Cutaneous Clues to Rheumatic Diseases in Children

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Objectives
- Recognize subtle cutaneous signs of rheumatic disease
- Recognize different features of psoriasis and psoriatic arthritis
- Recognize cutaneous complications of rheumatic diseases and treatments.

Potential Conflict of Interest Statement
I have no conflict of interest to report.

Case 1- facial rash
- 4 yo with a facial rash x 5 d
- DX: Parvovirus B19 infection
  - 5th Disease
  - epidemic viral illness
  - facial rash, lacy trunk rash
  - children - low grade fever, arthralgias (20%): diffuse rash
  - adults - fever, small joint polyarthritis (80%): little rash
  - anemia (RBC arrest) >> leukopenia
  - esp. red cell defects
  - ex: Sickle cell disease

LABS:
- WBC 3800, Hb 9.5
- LFT nl; ESR 40
- DX ??

Viral arthritis
- Many different viruses
  - Parovirus, rubella, hepatitis B,C
  - cryoglobulinemia
  - EBV, CMV, adenovirus, coxsackie
- Arthralgia > arthritis
  - "Toxic synovitis"
- Associated with fever, exanthem
- Migratory x 1- 6 wks
  - Rarely persistent
  - except immunocompromised hosts
  - Non-erosive
Clues for the PCP

- Arthritis usually transient
  - + associated viral syndrome
  - Quick response to NSAIDs
  - Recurrences uncommon
- Rash
  - Typical viral exanthem to vasculitic
- Labs:
  - near normal or
  - inflammatory markers high

Case 2 - facial rash

- 13 yo w/ facial rash x 2 wks
- low grade fever
- joints ache, stiff in a.m. x 4 wks
- fatigue x 6 wks

LABS:
- WBC 3800, Hb 9.5
- LFT nl; ESR 40

Dx ??

Case 2 - facial rash

- 13 yo w/ facial rash + systemic symptoms
- DX: Systemic lupus erythematosus
  - 20% onset before 20 yo
  - 70% with photosensitivity
  - 80% with rashes
- Organ system involvement:
  - 50% develop nephritis
  - 90% have arthritis
  - 80% with cytopenia

SLE Criteria

- Malar rash
- Discoid rash
- Photosensitivity
- Oral/nasal ulcers
  - + ANA
  - + specific serology
    - Anti-DS-DNA
    - APS
    - Anti-Smith ab
- Renal involvement
- CNS involvement
  - Seizures or psychosis
- Non-erosive arthritis
- Serositis
  - Pericarditis
  - Pleuritis
- Hematologic involvement
  - cytopenias
  - > 4/11 are 88% specific

SLE - cutaneous findings

- Malar rash
  - over bridge of nose
  - skips nasolabial folds
  - similar to rash of:
    - dermatomyositis
    - Fifth disease
    - rosacea (adult acne)

- Discoid lupus
  - Scarring rash
  - malar, scalp, ears
  - photosensitive
  - Rx: injections of steroids

SLE - cutaneous findings

- Photosensitivity
  - new onset
  - lifelong sun sensitivity does not count
- other causes:
  - other autoimmune illnesses (dermatomyositis)
  - Medications
    - antibiotics, hormones, steroids
    - prior severe sunburn
SLE - Treatment
- Avoid sun
  - 70% are photosensitive
  - Sunscreen to block UV light
    - > 35-40 SPF preferred
  - Physical blocking agents
- Topical medications
  - Corticosteroids
  - Tacrolimus, pimecrolimus
- Anti-malarials – usually hydroxychloroquine
- Others: dapsone, colchicine

Malar rash may present as subtle flush only
- Discoid LE lesions:
  - Hide in external ear
  - May mimic psoriasis or ringworm
  - May be sole manifestation in some; only 20% evolve to SLE
- Discoid and malar rashes spare nasolabial fold
- More severe rash requires dermatologist input

Distinguishing Parvovirus from SLE
- Age/epidemiology of patient/family
  - 5th dis: younger child; + exposure hx
- Rash characteristics
  - Parvo: slapped cheek, lacy body rash; few sx
  - vs SLE: older pt; facial rash + systemic sx
- Hematologic parameters
  - Parvo: effects on RBC >> WBC, platelets; no retics
  - vs SLE: WBC >> RBC, platelets; w/ hemolysis - retics
- Arthritis manifestations
  - Parvo: migratory arthralgias younger; hand arthritis older pt
  - vs SLE: variable inflammatory, persistent polyarthritis
- Hepatitis
  - Parvo: common, transient; occasionally severe
  - vs SLE: occasionally seen
- Time course
  - Parvo: transient; resolves w/in 4-6 weeks in > 90%
  - vs SLE: indolent onset, worsening over 4-12 weeks

Case 3 - infant with facial rash
- 3 week old baby has facial rash x 2 wks
- Seems well otherwise
- No pregnancy or neonatal complications
- Labs:
  - WBC 3800, Hb 9.5
  - LFT nl; platelets 110,000
- Dx ??

Case 3 - infant with rash
- 3 wk old w/ facial, scalp rash
- Dx: neonatal lupus
  - 5-10% of mothers w/ SS-A, SS-B ab
  - 50% no hx SLE or Sjogren’s
  - 1/2 will go to definite dx in 10 yrs time
  - 10-20% recurrence risk with subsequent pregnancies

Case 3 - infant with rash
- Neonatal LE
  - Rash on face/trunk
  - Discoid or SCLE
    - w/ SS-A, SS-B w/ SCLE
  - Annular or blistering lesions
- Congenital HB
  - Serious; 3rd”->pacemaker
  - Hepatitis, serositis, cytopenia
  - Rash w/ phototherapy
- Known hi risk mother:
  - Check SS-A, SS-B
  - High risk OB
  - Fetal echo @ 16 wks gestation
  - 7 role for high dose steroids
Case 4- facial rash
- 11 yo w/ facial rash x 3 wks
- fever, fatigue x 2 wks
- trouble doing nl activities
  - soccer, karate class
  - going to school
- LABS:
  - CBC nl, ESR 10
  - ALT 90, AST 90
- DX ??

JDM – Labs, Course
- Clinical features:
  - Symmetrical proximal weakness
  - Rash in DM:
    - Heliotrope, facial edema
    - Gottron’s papules - violaceous
      - Hands, elbows, knees, extensor
  - Arthritis/arthralgia
  - Dysphagia, dysphonia
  - = medical urgency
- Labs:
  - CK, aldolase, LDH, ALT/AST > 99%
  - ANA in 50%; ESR nl in most

JDM - Complications
- No malignancy association
  - 7-15% adult myositis
- > 60% do well w/ long remissions
- calcinosis prominent
  - 30-50% if not treated aggressively in 4 mos of dx
- lipodystrophy - late feature
  - loss of SubQ fat
  - insulin resistance
  - Hyperlipidemia, HTN

Case 4- facial rash
- 11 yo w/ facial rash, trouble with ADLs
- DX: Juvenile Dermatomyositis
  - 20% onset in childhood
  - no malignancy association
  - 15% adult DM
  - muscle and skin features vary
    - muscle involvement alone = polymyositis

JDM - Criteria
- Inflammatory muscle disease:
  - weakness, ↑ muscle enzymes,
    - abnl EMG, MRI &/or muscle biopsy
- Classification
  - I Primary idiopathic PM
  - II Primary idiopathic DM
  - III PM (7%) or DM (15%) with malignancy
  - IV Childhood DM >>> PM
  - V PM or DM w/ another CTD
  - VI Miscellaneous types
    - inclusion body

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JDM - Treatment
- High dose steroids
  - 2-3 mg/kg/day to start
  - Early Rx w/ in 4 mos of onset prevents calcinosis
- anti-malarials
  - for skin
- Steroid sparing early in course
  - MTX
  - Cyclosporine
  - IVIG
  - ?Rituximab
Clues for the PCP

- **Diagnosis:**
  - Proximal weakness >> muscle pain
  - Heliotrope, periorbital edema may be very subtle
  - Gottron’s papules may mimic eczema or psoriasis
  - Cuticle overgrowth and cuticle redness/swelling are VERY suggestive of JDM

**Case 5 - hand rash**

- 8 yo with red hand rash x 2 months
- Minimal response to OTC steroids
- Feels fatigued, having trouble with some usual activities
- DX ??

**Case 6 - hand rash**

- 15 yo w/ red rash on hands x 2 mos
- Minimal response to OTC steroids
- Feels fatigued, achy
- No fever, swelling, or edema
- DX ??

**Clues for the PCP**

- **SLE hands**
  - red cuticles and rash BETWEEN knuckles
- **JDM hands**
  - cuticles
    - Red, overgrown
    - Rash ON knuckles
    - Gottron’s scaly pink papules
    - Classic capillary Δ
- **EITHER**
  - telangiectasias,
  - vasculitic lesions

**Case 5 - hand rash**

- Rash on knuckles

**Case 6 - hand rash**

- Rash between knuckles
  - Vasculitic rash on palms
Case 7 - hand rash

- 12 yo w/ red, scaly hand, toe rash x 9 mos
- some pain and stiffness in ankles, knees with a swollen knuckle x 1 month
- feels well otherwise
- LABS:
  - CBC nl, LFT nl; ESR 40
- DX ??

Diagnosis – Psoriatic arthritis

- 5 clinical subgroups
  - Groups may overlap
    - DIP arthritis w/ dactylitis
    - asymmetric oligoarthritis
    - RA-like distribution
      - RF negative
    - spondylitis
    - arthritis mutilans
      - Destructive, deforming
- extra-articular features:
  - Nails
    - Pits, "oil spots," onycholysis
  - uveitis
  - carditis rare
  - In spondylitis pts

Psoriatic arthritis

- Laboratory Findings
  - tests nl
  - ESR may be ↑
  - RF absent; ANA + in 30%
  - If RF + consider that RA and psoriasis can co-exist
  - HLA-B27 + in 50% of patients with spondylitis
    - 7-10% in others
    - = population norm

Psoriatic arthritis

- Outcome
  - Many do well
  - Degree of skin involvement ≠ arthritis or severity
  - Arthritis mutilans uncommon
    - Destructive, erosive
    - "pencil in cup deformity"
- Treatment
  - NSAIDs
  - MTX, SSZ
  - Anti-TNF agents
    - Skin and nails improve too

Clues for the PCP

- Mono or oligo arthritis may → psoriatic arthritis
- May take 10 yrs for skin lesions to appear after arthritis in kids
  - Adults usually psoriasis 1st
    - umbilicus, ears, gluteal fold
  - Family hx psoriasis suggests dx psoriatic arthritis even before rash
    - Consider: fungal vs psoriasis
    - Look for pits
Case 8 – body/extremity rash

- 9 yo with fluctuating rash on trunk, arms
- has had fevers for 3 weeks up to 103˚
  - rash worse when fever is highest
- no joint swelling
- Won’t walk in the am

LABS:
- WBC 18,000, Hb 9.5; ESR 95
- Platelets 600,000, LFT nl
- DX ??

Case 8 – body/extremity rash

- 9 yo with fluctuating rash w/ fevers, joint sx
- DX: Systemic Juvenile idiopathic arthritis
  - 20% of JIA pts
  - Epidemiology:
    - > 300,000 children in US
    - More common than childhood diabetes
    - incidence 5-15 per 100,000
    - prevalence 60-200 per 100,000
  - Criteria:
    - <16 y, arthritis >6 wks
    - other possible causes ruled out

Classification- Juvenile Arthritis

- Juvenile Idiopathic Arthritis
  - Oligoarticular
  - Polyarticular
    - RF+, RF-
  - Systemic
  - Juvenile psoriatic arthritis
  - Enthesopathy associated arthritis
    - Juvenile ankylosing spondylitis
  - Undifferentiated

JIA - Dermatologic Issues

- systemic JIA
  - “salmon colored evanescent rash”
  - Worse with fevers
    - Koebner’s phenomena
      - Rash after pressure/scratch
    - May: be pruritic, or coalesce

Systemic JIA – Clinical Features

- ≥ 1 joint, fever, rash (95%)
  - serositis (25-50%)
  - anemia, leukocytosis, thrombocytosis
  - hepatitis, coagulopathy
  - ANA + < 5%, RF -
  - 50% remit by 1 year

- Late risks:
  - joints often = poly
  - 25% poor articular outcome
  - worse prognosis:
    - age at onset < 4 y
    - active dia 6 mos after onset

JIA – Other Dermatologic Issues

- polyarticular JIA
  - subcutaneous nodules
    - < 10% of JIA pts
    - locations: olecranon, pressure areas, over knuckles
  - rheumatoid vasculitis
    - rare complication of RF + subgroup
    - digital infarcts, purpura, gangrene
Clues for the PCP

- For systemic JIA
  - Fever pattern w/ high evening spikes
  - Subnormal other times
  - R/o virus, malignancy
  - Monitor labs closely for coagulopathy, increased LFTs (MAS)
  - Avoid corticosteroids until dx certain or marrow assessed
  - Early referral to pediatric rheumatologist

Case 9 – body/extremity rash

- 2 yo has a rash with fevers x 10 days
- Hands and feet appear puffy
- Diaper area reddened
- Lips dry, cracked
- Labs:
  - WBC 18,000, Hb 9.5
  - ESR 95
  - Platelets 600,000, LFT nl
- DX ??

Case 9 - body rash

- 2 yo has a rash with fevers with mucosal changes
- Dx: Kawasaki Disease
  - 2nd most common childhood vasculitis
  - Usually < 7 yo, M > F
  - Atypical, more severe when pt < 6 mos old, M
  - More risk Asian descent

Diagnosis - KD

- Fever PLUS 4 out of 5 criteria.
  - Spiking fever for at least 5 days
  - 1. Bilateral conjunctival congestion
  - 2. Oropharyngeal involvement: Diffuse erythema, strawberry tongue, redness, lip change
  - 3. Polymorphous erythematous rash
  - 4. Cervical lymphadenopathy
  - 5. One or more of following signs: Indurative edema hands, feet
    Erythema of palms, soles
    Desquamation ~ 2 wks after onset
    Transverse grooves nails in 2 to 3 mos

Clues for the PCP - KD

- Diagnostic clues:
  - High index suspicion
  - Hi ESR, platelets climbing
  - Very irritable, even w/o fever
  - Sterile pyuria, rash on perineum
  - Echocardiogram early
    - Also check gall bladder for enlargement (hydrops)
- Rx
  - IVIG 2 g/kg
  - Consider repeating if still fever, irritability after 24-36 hrs
  - ASA - hi dose short term; anti-platelet - 81 mg - long term
  - For IVIG failures: repeat IVIG, IV pulse steroids, ? CTX

Case 10 - body/extremity rash

- 13 yo boy w/ knee, ankle pain x 5 days
- Now has small reddish purple spots on lower extremities.
- Labs:
  - CBC nl, coags, nl
  - ESR 15
  - LFT nl
- Dx ??
Vasculitis – HSP
- 13 yo boy w/ joint pain, LE purpura
- DX: Henoch Schonlein Purpura
  - Small vessel vasculitis
    - Path: LCV
    - IgA deposits
    - dermal, mesangial, GI lesions
  - Purpura from waist down
  - Arthritis/periarthritis
  - GI vasculitis, bleeding, volvulus
  - Glomerulonephritis – IgA nephropathy
  - Testicular swelling/vasculitis

Vasculitis: Clues for the PCP
- Systemic Illness with:
  - Rash, Fever
    - Small vessel = purpura
    - Medium vessel = organ problems
      - GI, brain, heart, nerves
      - renal artery = HTN
    - Large vessel = claudication
  - Labs - non-specific inflammation
    - Except ANCA
    - cANCA = Wegener’s in 90%
  - Biopsy = dx
  - Angiogram
    - medium or large vessel vasculitis
- Treatment
  - varies w/ dx, organ involvement
  - Steroids, CTX, MTX

Dermatologic Complications - Medications
- NSAIDs - commonly used drugs
  - allergic rash
    - serum sickness w/ fever, arthritis
  - urticaria, maculopapular rash
  - pseudoporphyria
    - naproxen, nabumetone; others less common
  - Fair complexion; blistering in sun exposed areas
    - small scars fade to freckling

Complications - Medication
- Anti-malarial agents
  - hydroxychloroquine, chloroquine
    - for SLE, dermatomyositis, JIA
  - Rare, worrisome toxicity:
    - retinal pigment deposits
      - Chloroquine > risk
    - myopathy
    - hyperpigmentation:
      - face, mucosa, nails
      - Adjust dose
      - Minimize sun

Complications - Medication
- Cyclosporine
  - used for systemic JIA, occ. Poly JIA, JDM
  - controls systemic JIA
  - Synergistic w/ MTX
  - most worrisome SE:
    - renal dysfunction
    - hyperkalemia
    - infections
    - hirsutism
    - gingival hypertrophy

Complications - Medication
- Corticosteroids
  - for JIA, SLE, JDM, others
  - Toxicity: dose, route related
    - low dose < 0.25 mg/kg/d or < 10 mg/d
    - hi dose > 1 mg/kg/d or > 40 mg/d = ↑ risk SE
      - weight, acne, striae, cataracts, HTN, DM
      - Hypopigmentation at site of steroid injections
      - Labs: AVN, osteoporosis
      - topical ophthalmic steroids
        - use 2-3 x a day
        - glaucoma, cataracts
Unknown Case
- 11 yo boy with rash on and off x 6 weeks
- Not itchy or tender
- Fevers to 102˚ nightly w/ arthralgias for past 4 wks
- About 5 # weight loss
- No CP, SOB, abdominal pain, joint swelling
- LABS ordered?
- DX ??

Unknown Case
- 8 yo girl w/ hand rash x 3 mos
- Minimal response to topical OTC steroids
- No other rash noted
  - did burn more easily during the summer (2 months ago)
- Slight ↓ activity level (not as fast when running)
- LABS ordered?
- DX ??

Summary
- Skin manifestations often clue to rheumatologic dx
- Subtle differences in distribution of rash, associated sx can give definitive dx
- Cutaneous complications of the illnesses and medication complications important part of disease monitoring
- PCP can work together w/ pediatric rheumatologist and dermatologist
- Optimize pt care and outcome

Any questions?