Superficial Fungal Infections in Children

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"Of course I'll need to run some tests; but offhand I'd say it's some sort of fungus infection."
Objectives

• Identify superficial fungal infections (SFIs)
• Discuss the management of common SFIs
• Compare and contrast SFIs with other non-fungal disease look-alikes
• Describe methods to differentiate SFIs from other disease processes
Case #1

• You are seeing a 6 year old child for an itchy flaky scalp. Mom thinks he has dandruff. You believe he has tinea capitis.
  • Do you need to do further testing to confirm?
  • Should you treat his asymptomatic 8 year old brother?
  • Should you do a culture on the family dog?
  • When can he go back to school?
  • How long should he be treated and are lab tests needed?
Why is this important?

- Superficial skin infections can be mistaken for other common diseases
- An accurate diagnosis is essential to the appropriate management strategy
- Patient understanding is the key to treatment adherence
Case #2

- 4 week old infant
- Progressive hair loss x 2 weeks
What is your differential diagnosis and what would you do?
Tinea Capitis

- 95% of cases – Trichophyton tonsurans
- Most cases occur between 3-7 yrs. of age
- More common with crowded living conditions, low SES, urban settings and AA
- Indirect contact with fallen hair and cells
- Some call it a “modern day epidemic”

Abdel-Rahman SM, et al. *Pediatrics* 2010
Case #2: Tinea Capitis

- Rare in infants less than 1
- Most often normal infants but think about immunodeficiency
- Look for source of infection in household contacts
- Treat with oral fluconazole

Presentations

• Non-inflammatory “black dot”
• Seborrheic (diffuse scale)
• “Gray patch”
• Pustular
• Kerion (inflammatory)
• Favus
When scalp scaling is noted in a child, the fungus is guilty until proven innocent
Differential Diagnosis

- Alopecia areata
- Impetigo
- Pediculosis
- Psoriasis
- Seborrhea dermatitis
- Traction alopecia
- Trichotillomania

www.dermatlas.org
Alopecia Areata

- Sharply demarcated, round nearly bald patches of hair loss
- Occ. will have hairs that look like exclamation points (mostly at periphery)
- Treatment is individualized

www.dermatlas.org
Tinea Capitis should be in the differential of any child who presents with alopecia.
Frequency of Signs and Symptoms

www.health-7.com
Case #3

9 year old girl, URI, hair thinning, no scale, no pruritus, shotty cervical lymphadenopathy
Mother is worried about ringworm of the scalp
Case #3: Traction Alopecia

- Hairstyles that constantly pull
- Also associated with chemical relaxers and tight rollers
- Usually no scale and no pruritis
- Typically on the frontal and temporal areas
- “Fringe” sign – fringe of proximal hair
- Treatment – loosen the hair style
Case # 4

7 year old cousin, thinning hair, slight pruritus, no adenopathy, visible flakes
Case # 4: Tinea Capitis

7 year old cousin, thinning hair, slight pruritus, no adenopathy, visible flakes
To confirm with microscopy or culture

• When in doubt, confirm with KOH or culture
• Woods lamp not helpful
• Provide counseling
  • No sharing of hair brushes, combs, hats, etc.
  • Wash bedding in hot water
  • No sports with scalp-to-scalp contact
• Should you screen other family members?
• Should you screen the family pet?

Management of Tinea Capitis

• Griseofulvin – 6-12 weeks (no baseline labs)
  • May need up to 16 weeks of treatment
  • If treating > 8 wks (CBC, ALT, AST, BUN, Cr)
  • Higher doses recommended (20-25 mg/kg/d microsize and 10-15 mg/kg/d for ultramicrosize)

• Terbinafine – once daily for 2-4 weeks
  • Liver transaminases prior to therapy
  • Oral granules sprinkled on food
  • $14/day (compared to $4.50) – generic now available
  • Dosing based on weight

Case #5 Topical or Oral Treatment?
Case #5
Oral Treatment

www.ethnomed.org
Adjunctive Topical Treatment

- Ketoconazole 2% shampoo
- Selenium sulfide 1% shampoo
- Povidone-iodine 2.5% shampoo
- Ciclopixor 1% shampoo

- Use sporicidal shampoo 3X weekly for 2-4 weeks
- Decreases viable spores – treat everyone

Case #6: Fungal cx negative: Antibiotics or Antifungals?

Proudfoot L. NEJM March 22, 2012
Case #6: Kerion: Treat with Antifungals (+/- glucocorticoid)

Proudfoot L. NEJM March 22, 2012
Case # 7

- 3 year old female
- Treated for 2 wks. with oral griseofulvin
- Recently developed this scaling erythematous rash
- 1-3 mm papules
- Diagnosis & management?

www.dermatlas.org
Case # 7: Dermatophytid (Id) Reaction

• Secondary dermatitic eruptions
• Pruritic, papulovesicular eruption
• Often distal from the original infection
• Continue antifungals
• Topical corticosteroids and antipruritic agents
Case #1 Revisited

• You are seeing a 6 year old child for an itchy flaky scalp. Mom thinks he has dandruff. You believe he has tinea capitis.
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Case #8

- What is your differential diagnosis?
- What laboratory tests (if any) do you want to do?
- What is your management plan?
- How would you counsel this family?
Differential Diagnosis

- Drug eruption
- Erythema multiforme
- Granuloma annulare
- Nummular eczematous dermatitis
- Pityriasis rosea
- Psoriasis
- Secondary syphilis
- Tinea (pityriasis) versicolor
- Tinea corporis
Case #8: Granuloma Annulare

• Subacute onset
• No epidermal changes (nonscaly, nonpruritic)
• Usually on dorsum of hands and feet
• Slowly enlarges with “central clearing”
• Etiology unknown
• Observation

www.dermatlas.org
Tinea vs. Granuloma

www.dermatlas.net

www.fromyourdoctor.com
Case #9

• 10 yr. old female
• pruritic lesion on arm x 6 mos.

www.health-pictures.com
Case #9: Nummular eczema

- Coin shaped
- Scaly patch
- No central clearing
- Itchy
- “Atopic”
- Xerosis

www.health-pictures.com
Case #10  What is your diagnosis?

www.dermatlas.org
Case #10: Tinea incognito

- Tinea corporis that has been inappropriately treated with steroids
- Original infection slowly extends
- Pruritic
- KOH prep

www.dermatlas.org
Case #11  Is This Tinea?
Case #11  Pityriasis Rosea

anagen.ucdavis.edu

www.advancedskinwisdom.com

www.aafp.org
Case #12  Is This Tinea?
Case #12  Majocchi granuloma

- Deep folliculitis due to a cutaneous dermatophyte infection
- Women who frequently shave their legs
- Use of potent topical steroids under occlusion

www.dermatlas.org
Case #13  Crusted papules and confluent vesicles. Is this Tinea?

www.dermatlas.org
Case #13  Tinea Corporis

www.dermatlas.org
Tinea Corporis

• T. rubrum
• Skin scraping from active border of lesion
• Multiple lesions look like a flower petal
Tinea Corporis

- Topical antifungals
- Do not use nystatin
- Extensive disease (or immunocompromised) treat orally
- Tinea faceii may require a longer course of treatment
Tinea Corporis Revisited

• What is your differential diagnosis?
• What laboratory tests (if any) do you want to do?
• What is your management plan?
• How would you counsel families?
Tinea Corporis Gladiatorum

- Fluconazole 200 mg weekly x 3 weeks – negative cultures by the third week of therapy (preferred)
- Topical antifungals also effective but need longer therapy
- Restrict sports participation 10-15 days

Case #14  Which one is Tinea?

A

B

C

www.dermatlas.org
Case #14  Which one is Tinea?

A  Tinea cruris

B  Erythrasma

C  Candidiasis
Tinea Cruris

• Usually occurs in adolescent males
• Usually is bilateral
• Spares the scrotum and penis
• Look for tinea elsewhere
• Topical antifungals of the imidazole or allylamine family
Case #15  What is the diagnosis and treatment?
Case #15  Moccasin Type Tinea Pedis

www.hardinmd.lib.uiowa.edu
Case #16 Is this Tinea?
Case #16 Psoriasis

www.onlinedermclinic.com
Case #17 Tinea, Candida or Dyshidrosis?
Case #17  Tinea Pedis

www.phil.cdc.gov
Case #18  Is it Tinea?
Case #18  Juvenile Plantar Dermatosis
Case #19  Which is Pityriasis Versicolor?

www.medicinenet.com

www.graphicshunt.com
Case #19  Which is Pityriasis Versicolor?

www.medicinenet.com
Case #20 Is this Pityriasis Versicolor?
Case #20  Vitiligo
Case #21  Is this tinea in an 8 year old girl?
Case #21  Proximal subungual onychomycosis

www.dermatlas.org
Case #22  Tinea?

www.podiatry-arena.com
Case #22  Candidiasis due to thumb sucking

www.podiatry-arena.com
Case #23 Out, out *#$% spot. What is the cause of these nail changes?
Case #23 Excessive Hand Washing
due to Obsessive Compulsive Disorder

www.webmdboots.com
New Recommendations - Ketoconazole

• Oral ketoconazole should not be used as first line therapy for any fungal infection.
• Ketoconazole should not be used for dermatophyte or candida infections.
• Risks of oral ketoconazole include: potentially fatal liver toxicity, adrenal insufficiency and serious drug interactions (QT prolongation).
• Topical ketoconazole may still be an appropriate choice for certain fungal infections.
Summary

• SFIs are very common
• Many things can look like SFIs
• KOH prep, fungal cultures, and a Wood lamp can help with differentiation.
• Treatment for tinea capitis requires systemic therapy as does tinea unguium.
• Tinea pedis, manuum, and cruris are rare in prepubescent children
References


• Tully AS et al. Evaluation of Nail Abnormalities. *Am Fam Physician* April 15 2012 Vol. 85 No. 8