Pathophysiology
  - Delayed-type hypersensitivity response to undefined, endogenous, cutaneous photo-induced antigens (primarily CD4+ and CD8+ T-lymphocytes)
  - Genetic predisposition → 70% have “tendency” for developing, but not all expression
- Pathology
  - Epidermal spongiosis and superficial and deep, perivascular and periappendageal lymphohistiocytic dermal infiltrate with scattered eosinophils and neutrophils
- DDx → LE, solar urticaria, porphyria, EM

PMLE

- Treatment
  - Sun avoidance
  - SPF clothing
  - High-SPF, broad-spectrum sunscreens
  - Topical steroids

  - Prophylactic NB-UVB
  - Antimalarials (hydroxychloroquine)
  - Azathioprine
  - Cyclosporine

Solar Urticaria

- Transient cutaneous eruption of wheals that appears almost immediately after exposure to UV radiation or visible light
- Female predominance, onset 40s-50s
- Associated with AD in 20-50%

- Clinical features
  - Lesions < 24 hours
  - Photodistributed pattern
  - Pruritus or burning
  - Rarely systemic sx (nausea, syncope, bronchospasm = anaphylaxis)
Solar Urticaria

- **Pathophysiology**
  - Mast-cell degranulation
  - Trigger not fully understood
- **Pathology**
  - Mild dermal edema with perivascular mixed neutrophilic and eosinophilic infiltrate
- **DDX**
  - Heat urticaria, PMLE, EPP
- **Treatment**
  - Oral antihistamines
  - Sun protection (generally insufficient monotherapy)
  - Antimalarials
  - Cyclosporine
  - IVIG

Lupus Variants

- **Acute cutaneous lupus/SLE**
- **Discoid Lupus**
Bites (Papular Urticaria)

- Mites
- Bedbug
- Scabies
- Spider
  - Brown recluses

Pathophysiology

- Complex nature of insect venom and saliva
- Immediate hypersensitivity reactions related to histamine, serotonin, formic acid or kinins
- Delayed reactions typically manifestations of immune response to proteinaceous allergens
- Anaphylaxis most commonly related to hymenopterid stings (bees, wasps, hornets, ants)

Clinical features

- Morphology
  - Grouped or disseminated 1-4mm urticarial papules or plaques
  - Nodular or vesiculobullous reactions common

- Pearls
  - Pseudomembranous and papular lesions resembling insect bites described in patients with chronic lymphocytic leukemia (CLL) appear months after initial episode
  - Cough, respiratory distress may develop
  - Atrial arrhythmias have been reported after bee stings, in absence of anaphylaxis
Scabies

- Caused by Sarcoptes scabiei, obligate human parasite
- Burrows into the stratum corneum
- Symptoms arise 2-6 weeks after initial infestation
- Morphology = papules, blisters, nodules, and thin linear 1-10mm burrows distributed in interdigital spaces, wrist/axilla, flexor surfaces, nipples, and penis (history of genital involvement is important clue!!)

**Burrows**


Scabies Preparation


Treatment

- Topical permethrin 5% applied in single dose and left on for at least 8 hours
- Oral Ivermectin 200mg/kg x 1 with repeat dose in 2 weeks
  - Unsafe in children < 5 years
- HIV patients may need combination therapy, disease likely more refractory
Bedbugs
- Flat, oval body, size of a tick, reddish-brown in color
- Nocturnal, hide in cracks
- Morphology: urticarial wheals and erythematosus papules in linear groups of three “breakfast, lunch, and dinner”
- Treatment is difficult → elimination of cracks/crevices, mattress change, extermination
- Supportive care (topical steroids, oral antihistamines)


Spider Bites
- Brown Recluse (Loxosceles reclusa) - small body and long legs, 3 pairs of eyes and dorsal violin pattern on cephalothorax
- South central US (Tennessee/Missouri/OK/TX)
- Non-aggressive - bite is last line of defense as it is being crushed (rolling over in bed, inside a shoe) - bites rarely outdoors
- Good history important

Morphology:
- Initially - red papule/plaque with dusky central pallor
- Later - vesiculation, then central dark depression → eschar → ulceration
- Sphingomyelinase D is the major toxin in venom
  - activates complement, induces neutrophil chemotaxis, induces apoptosis of keratinocytes and other cells, and initiates the generation of hyaluronidase
  - Accounts for skin necrosis
Tick Bites and Tick-Borne Disease

Stay Tuned for Part 2...

Stings

- Atypical arthropod stings
  - Caterpillar
    - Gypsy moth
  - Puss caterpillar
  - Blisters (Cantharidin exposure)

Lepidopterism (Caterpillar Dermatitis)

- Megalopyge opercularis (woolly agi, puss caterpillar) - native to Central Texas
- Lagoa crispato (puss caterpillar) - Oklahoma
- Lymantria dispar (gypsy moth caterpillar) - Northeastern US
- Morphology
  - "railroad track" pattern of hemorrhage, edema, macular erythema and urticarial wheals
- Pearls
  - Toxic-mediated reactions may be related to histamine, kinins, plasminogen activators
  - Spiny hairs - mechanical irritant
- Treatment
  - Supportive - self-limited
  - Removal of spiny hairs

Blister beetles

- Oblong bodies and short, segmented antennae
- Sting emits a substance called Cantharidin (protective)
  - Extract used widely in Dermatologic procedures (warts, molluscum contagiosum)
- Contact with beetles results in vesicles and bullae that may burn or itch
- Treatment is supportive

Source: http://cdn.orkin.com/images/bug-bites/blisterbeetle_L.jpg
Source: https://ameshollowfarm.wordpress.com/tag/blister-beetle/

Marine Dermatoses

- Seabather’s Eruption
- Pseudomonas Folliculitis (hot tub folliculitis)
- Swimmer’s Itch

Case Study

- A 10 y/o HM presents to your clinic c/o rash to torso/arms/thighs x 1 week. His mother notes they were on vacation 1 week ago in the Caribbean, when she noticed a rash erupting within minutes of swimming in the salt water ocean to non sun-exposed areas covered by his wetsuit. His younger brother developed a rash, though not as severe, at precisely the same time. Intense pruritus, worsened with heat. His mother tried topical calamine lotion without benefit.

PMH/PSS: none
Allergies: NKDA
MedS: calamine lotion
ROS: otherwise negative
What is your DDx?

Seabather’s Eruption

- AKA “sea lice”
- Caused by a variety of stinging larvae, including the larvae of the thimble jelly fish (*Linuche unguiculata*), common in Southern waters
- Caused by sea anemone (*Edwardsiella lineata*) off the coast of Long Island
- Morphology:
  - Pruritic papules that localize under the bathing suit and in intertriginous areas

Seabather’s Eruption

- Multiple erythematous papules on the torso and trunk. The papules are primarily located in areas covered by a bathing suit.
Pseudomonas Folliculitis

- Pseudomonas aeruginosa gains entry to skin via hair follicles or breaks in the skin
- “hot tub folliculitis” associated with use of whirlpools, hot tubs, and swimming pools
- Arise 8-48 hrs after exposure and resolve in 7-14 days
- Systemic symptoms are rare
- Morphology:
  - Follicular, erythematous, edematous papules and pustules occurring in NON-EXPOSED skin covered by bathing suit (face and neck usually spared)

Swimmer’s Itch (Cercarial dermatitis)

- Caused by over 20 species of schistosomes that usually infect birds and mammals
- Worldwide distribution (most often northern central US states)
- Fresh water environments
- Transmitted through host snail species—passed through feces or urine—eggs hatch in fresh water—penetrate human skin on contact
- Morphology:
  - Pruritic papules at sites of EXPOSED skin only

Now...what is your Diagnosis?

- Treatment:
  - Supportive, generally self-limited
  - Topical corticosteroids for pruritus
  - Oral antihistamines if disrupting sleep
  - Wash affected clothing in hot water (some sources suggest vinegar—anecdotal)
Treatment

- **Pseudomonas Folliculitis**
  - Self-limited
  - Corticosteroids not advised
  - Can worsen/prolong folliculitis
  - If widespread disease or immunocompromised:
    - Oral Fluoroquinolone and/or topical gentamicin

- **Cercarial dermatitis**
  - Self-limited (7-10 days)
  - Topical corticosteroids or PO antihistamines for supportive symptomatic relief
  - Avoidance of swimming/wading in freshwater bodies of water during peak seasons (early and mid summer)

References