Dermatologic Problems in Primary Care

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Learning Objectives

• Identify skin conditions that may present in primary care
• Review treatment options for various skin conditions
• Determine when to refer patient to dermatologist or other specialist for sundry skin conditions
Introduction

• Skin conditions are one of the most common chief complaints encountered in the primary care setting

• Most common skin conditions to present in primary care:
  • Acne vulgaris
  • Atopic dermatitis (eczema)
  • Benign skin lesions
  • Cellulitis/abscess
  • Verruca vulgaris (common wart)

CASE #1

• 24-year-old male presents with multiple moles scattered all over the body, mainly on trunk and back
• Concerned about some of them being larger than others
• Mother with history of benign skin lesions, wants him checked out
• Has history of sun exposure as youth, with several bad sunburns
• Exam reveals a thin, fair skinned young man with blond hair and brown eyes
• Scattered brown lesions throughout the body
• Exam findings: many brown papules with one that is 6 mm

Image Credit: DermNet; https://dermnetnz.org/topics/atypical-naevus-images
Atypical Nevus (aka Dysplastic Nevus)

- Benign pigmented lesions
- Exhibit some of the clinical and histologic features of malignant melanoma
- More common in fair-skinned individuals and in those with high sun exposure
- Characteristics:
  - Size of 6 mm or more at the greatest dimension
  - Color variegation
  - Border irregularity
  - Pebbled texture
- Associated with an increased risk of melanoma, warranting enhanced surveillance, particularly in patients with more than 50 moles and family history of melanoma


Atypical Nevus (continued)

- Individual lesion is unlikely to display malignant transformation, therefore, biopsy of all atypical moles is neither clinically beneficial nor cost-effective
- ABCDE mnemonic: Valuable tool for clinicians and patients to identify lesions that could be melanoma
  - Asymmetry
  - Border irregularity
  - Color unevenness
  - Diameter of 6 mm or more
  - Evolution
- Atypical moles with changes suggestive of malignant melanoma should be biopsied, using an excisional method, if possible


Image Credit: DermNet; https://dermnetnz.org/topics/melanoma-in-situ-images
Risk of Melanoma

- Most atypical moles do not become melanoma
- Patients with a high number of atypical moles have an increased lifetime risk of melanoma
- Relative risk of melanoma
  - 1.45 in patients with one atypical mole vs. none
  - 6.36 in those with five atypical moles
- Familial Atypical Multiple-Mole Melanoma (FAMMM) Syndrome
  - 10-year risk of melanoma of 10.7%, which is 17.3 times higher than in those without the syndrome
  - The lifetime risk approaches 100%


Characteristics

<table>
<thead>
<tr>
<th>LESION</th>
<th>SIZE</th>
<th>COLOR</th>
<th>SHAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Mole</td>
<td>Typically &lt; 6 mm</td>
<td>Evenly distributed 1 or 2 shades of brown</td>
<td>Round/Oval Symmetrical Smooth, well demarcated borders</td>
</tr>
<tr>
<td>Atypical Mole</td>
<td>Typically ≥ 6 mm, possibly smaller</td>
<td>Variegated More than 2 shades of color (brown/tan, could be pink/black)</td>
<td>Round/Oval Asymmetrical Pebbled surface and irregular or poorly demarcated borders</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Typically ≥ 6 mm, possibly smaller</td>
<td>Variegated More than 2 shades of color (very dark brown/black) that may have changed over time</td>
<td>Asymmetrical Irregular or poorly demarcated borders</td>
</tr>
</tbody>
</table>

Atypical Moles

Image Credit: DermNet; https://dermnetnz.org/topics/atypical-naevus-images

Screening and Surveillance

- Individual risk stratification based on:
  - Patient’s personal history of previous neoplasm
  - Family history (FAMMM Syndrome)
  - # of moles
  - ABCDE findings
  - Available screening tools
  - Examiner expertise

- Annual screening vs. every 6 months
  - Dermatologist vs. PCP
  - Photography
  - Dermascope

### Biopsy

- **Primary goal:** rule out melanoma
- **Full epidermal and dermal excisional biopsy, including the entire lesion**
  - At least 4 mm in depth
  - 2 mm margin
  - Preferred method
- **Punch biopsy**
  - Leaves open the possibility of not sampling the area of greatest depth or of missing the area of melanoma entirely
- **Deep shave biopsy**
  - May be preferable to punch biopsy


### CASE #2

- 43-year-old woman presents with patches of red, scaly lesions on palms and soles for months
- Itchy and painful at times
- OTC meds have not helped
- No prior history of lesions
- No significant other history

*Image Credit: DermNet; https://dermnetnz.org/topics/palmoplantar-pustulosis-images*
Psoriasis

- Chronic relapsing inflammatory skin condition
- Affects 2%-3% of the population; about 8 million Americans
- Family history of psoriasis is common
- Complex genetic disease of the immune system with environmental triggers
- Mean onset at 20-30 years but can present later (50-60 years)
- 1/3 of patients diagnosed with psoriasis develop psoriatic arthritis


Risk Factors

- Family history of psoriasis
  - 1/3 of patients have first degree relative with psoriasis
- Direct skin trauma (Koebner phenomenon)
- Streptococcal throat infection may trigger or exacerbate
- HIV can exacerbate disease
- Smoking
- Obesity
- Alcohol use

Pathophysiology and Co-morbidities

- Immune-mediated disease driven by T-lymphocytes and dendritic cells
- Systemic disease with co-morbidities:
  - Cardiovascular disease
  - Metabolic syndrome
  - Diabetes mellitus
  - Obesity
  - Dyslipidemia
  - Hypertension
  - NASH
  - Crohn’s disease
  - Depression and anxiety


Clinical Features and Classification

- Diagnosis is clinical
- Typical erythematous scaly patches, papules and plaques
- Often pruritis, sometimes painful
- Biopsy is rarely needed to confirm the diagnosis

Types of Psoriasis

1. Plaque
2. Inverse
3. Erythrodermic
4. Pustular
5. Guttate
6. Psoriatic Nail
7. Psoriatic Arthritis

Plaque Psoriasis

- 90% of affected patients have plaque psoriasis (most common)
- Well-defined round or oval plaques that differ in size and often coalesce
- Raised red patches covered with a whitish buildup of dead skin cells
- Occurring on:
  - Extensor surfaces of arms and legs
  - Scalp
  - Buttocks
  - Trunk
- Plaques often itch or hurt
- Considered an autoimmune disease

Inverse Psoriasis (aka Intertriginous Psoriasis)

- 2%-6% of psoriasis
- Less scaly than plaque form
- Occurs in skin folds
  - Flexor surfaces
  - Perineal
  - Infra mammary
  - Axillary
  - Inguinal
  - Intergluteal
- Heat, trauma, and infection may contribute to development
- Most often alongside some other form of the condition, such as plaque psoriasis
- More common in people who are overweight or obese or have deep skin folds


Image Credit: DermNet; https://dermnetnz.org/topics/flexural-psoriasis-images
**Erythrodermic Psoriasis**

- 1%–2.25% among psoriatic patients
- Severe variant of psoriasis
- Widespread, generalized erythema
- Often associated with systemic disease
- May develop slowly from long lasting psoriasis, or may appear abruptly in patient with mild case

Image Credit: DermNet; https://dermnetnz.org/topics/erythrodermic-psoriasis

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**Pustular Psoriasis**

- 3.3% of people with psoriasis (usually adults)
- White bumps filled with pus near or inside red skin blotches
- Pustules on palms of hands and soles of feet
- Can hurt, be scaly, flaky, or itchy
- No plaque formation

Image Credit: DermNet; https://dermnetnz.org/topics/palmoplantar-pustulosis-images
Guttate Psoriasis

- 2% of psoriasis cases
- Small, pink-red spots on skin
- More common in patients younger than 30 years old
- Lesions typically located on the trunk, upper arms, thighs, scalp
- Stages of Guttate Psoriasis
  - Mild – few spots cover about 3% of skin
  - Moderate – lesions cover about 3-10% of skin
  - Severe – lesions cover 10% or more of body

Psoriatic Nail Disease

- Occurs in 50% of all people with psoriasis and 80% of those with psoriatic arthritis
- Can affect fingernails and toenails
- Characteristics:
  - Pitting
  - Onycholysis
  - Subungual hyperkeratosis
  - Oil drop (or salmon patch): a see-through yellow-red patch appears in the nail bed that looks like there is a drop of oil under the nail
  - Nail discoloration (yellow-brown)
Psoriatic Arthritis

- Condition where you have both psoriasis and arthritis
- Affects about 1/3 of psoriasis patients
- Pain, stiffness, limited mobility
- Reduced range of motion
- Can deform joints in 40-60% of patients
- Majority of patients with PsA have cutaneous manifestations for up to 10 years before the onset of PsA
- Enthesitis = swelling where tendons connect with bone
- Dactylitis = swelling of finger and toes

Image Credit: DermNet; https://dermnetnz.org/topics/psoriatic-arthritis

Psoriasis Epidemiology Screening Tool (PEST)

- PEST is a validated screening tool for PsA
- Recommended that patients with psoriasis who do not have a diagnosis of PsA should complete an annual PEST questionnaire (NICE Psoriasis: Assessment and Management Guidelines 2012)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you ever had a swollen joint (or joints)?</td>
<td></td>
<td></td>
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<tr>
<td>Has a doctor ever told you that you have arthritis?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do your fingernails or toenails have holes or pits?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you had pain in your heel?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you had a finger or toe that was completely swollen and painful for no apparent reason?</td>
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<td></td>
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</tbody>
</table>

Please answer the questions and score 1 point for each question answered “Yes”. A total score of 3 or more is positive and indicates a referral to rheumatology should be considered.

Treatment of Dermatologic Symptoms

- Determine Severity of Psoriasis
  - Mild/Moderate (<5% of body surface area)
    - Candidate for intermittent therapy: topical corticosteroids, vitamin D analogs, tazarotene
    - Candidate for continuous therapy: calcineurin inhibitors
  - Severe (5% or more of body surface area)
    - Is <20% body surface area affected?
      - Yes – vitamin D analogs ± phototherapy; consider referral to dermatologist
      - No – systemic therapy ± phototherapy; consider referral to dermatologist
    - Biologic therapy if patient has arthritis symptoms: consider referral to rheumatologist

CASE #3

- 55-year-old male presents to your office with worsening lump on left gluteus. It is very painful and has been oozing a bit. No history or trauma.
- No prior
- Noticed a small lump there for many months prior
- Exam: normal VS’s, afebrile
  - Very tender induration

Image Credit: DermNet; https://dermnetnz.org/topics/epidermoid-cyst
Abscess of Sebaceous Cyst
Patient Presents with Skin & Soft Tissue Infection

- Is infection severe or uncontrolled despite outpatient antibiotics and drainage? No
- Is patient septic, dehydrated, acidic, or immunosuppressed? No
- Does patient have organ dysfunction or antibiotic intolerance? No
- Is appropriate follow-up unavailable? No

If Yes ---- > Inpatient Management

Does the abscess require drainage? No
- Administer antibiotics effective against streptococci and staphylococci (beta-lactams, clindamycin, trimethoprim/sulfamethoxazole
- If no improvement in 48 hours – add agents active against MRSA; consider imaging to detect abscess
  - If abscess present – incision and drainage, pus culture, complete 5-10 day antibiotic course

If improvement – complete 5-10 day antibiotic course


Abscess of Sebaceous Cyst
Patient Presents with Skin & Soft Tissue Infection

- Is infection severe or uncontrolled despite outpatient antibiotics and drainage? No
- Is patient septic, dehydrated, acidic, or immunosuppressed? No
- Does patient have organ dysfunction or antibiotic intolerance? No
- Is appropriate follow-up unavailable? No

Does the abscess require drainage? Yes

Does abscess involve face, hands, or genitalia?
- Yes – Admit, perform incision and drainage and pus culture, and administer agents active against MRSA
- No – Perform outpatient incision and drainage, pus culture

Is there overlying cellulitis?
- No – No further treatment necessary
- Yes – Is MRSA coverage required? Is infection purulent?
  - No – Use antimicrobials active against MSSA and streptococci
  - Yes – Use antimicrobials active against MRSA

No improvement: Imaging, blood or wound/pus cultures, repeat incision and drainage. If insufficient drainage, change antibiotics, inpatient treatment.

# Inpatient Management of a Patient with Skin and Soft Tissue Infection

<table>
<thead>
<tr>
<th>Question</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is infection severe or uncontrolled despite outpatient antibiotics and drainage?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is patient septic, dehydrated, acidicotic, or immunosuppressed?</td>
<td>Yes</td>
</tr>
<tr>
<td>Does patient have organ dysfunction or antibiotic intolerance?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is appropriate follow-up unavailable?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

- Complete blood count, C-reactive protein testing, liver/kidney function testing
- Blood culture for severe infection and in immunocompromised or older patients
- Culture of aspirate from advancing edge of cellulitis or abscess
- Imaging for suspected necrotizing fasciitis or if no response to initial treatment of cellulitis or abscess
- Tissue biopsy from advancing edge of cellulitis after debridement of bites or necrotizing fasciitis
- Correction of fluid/electrolyte/acid-base imbalance
- Empiric broad-spectrum antibiotics followed by culture-specific narrow-spectrum agents (include MRSA coverage)

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**Is surgical consultation required?** (Purulence or suspected necrotizing fasciitis, gas gangrene, or deep bites involving joint?)

**No:** Culture specific antibiotics for 7-14 days; change to oral agents if clinical improvement is noted and oral administration is tolerated

**Yes:**
- Abscess - incision and drainage, continue antimicrobials active against MRSA
- Necrotizing fasciitis: debridement, continue polymicrobial coverage
- Bites, gas gangrene: debridement, antimicrobials
- Change to oral agents if clinical improvement is noted, oral administration is tolerated, and drainage/debridement is complete
- Total antibiotic course is 7-14 days, or 6 weeks if joint is involved

# Antibiotic Choices for Mild to Moderate Skin and Soft Tissue Infections

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Dosage</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amoxicillin/Clavulanate</strong></td>
<td>Adults: 500 mg orally 2x per day or 250 mg 3x per day</td>
<td>For impetigo; human/animal bites; MSSA, <em>Escherichia coli</em>, or <em>Klebsiella</em> infections</td>
</tr>
<tr>
<td></td>
<td>Children &lt;3 mos and &lt;40 kg: 25-45 mg per kg per day (amoxicillin component), divided every 12 hours</td>
<td></td>
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<tr>
<td></td>
<td>Children &gt;3 mos and 40 kg or more: 30 mg per kg per day, divided every 12 hrs</td>
<td>Common adverse effects: diaper rash, diarrhea, nausea, vaginal mycosis, vomiting</td>
</tr>
<tr>
<td><strong>Cefazolin</strong></td>
<td>Adults: 250-500 mg IV or IM every 8 hrs (500-1,500 mg IV or IM every 6-8 hours for moderate to severe infections)</td>
<td>For MSSA infections and human/animal bites</td>
</tr>
<tr>
<td></td>
<td>Children: 25-100 mg per kg per day IV or IM in 3-4 divided doses</td>
<td></td>
</tr>
<tr>
<td><strong>Cephalexin</strong></td>
<td>Adults: 500 mg orally 4x per day</td>
<td>For MSSA infections, impetigo, and human/animal bites</td>
</tr>
<tr>
<td></td>
<td>Children: 25-50 mg per kg per day in 2 divided doses</td>
<td></td>
</tr>
<tr>
<td><strong>Clindamycin</strong></td>
<td>Adults: 150-450 mg orally 4x per day (300-450 mg orally 4x per day for 5-10 days for MRSA infection; 600 mg orally or IV 3x per day for 7-14 days for complicated infections)</td>
<td>For impetigo; <em>MSSA</em>, <em>MRSA</em>, and clostridial infections; human/animal bites</td>
</tr>
<tr>
<td></td>
<td>Children: 16 mg per kg per day in 3-4 divided doses</td>
<td></td>
</tr>
<tr>
<td><strong>Dicloxacillin</strong></td>
<td>Adults: 125-500 mg orally every 6 hours (max dosage, 2 g per day)</td>
<td>For MSSA infections</td>
</tr>
<tr>
<td></td>
<td>Children &lt;40 kg: 12.5-50 mg per kg per day divided every 6 hrs</td>
<td></td>
</tr>
<tr>
<td><strong>Doxycycline or Minocycline</strong></td>
<td>Adults: 100 mg orally 2x per day</td>
<td>For MRSA infections and human/animal bites; not recommended for children &lt;8 yrs</td>
</tr>
<tr>
<td></td>
<td>Children 8 years and older and &lt;45 kg: 4 mg per kg per day in 2 divided doses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children 8 years and older and &gt;45 kg: 100 mg orally 2x per day</td>
<td>Common adverse effects: myalgia, photosensitivity</td>
</tr>
<tr>
<td><strong>Fluoroquinolones</strong></td>
<td>Adults: Ciprofloxacin 500-750 mg orally 2x per day or 400 mg IV 2x per day</td>
<td>For human/animal bites; not useful in MRSA infections; not recommended for children</td>
</tr>
<tr>
<td></td>
<td>Gatifloxacin or moxifloxacin 400 mg orally or IV per day</td>
<td></td>
</tr>
<tr>
<td><strong>Mupirocin</strong></td>
<td>2% ointment applied 3x per day for 3-5 days</td>
<td>For MRSA impetigo and folliculitis; not recommended for children &lt; than 2 mos.</td>
</tr>
<tr>
<td><strong>Retapamulin</strong></td>
<td>1% ointment applied 2x per day for 5 days</td>
<td>For MSSA impetigo; not recommended for children &lt; than 9 mos.</td>
</tr>
<tr>
<td><strong>Trimethoprim/ Sulfamethoxazole</strong></td>
<td>Adults: 1 or 2 double strength tablets 2x per day</td>
<td>For MRSA infections and human/animal bites; contraindicated in children &lt;2 mos</td>
</tr>
<tr>
<td></td>
<td>Children: 8-12 mg per kg per day (trimethoprim component) orally in 2 divided doses or IV in 4 divided doses</td>
<td>Common adverse effects: anorexia, nausea, rash, urticaria, vomiting</td>
</tr>
</tbody>
</table>
CASE #4

• 12-year-old male presents with several days of rash all over
• Also complaining of joint pains and abdominal pain
• Low grade fever, fatigue
• Just got over a cold a week ago

Image Credit: DermNet; https://dermnetnz.org/topics/henoch-schoenlein-purpura

CASE #4 (continued)

• Rash started as erythematous papules that developed into crops of petechiae and palpable purpura
• Some of the purpura have enlarged into palpable ecchymoses
• The purpura are predominantly on extensor surfaces and dependent areas that are subject to pressure, such as the legs and buttocks
• Exam: non-toxic looking child, tired, NAD
• VS normal, 99.5 F temperature
• Purpuric rash on extensor surface, non-blanching
• Remainder of the exam is normal

Image Credit: DermNet; https://dermnetnz.org/topics/henoch-schoenlein-purpura
Henoch-Schönlein Purpura

• AKA: Immunoglobulin A (IgA) vasculitis
• Systemic, immune complex-mediated, small-vessel leukocytoclastic vasculitis
• Characterized by nonthrombocytopenic palpable purpura, arthritis, and abdominal pain
• Most common vasculitis in children but can also occur in adults

Epidemiology and Pathogenesis

• 3.0 - 26.7 out of 100,000 children and 0.8 - 1.8 out of 100,000 adults each year
• More than 90% of cases occur in children younger than 10 years
• In children, more common during the fall and winter, but no seasonal pattern has been consistently shown in adults
• IgA vasculitis is milder in children younger than two years, but more severe in adults, with worse outcomes
• Multiple viral and bacterial infections thought to trigger the disease, including *Streptococcus*, parainfluenza, and human parvovirus B19

Signs and Symptoms

• Arthralgias are more common in the knees and ankles than in small joints
  • Transient and does not damage the joints

• Abdominal pain:
  • Typically, colicky
  • Can be severe enough to mimic an acute abdomen
  • Emesis and GI bleeding can occur in approximately one-third of patients
  • Intussusception can occur in rare cases


Signs and Symptoms (continued)

• Renal disease occurs in 50% of patients and may cause long-term damage
  • Typically develops within 1-3 months after the rash, but it may be delayed up to 6 months
  • Microscopic hematuria, red cell casts, proteinuria, and rarely overt renal failure

• Low-grade fever and fatigue are common

• Less common symptoms include orchitis, pulmonary hemorrhage, and central nervous system involvement with headaches, behavior changes, seizures, or hemorrhage

### Diagnostic Tests

- CBC, CMP, Coag profile, UA
- A skin biopsy is needed only in cases where the diagnosis is unclear


### Treatment and Follow-Up

- Spontaneous resolution in 94% of children and 89% of adults, making supportive treatment the primary intervention
- Relapses most commonly involve the skin but can also involve the joints, kidneys, and gastrointestinal system
  - Occur in 2-30% of children
  - May occur up to 10 years later

CASE #5

• 21-year-old female college athlete presents with tender, painful red nodules on the shins
• No history of trauma, no sickness symptoms, no recent illnesses
• PMH negative
• SH: negative
• Medications: OC

Erythema Nodosum (EN)

• Painful disorder of the subcutaneous fat - most common type of panniculitis
  • Anterior legs most common location
  • Involute in weeks with bruise-like appearance
  • Does not ulcerate; tends to heal completely
• Generally, it is idiopathic (55%)
  • Most common identifiable cause is streptococcal pharyngitis (28-48%)
  • Drugs: OC’s and some antibiotics (3-10%)
  • Inflammatory bowel disease, TB, sarcoidosis (11-25%), pregnancy
  • Often a sign of a serious disorder that potentially is treatable
    • Management of an underlying etiology is the most definitive means of alleviating erythema nodosum

Image Credit: DermNet; https://dermnetnz.org/topics/erythema-nodosum-images

Image Credit: DermNet; https://dermnetnz.org/topics/erythema-nodosum-images
Erythema Nodosum (continued)

- A prodrome commonly occurs 1-3 weeks before the onset of EN
  - Weight loss
  - Malaise
  - Low-grade fever
  - Cough
  - Arthralgia can persist for up to two years after the resolution of EN
- Treat underlying condition and supportive therapy: bed rest, avoidance of contact irritation of affected areas
- Pain management - NSAIDS
- Potassium iodide may relieve lesional tenderness, arthralgia, and fever
- Corticosteroids effective, but seldom necessary

*Am Fam Physician. 2007 Mar 1;75(5):695-700.*

CASE #6

- 57-year-old woman presents with two-week history of itchy patches on dorsum of both hands
- PMH significant for Type 1 DM

*Image Credit: DermNet; https://dermnetnz.org/topics/granuloma-annulare-images*
Granuloma Annulare (GA)

- Rash with red bumps (erythematous papules) arranged in a circle or ring pattern (annular)
- Commonly localized (75% of cases) affecting the forearms, hands, feet
- Generalized form (15% of cases) presents with numerous erythematous papules that form larger plaques on the body, including palms of hands and soles of feet
- Cause unknown but may involve an immune and/or inflammatory response
- Associated with development of other medical conditions: diabetes, dyslipidemia, and some malignancies
- Chronic stress may be a trigger

https://rarediseases.info.nih.gov/diseases/6546/granuloma-annulare

Treatment

- Localized GA: topical steroid creams, cryotherapy, laser therapy
- Generalize GA:
  - Topical steroid creams, steroid injections – work best before lesions are widespread
  - Light therapy
  - Hydroxychloroquine, isotretinoin, dapsone
  - Combination of certain antibiotics
- GA goes away within a few years, lasting longer when spread to more parts of the body
- About 25% of Generalized GA cases last for more than 5 years, and for some it may last longer than 10 years

https://rarediseases.info.nih.gov/diseases/6546/granuloma-annulare
CASE #7

- 57-year-old male presents with generalized rash that are target-like, red, raised, itchy, and some painful, that began 4 days ago
- Rash seems more prominent in the fingers and toes
- Some lesions are in the oral mucosa as well, specifically the tongue
- PMH significant for HTN, treated with vasartan/HCTZ
- Recently hospitalized for COVID for 6 days, currently doing well, and has stopped home oxygen

Image Credit: DermNet; https://dermnetnz.org/topics/erythema-multiforme-images

Erythema Multiforme

- Immune-mediated reaction that involves the skin and sometimes the mucosa
- Described as target-like, can be isolated, recurrent, or persistent
- Raised, blanching lesions
- More common in adults, younger than 40
- Present symmetrically on the extremities (especially on extensor surfaces) and spread centripetally
- Infections, especially herpes simplex virus (HSV) and Mycoplasma pneumoniae, and medications constitute most of the causes
- Immunizations and autoimmune diseases have also been linked

Erythema Multiforme (*continued*)

- Differentiated from urticaria by the appearance and duration of individual lesions
  - Lesions are typically fixed for a minimum of 7 days, whereas individual urticarial lesions often resolve within 1 day
- Symptomatic treatment: topical steroids or antihistamines; treating the underlying etiology, if known
- Recurrent erythema multiforme associated with the herpes simplex virus should be treated with prophylactic antiviral therapy


CASE #8

- 22-year-old female presents with a 3 cm oval patch on the flank for the past 5 days
- Erythematous with slightly elevated scaling borders and a lighter depressed center
- Not itchy or painful
- Admits to general malaise, fatigue, nausea, headaches, joint pain, enlarged lymph nodes, low grade fever, and mild sore throat since the patch started

Image Credit: DermNet; https://dermnetnz.org/image-library/pityriasis-rosea-images
CASE #8 Follow-up

- Clinician prescribes topical ketoconazole
- Patient returns 2 weeks later with the patch no better, and rash has now scattered all over the trunk and back
- Lesions are mildly itchy
- All systemic symptoms are resolving

Image Credit: DermNet; https://dermnetnz.org/image-library/pityriasis-rosea-images

Pityriasis Rosea

- Presents as discrete scaly papules and plaques along the Langer lines (cleavage lines) over the trunk and limbs
  - Lesions are smaller than the herald patch and can continue to appear up to 6 weeks after the initial eruption, and continue up to 12 weeks
  - On the back may have a “Christmas tree” pattern, whereas a rash on the upper chest may have a v-shaped pattern

Pityriasis Rosea (continued)

- Usually preceded 2 weeks by a herald patch on the trunk in up to 90%
- Typically affects persons 10-35 years of age
- More common in females
- Winter month predilection
- Prodromal symptoms present before or during the course of the rash in 69% of patients
- Rash is self limited
- The epidemiology and clinical course of pityriasis rosea suggest an infectious etiology
  - The most common viruses linked to PR are human herpesvirus-6 and -7 (HHV-6 and -7)


Treatment

- Symptoms can be managed with oral or topical corticosteroids or oral antihistamines
- Macrolide antibiotics have no benefit in the management of pityriasis rosea
- Acyclovir is effective in treatment and may be considered in severe cases
- Phototherapy may be effective

CASE #9

- 2-year-old presents with generalized rash. It just started today, initially on the trunk and now spreading peripherally
- Mother called the doctor on call a few days ago stating the child had a fever of 103.5, and no other symptoms, acting bit tired, but taking in fluids nicely
- Currently child is afebrile, pleasant, happy, cooperative, mild rhinorrhea, nothing else on exam

Roseola (Exanthema Subitum)

- Commonly caused by human herpesvirus 6
- Affects infants and children < 3 years old
- Abrupt onset of high fever lasting 1-5 days
- Often appear well with no focal clinical signs except possible mild cough, rhinorrhea, or mild diarrhea
- As the fever resolves, abrupt onset of erythematous macular to maculopapular rash appears
  - Starting on the trunk and spreading peripherally
  - Similar in appearance to that of rubeola (measles), but different in that measles rash starts on face/mouth and moves downward, and has Koplik spots, and the child is usually sick
- Treatment is supportive

Image Credit: DermNet; https://dermnetnz.org/topics/roseola-images*
CASE #10

• 14-year-old male presents with several days of fever, chills, arthralgias, and malaise

• The only other symptom is a growing rash on the arm that started the same time as the fever

• It is painless and not itchy

Lyme Disease

• Most common tick-borne disease in US

• Caused by the bacterium Borrelia burgdorferi, transmitted primarily by the deer tick (Ixodes scapularis; Ixodes pacificus on the West Coast)

• Infection occurs primarily during the late spring and summer months when nymphs are most active and persons spend the most time outdoors, but cases have been reported throughout the year

• How long the tick is attached (usually at least 36 hrs) and whether it is engorged are 2 of the most important factors to consider when assessing the risk of transmission

• Symptoms of early Lyme disease usually begin 1-2 weeks after a tick bite (range of 3-30 days)

Image Credit: DermNet; https://dermnetnz.org/topics/erythema-migrans-images

Image Credit: DermNet; https://dermnetnz.org/topics/erythema-migrans-images
Lyme Disease (continued)

Three stages:

1. Early localized
   - Erythema migrans
   - Virus-like illness (e.g., fatigue, malaise, fever, chills, myalgia, headache)

2. Early disseminated
   - Cardiac (e.g., AV block)
   - Dermatologic (multiple erythema migrans lesions)
   - Musculoskeletal (myalgias, arthralgias)
   - Neurologic (Bell's palsy, lymphocytic meningitis, encephalitis)

3. Late
   - Arthritis (e.g., monoarticular, oligoarticular)
   - Neurologic symptoms (e.g., encephalomyelitis, peripheral neuropathy)

Erythema Migrans

- In as many as 80% of patients
- Classically reported as a single lesion, multiple lesions in 10-20%
- Uniform erythematous oval to circular rash with a median diameter of 16 cm (range of 5 to 70 cm)
- ~19% are “bull's-eye” rash
- With untreated disease, the most common sites of extracutaneous involvement are the joints, nervous system, and cardiovascular system

Image Credit: DermNet; https://dermnetnz.org/topics/erythema-migrans-images
Musculoskeletal Symptoms

- Most common extracutaneous manifestation
- Can occur with early or late disease
- Early disease: transient oligoarticular symptoms of arthralgia or myalgia that may include joint swelling
- Late disease: arthritis, occurs in up to 60% of untreated patients
  - Typically ~6 months after infection
  - Joint pain and swelling, and synovial fluid findings that suggest an inflammatory process
  - Chronic arthritis primarily involves the knees and hips


Neurologic Involvement

- 15% of untreated patients
  - Lymphocytic meningitis, cranial neuropathies (primarily unilateral, but rarely bilateral, facial nerve palsy), motor or sensory radiculoneuropathy, mononeuritis multiplex, cerebellar ataxia, and myelitis
  - Lyme disease must be included in the differential diagnosis of a seventh cranial nerve (Bell’s) palsy in endemic areas

Cardiac Involvement

• Usually occurs within 1-2 months after infection (range of less than 1 week to 7 months)

• Lyme carditis is a less common complication of systemic disease, occurring in approximately 4-10% of patients

• May present as chest pain, dyspnea on exertion, fatigue, palpitations, or syncope, and often includes some form of AV block


Diagnostic Testing

• The CDC and IDSA: serology is the preferred initial diagnostic test

• Two-tier protocol using an enzyme-linked immunosorbent assay (ELISA) initially

• Followed by the more specific Western blot to confirm when the assay samples are positive or equivocal

• Polymerase chain reaction testing has the highest sensitivity for Lyme disease in synovial fluid samples from patients with untreated late Lyme arthritis

Treatment

- Antibiotic recommendations for common presentations
  - Lyme disease prophylaxis: doxycycline
  - Erythema Migrans: doxycycline, amoxicillin, cefuroxime axetil, azithromycin

- Antibiotic recommendations for complicated presentations
  - Neurologic manifestations
    - IV: ceftriaxone, cefotaxime, penicillin G
    - Oral: doxycycline
  - Lyme Carditis
    - IV: ceftriaxone
    - Oral: doxycycline, amoxicillin, cefuroxime axetil
  - Lyme Arthritis/Borrelial Lymphocytoma/Acrodermatitis Chronica Atrophicans
    - Oral: doxycycline, amoxicillin, cefuroxime axetil