Telemedicine Pediatric Dermatology for the Allergist

Illinois Society for Allergy, Asthma & Immunology
Winter Meeting, 2024

Anthony J. Mancini, M.D., FAAP, FAAD
Professor of Pediatrics and Dermatology
Northwestern University Feinberg School of Medicine
Head, Pediatric Dermatology & Associate Fellowship Program Director
Ann & Robert H. Lurie Children's Hospital of Chicago
Chicago, IL

Ann & Robert H. Lurie Children's Hospital of Chicago

NORTHWESTERN UNIVERSITY

Disclosures

Advisory board/consultant: Verrica, Novartis, ParaPRO, Cassiopea, Castle Creek, Novan, Dermavant, Arcutis

Speaker's bureau: Sanofi Genzyme, Verrica

Background

The ask: review entities that might present to allergist via telemedicine

Keep in mind:
- Our telemedicine practice has been largely restored to live visits
- Only 25% of our faculty still utilize telemedicine with any regularity
- Many of these conditions are best diagnosed and manage via live visits

- Telemedicine in dermatology:
  - Not as useful or feasible as some initially thought (photos vs live video visit)
  - Less efficient, less accurate
  - Multiple barriers to implementation (technology literacy, accessibility)
  - But still plays a role for some practices/clinicians

Background (continued)

“Allergist-relevant” disorders

Focus:

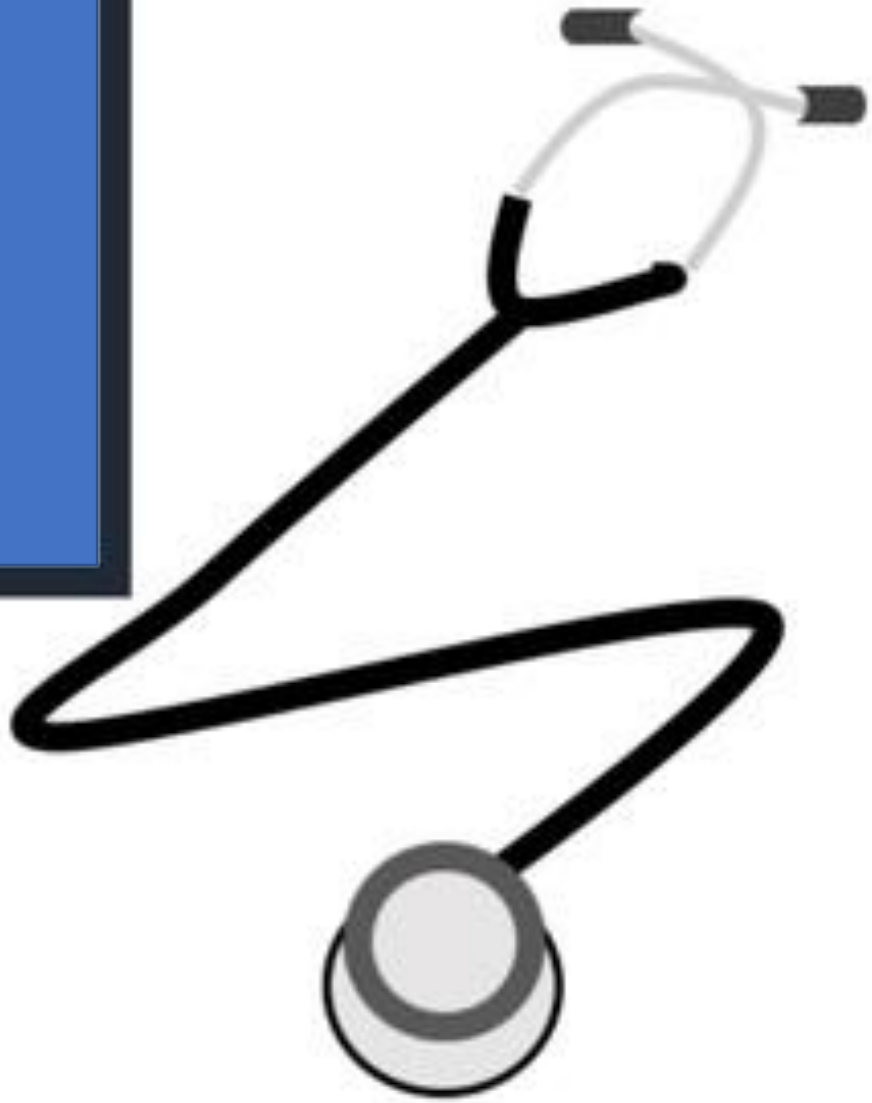
- Differential diagnosis
- Diagnostic mimickers
- Clinical pearls in diagnosis/management

All photos/videos:

- From the personal files of AJM (unless otherwise noted)

PATIENT 1

5 yo boy, “lifelong” atopic dermatitis
Sudden flare, marked pruritus/sleep disruption
Missed 8 days of Kindergarten thus far (early Fall)
Bathing twice weekly
Using triamcinolone 0.025% for body/extremities,
hydrocortisone 1% for face
Taking cetirizine qHS



In AD patient, always consider effects on the “4 S’s”: sleep, school, significant others (family), socialization

Burden of AD

Decreased sleep efficiency, daytime drowsiness, irritability
Increase in co-sleeping
School absence, impaired performance
Family discord
Parents: psychosocial stress, lower rates of employment, missed work days
Social isolation, poor self esteem, secondary gain
Mental health comorbidities: anxiety, depression, poor self-image, ADHD, behavioral/conduct problems

Stores G, et al. Pediatr Dermatol 1998;15:264-8; Chamlin SL, et al. Pediatrics 2004;114:607-11; Zuberbier T. J Allergy Clin Immunol 2006;118:226-32; Holm JG, et al. J Eur Acad Dermatol Venereol 2016;30:1760; Na CH, et al. Children (Basel) 2019;6(12):133; Simpson EL, et al. J Am Acad Dermatol 2016;74:491.

Why is our patient not getting better?

5 yo boy, “lifelong” atopic dermatitis

Sudden flare, marked pruritus/sleep disruption

Missed 8 days of Kindergarten thus far (early Fall)

Bathing twice weekly

Using triamcinolone 0.025% for body/extremities, hydrocortisone 1% for face

Taking cetirizine qHS

Infected! Needs antibiotic for MSSA

Key exacerbator; help restore sleep/wake cycles

Outdated approach; “wet method” far superior

Moderate-severe AD needs high-potency steroids

Using a TCI or TPDE4i a better choice here

Non-sedating agents not helpful; use sedating H1 blocker

Skin of color

Traditional & newer treatments for pediatric AD

- TCS
- TCI
- PDE4i
- JAKi

→ Topicals

- UVB phototherapy (≥12 yrs)

→ Phototherapy

- Immunosuppressants (AZA, CsA, MTX, MMF)

→ Systemic immunosuppressants

- IL-4 and IL-13 targeting
- JAK1 targeting

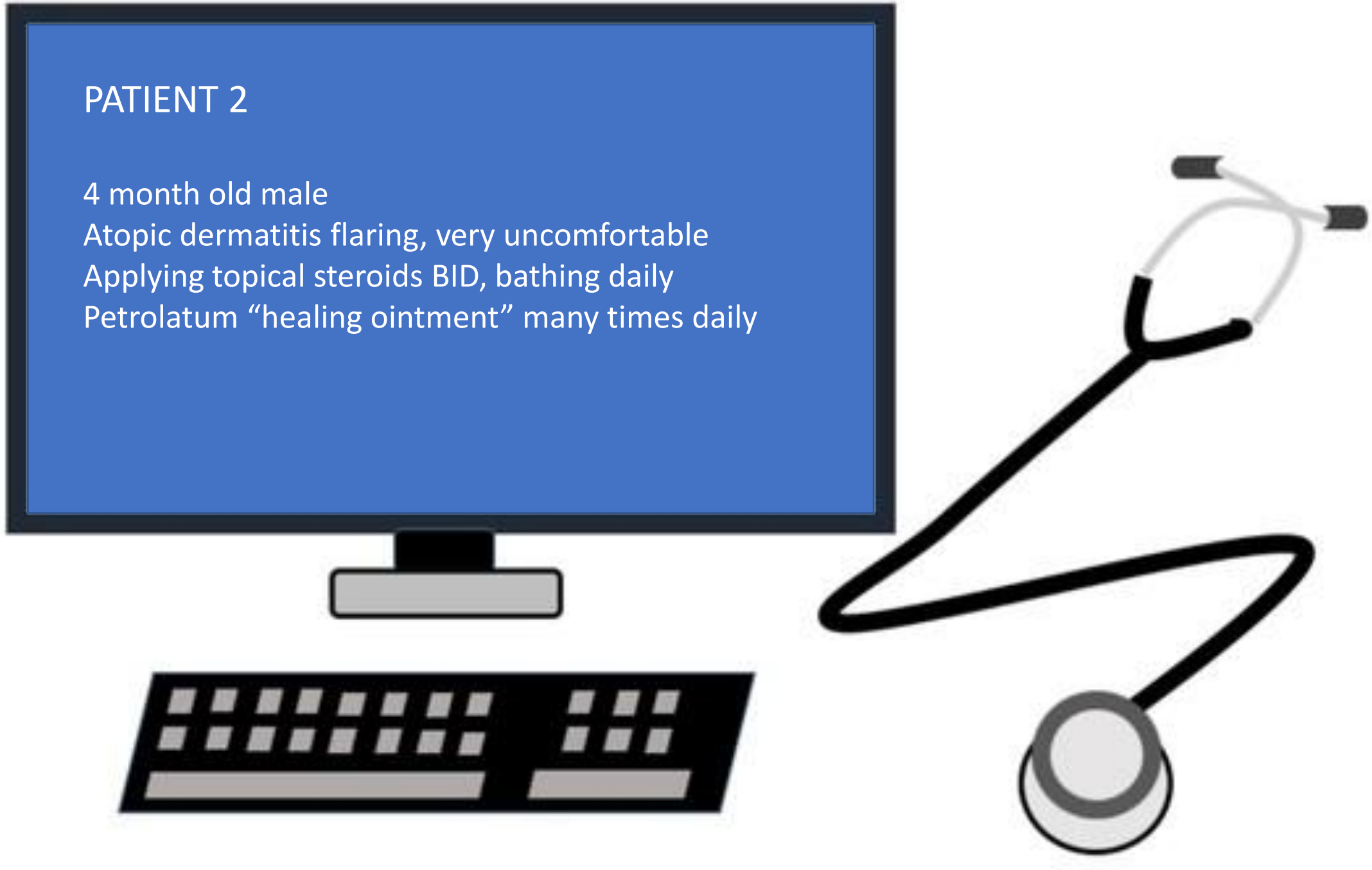
→ Injectable biologics & oral JAKi (small molecule targeted rxs)

TCS, topical corticosteroids; TCI, topical calcineurin inhibitors; PDE4i, PDE4 inhibitors; JAKi, JAK inhibitors
AZA, azathioprine; CsA, cyclosporin A; MTX, methotrexate; MMF, mycophenolate mofetil

***UPDATED AAAAI/ACAAI JTF Guidelines: Chu DK, et al. Ann Allergy Asthma Immunol 2023;Dec 18:S1081-1206(23)01455-2.** (updated rx recommendations)*
***AD Yardstick Update: Boguniewicz M, et al. Ann Allergy Asthma Immunol 2023;130:811-20.** (updates on IL4/13 targeting, topical/oral JAKi's)*

PATIENT 2

4 month old male
Atopic dermatitis flaring, very uncomfortable
Applying topical steroids BID, bathing daily
Petrolatum “healing ointment” many times daily



Why the “treatment failure”?

Because 90% of this is miliaria rubra (prickly heat)
Often misdiagnosed (both parents and PCP colleagues)
Continue flaring → increased emolliation, which perpetuates cycle!
Key question: how often are you applying Aquaphor?

Keys:
Use creams as emollients, especially in humid, warm climates
ONCE daily emolliation only
Avoid overdressing/swaddling (grandma/bedtime)
“Let the skin breathe”

PATIENT 3

15 yo male
Severe atopic dermatitis
On dupilumab for 8 months
AD improved overall; new facial rash while on therapy
Itchy, uncomfortable

How are you going to treat this?

Etiology?
Do we need to stop dupilumab?

Dupilumab facial redness (DFR)
Dupilumab-associated head and neck dermatitis (DAHND)
Residual facial dermatitis on dupilumab (RFDD)

Bottom line: increasing reports of facial/neck erythema attributed to dupilumab use.

Dupilumab facial redness (DFR)

Face and neck primarily; not reported in clinical trials; erythema, scaling, burning, pruritus

Multicenter prospective study:

- 137/162 (84.6%) reported FR *prior* to rx
- 121/these 137: FR got better with dupilumab; 9 (6.6%) no change; 7 (5.1%) worse
- 6/25 (24%) without preceding FR *developed* DFR after starting dupilumab
- In exacerbation group: 71.4% diagnosed as steroid withdrawal
- In new-onset group: 50% called steroid withdrawal; also “new onset dermatitis” and ACD

Steroid withdrawal: burning; confluent erythema; history of prolonged TCS use

Other reported etiologies: seborrheic dermatitis/*Malassezia* reactivity; ACD (some with + patch testing); rosacea-like dermatitis (unopposed Th1/Th17/Demodex?)

Ahn J, et al. J Eur Acad Dermatol Venereol 2022;36:2140

Dupilumab facial redness (DFR)

Other observations from the literature:

24/192 (12%) in single center retrospective study developed DFR
11 of 101 (11%) patients from literature search: discontinued dupilumab due to this AE

No association with dupilumab dosage/dosing frequency
Seems more common in post-pubertal (vs pre-pubertal) children; supports Th17-predom hypersensitivity to *Malassezia*?

Most commonly used treatments: TCS, TCIs, topical/oral antifungals (ketoconazole cream, PO fluconazole, PO itraconazole)
Transition to oral JAKi (upadacitinib) led to rapid resolution in one series

McKenzie PL, et al. Pediatr Dermatol 2021;38:1178; Jo CE, et al. J Am Acad Dermatol 2021;84:1339; Muzamdar S, et al. J Am Acad Dermatol 2020;83(5):1520; Kozera E, et al. J Am Acad Dermatol 2023;88(1):255; Waldman RA, et al. J Am Acad Dermatol 2020;82(1):230.

Dupilumab facial redness (DFR)

How is the patient doing?

- Treated with ketoconazole 2% cream and/or tacrolimus 0.1% ointment
  - BID when flaring

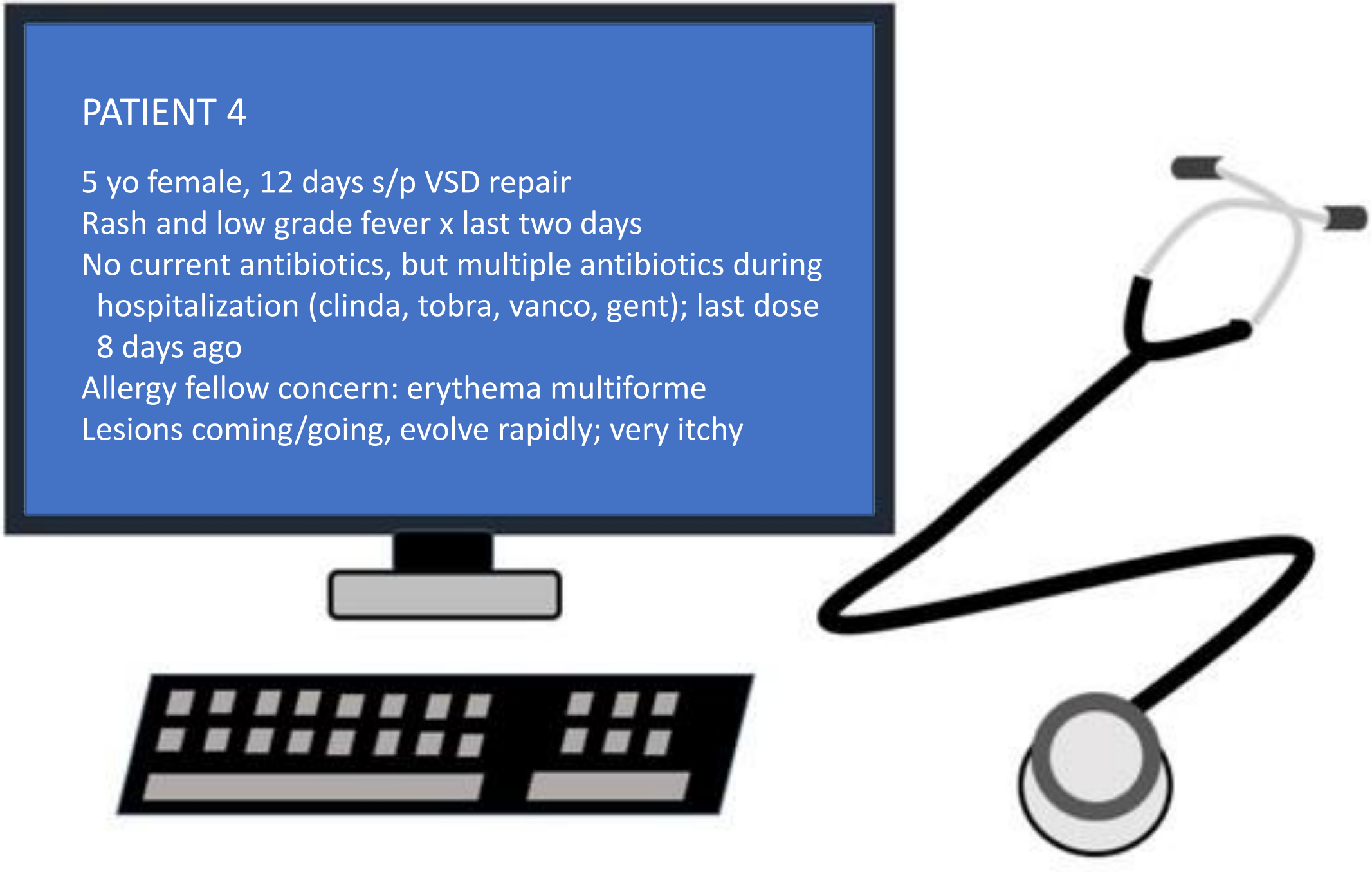
He decides on regimen based on response

This has kept him very well-controlled

Continues dupilumab, very happy with overall response

PATIENT 4

5 yo female, 12 days s/p VSD repair
Rash and low grade fever x last two days
No current antibiotics, but multiple antibiotics during hospitalization (clinda, tobra, vanco, gent); last dose 8 days ago
Allergy fellow concern: erythema multiforme
Lesions coming/going, evolve rapidly; very itchy



Urticaria multiforme

Formerly called “acute annular urticaria”; may be IgE-dependent (unclear)
Most commonly: 4 months – 4 years of age
Associated symptoms: fever (short duration, 1-3 days), w/without URI/GI symptoms
Self-limited, resolves by 8-10 days

Urticarial papules/plaques, often with dusky/ecchymotic centers
Leads to misdiagnosis of ERYTHEMA MULTIFORME (EM)

Can also have associated acral edema
Leads to misdiagnosis of SERUM SICKNESS-LIKE REACTION (SSLR)

Shah KN, et al. Pediatrics 2007;119(5):e1177.

Urticaria multiforme

Shah KN, et al. Pediatrics 2007;119(5):e1177; Mathur AN, et al. Dermatol Ther 2013;26:467.

Diagnostic criteria for UM

Typical annular and polycyclic morphology and configuration to urticarial lesions
Transient, ecchymotic skin changes may be present
Absence of true target lesions and/or skin necrosis or blistering
Absence of mucous membrane involvement with blisters or erosions
Duration of individual lesions of <24 h
Dermatographism
Angioedema but not arthralgias or arthritis
Angioedema typically involves the hands and/or feet but may also involve the periocular or oral mucosa; children with significant edema of the feet may find walking difficult, which should not be confused with arthritis or arthralgias
Favorable response to antihistamines
May require combination therapy with a long-acting antihistamine such as cetirizine in conjunction with a short-acting agent such as diphenhydramine or cetirizine in conjunction with ranitidine
Modest but not-significant elevations in acute-phase reactants may be present
White blood cell count, erythrocyte sedimentation rate, or C-reactive protein level may be mildly elevated but does not demonstrate the elevations typically seen in patients with rheumatologic disorders, serious systemic infections, or Kawasaki disease

Shah KN, et al. Pediatrics 2007;119(5):e1177.

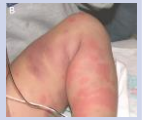
Distinguishing UM from EM and SSLR

UM:
Like urticaria, *evanescent*
Expands to form annular, arcuate, polycyclic wheals
Centrally, may be clear or dusky/ecchymotic
Rapidly responds to antihistamines (H_1/H_2) or systemic steroids
Angioedema (face, hands, feet) in up to ¾; pruritus nearly universal
Most patients with preceding viral symptoms

EM: fixed lesions (days-weeks); no dermographism; no angioedema; classic target lesions, ± vesicles/bullae; palms/soles very common

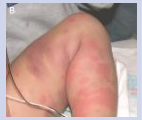
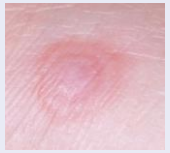
SSLR: fixed lesions (days-weeks); no dermographism; classic presentation with fever, arthralgias, lymphadenopathy, "purple urticaria" and angioedema; typically medication-related

UM vs EM vs SSLR

	Skin appearance/ duration	Distribution	Mucous membranes?	Facial/acral edema	Fever	Other symptoms/ findings	Common triggers	Treatment
Urticaria multiforme (UM) 	Annular, poly-cyclic wheals; centers may be dusky; NO true targets	Face, trunk, extremities	None	Common	Occasional, low-grade	Pruritus; may have URI or GI symptoms Lesions are *transient*	Viral illness, antibiotics, vaccinations	Medication discontinuation (if relevant); H1 and H2 blockers; systemic steroids if severe/recalcitrant

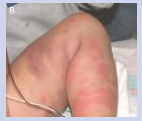
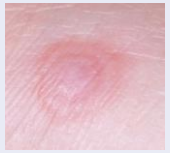
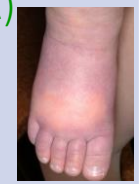
LAD, lymphadenopathy; *NSAIDs*, non-steroidal anti-inflammatory drugs

UM vs EM vs SSLR

	Skin appearance/ duration	Distribution	Mucous membranes?	Facial/acral edema	Fever	Other symptoms/ findings	Common triggers	Treatment
Urticaria multiforme (UM) 	Annular, poly-cyclic wheals; centers may be dusky; NO true targets	Face, trunk, extremities	None	Common	Occasional, low-grade	Pruritus; may have URI or GI symptoms Lesions are *transient*	Viral illness, antibiotics, vaccinations	Medication discontinuation (if relevant); H1 and H2 blockers; systemic steroids if severe/recalcitrant
Erythema multiforme (EM) 	CLASSIC target lesions (dusky center or blister, middle ring of pallor, peripheral erythema)	Palms & soles mostly; extremities > trunk	Can have oral erosions, blisters (lips, buccal mucosa, tongue); rarely conjunctivae, nasal, genital	None	Rare	Mild pruritus or burning Lesions are *fixed*	*Herpes simplex* virus, other viral agents, Mycoplasma	Supportive care; oral antiviral agents (HSV) may help to prevent recurrent EM

LAD, lymphadenopathy; *NSAIDs*, non-steroidal anti-inflammatory drugs

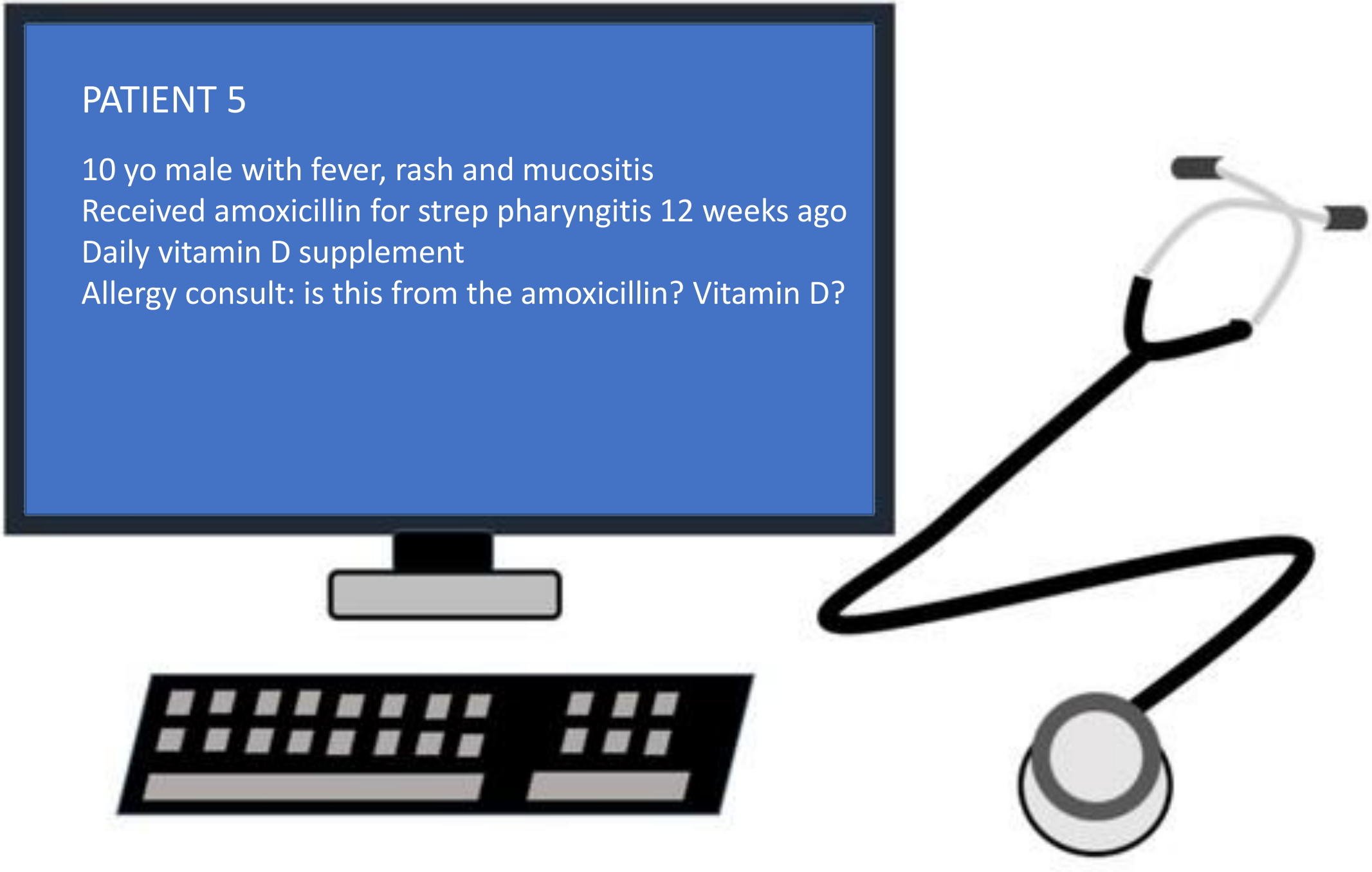
UM vs EM vs SSLR

	Skin appearance/ duration	Distribution	Mucous membranes?	Facial/acral edema	Fever	Other symptoms/ findings	Common triggers	Treatment
Urticaria multiforme (UM) 	Annular, poly-cyclic wheals; centers may be dusky; NO true targets	Face, trunk, extremities	None	Common	Occasional, low-grade	Pruritus; may have URI or GI symptoms Lesions are *transient*	Viral illness, antibiotics, vaccinations	Medication discontinuation (if relevant); H1 and H2 blockers; systemic steroids if severe/recalcitrant
Erythema multiforme (EM) 	CLASSIC target lesions (dusky center or blister, middle ring of pallor, peripheral erythema)	Palms & soles mostly; extremities > trunk	Can have oral erosions, blisters (lips, buccal mucosa, tongue); rarely conjunctivae, nasal, genital	None	Rare	Mild pruritus or burning Lesions are *fixed*	*Herpes simplex* virus, other viral agents, Mycoplasma	Supportive care; oral antiviral agents (HSV) may help to prevent recurrent EM
Serum sickness-like reaction (SSLR) 	Polycyclic wheals; "purple urticaria"; NO true targets	Face, trunk, extremities	None	Common	Very common, high-grade	Arthralgias (may impact gait), myalgias, LAD Lesions are *fixed*	Antibiotics	Medication discontinuation (if relevant); H1 and H2 blockers; NSAIDs; systemic steroids if severe/persistent, high fevers

LAD, lymphadenopathy; *NSAIDs*, non-steroidal anti-inflammatory drugs

PATIENT 5

10 yo male with fever, rash and mucositis
Received amoxicillin for strep pharyngitis 12 weeks ago
Daily vitamin D supplement
Allergy consult: is this from the amoxicillin? Vitamin D?



Mycoplasma/MIRM, SJS and RIME

Atypical bacterium

Drugs

Viruses

SJS, Stevens Johnson syndrome
MIRM, *Mycoplasma pneumoniae*-induced rash and mucositis
RIME, reactive infectious mucocutaneous eruption

MIRM

Mycoplasma IgM+

Improved with:

- Wound care
- Ocular support
- Fluids/gradual dietary advancement
- Mucosal wet compresses/barriers
- Pain control
- Azithromycin

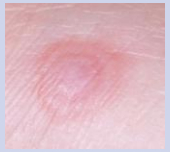
13 yo male; one week
Lamotrigine for seizures
Diagnosis: SJS
Supportive care
Full recovery

7 yo, fever/rash/mucositis
Testing: (+) Adenovirus, (-) Mycoplasma IgM
Diagnosis: RIME/SJS overlap

Not improved with supportive care alone (3 days)
IVIG x 2 days
Prednisolone with gradual taper over 4 weeks
Full recovery

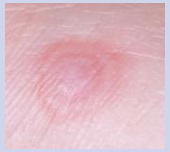
SJS vs MIRM vs RIME

All are febrile, blistering SCARs (severe cutaneous adverse reaction)

	Skin involvement	Mucosal involvement	Causes	Part of SJS/TEN spectrum?	Treatment
Stevens Johnson syndrome (SJS) 	Yes (up to 10% BSA) Dusky, bullous **True targets** 	2 or more sites Oral most common; also eyes, nose, genitals, rectum	Drugs >> infections (*Mycoplasma, HSV*) Drugs: aromatic anticonvulsants, allopurinol, tramadol, sertraline, sulfonamides, NSAIDs	Yes	DRUG WITHDRAWAL; supportive care, steroids, IVIG, TNFa agents, cyclosporine (amniotic membrane transplant) *Recurrence rare (but possible)

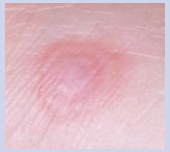
SJS vs MIRM vs RIME

All are febrile, blistering SCARs (severe cutaneous adverse reaction)

	Skin involvement	Mucosal involvement	Causes	Part of SJS/TEN spectrum?	Treatment
Stevens Johnson syndrome (SJS) 	Yes (up to 10% BSA) Dusky, bullous **True targets** 	2 or more sites Oral most common; also eyes, nose, genitals, rectum	Drugs >> infections (*Mycoplasma, HSV*) Drugs: aromatic anticonvulsants, allopurinol, tramadol, sertraline, sulfonamides, NSAIDs	Yes	DRUG WITHDRAWAL; supportive care, steroids, IVIG, TNFa agents, cyclosporine (amniotic membrane transplant) *Recurrence rare (but possible)
Mycoplasma pneumoniae-induced rash and mucositis (MIRM)	Usually <u>minimal</u>; no targets Known in past as: "Mucosal-predom. SJS"	Oral >> ocular, genital, others	*Mycoplasma pneumoniae* **PA(Pan-American)HO/WHO. Briefing note: *M pneumoniae* respiratory infections;Dec 20, 2023** – increase in Mycoplasma pneumonia (China, Denmark, France, Ireland, Netherlands, Norway, Sweden). ****News reports** – Ohio outbreaks in December 2023.	No	Supportive care, *macrolide antibiotics*, steroids, IVIG, TNFa agents, cyclosporine (amniotic membrane transplant) *Recurrence: 10-40% (more mild?)

SJS vs MIRM vs RIME

All are febrile, blistering SCARs (severe cutaneous adverse reaction)

	Skin involvement	Mucosal involvement	Causes	Part of SJS/TEN spectrum?	Treatment
Stevens Johnson syndrome (SJS) 	Yes (up to 10% BSA) Dusky, bullous **True targets** 	2 or more sites Oral most common; also eyes, nose, genitals, rectum	Drugs >> infections (*Mycoplasma, HSV*) Drugs: aromatic anticonvulsants, allopurinol, tramadol, sertraline, sulfonamides, NSAIDs	Yes	DRUG WITHDRAWAL; supportive care, steroids, IVIG, TNFa agents, cyclosporine (amniotic membrane transplant) *Recurrence rare (but possible)
Mycoplasma pneumoniae-induced rash and mucositis (MIRM)	Usually <u>minimal</u>; no targets Known in past as: "Mucosal-predom. SJS"	Oral >> ocular, genital, others	*Mycoplasma pneumoniae* **PA(Pan-American)HO/WHO. Briefing note: *M pneumoniae* respiratory infections;Dec 20, 2023 – increase in Mycoplasma pneumonia (China, Denmark, France, Ireland, Netherlands, Norway, Sweden). **News reports – Ohio outbreaks in December 2023.	No	Supportive care, *macrolide antibiotics*, steroids, IVIG, TNFa agents, cyclosporine (amniotic membrane transplant) *Recurrence: 10-40% (more mild?)
Reactive infectious mucocutaneous eruption (RIME)	Usually minimal; no targets	Oral most common, but often multifocal	*C pneumoniae,* influenza, para-inf, enterovirus, human metapneumovirus, SARS CoV-2	No	Supportive care, *macrolide antibiotics* (if *C. pneumoniae*), steroids, IVIG, TNFa agents, cyclosporine (amniotic membrane transplant) *Recurrence reported

Thanks!

References (UM, EM, SSLR, SSJS, MIRM, RIME):

Mathur AN, et al. Dermatol Ther 2013;26:467.
Jones DM, et al. J Pediatr 2023;257:2.
Shah KN, et al. Pediatrics 2007;119(5):e1177.
Ramien ML. Clin Exp Dermatol 2021;46:420.
Miller MM, et al. JAMA Dermatol 2021;157(2):230.
Ramien ML. Curr Opin Pediatr 2022;34:341.
Liakos W, et al. Pediatr Dermatol 2021;38:154.