

The Grenz Zone Podcast

Quiz Time! Season 1

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Episode 1- Intro/Anatomy of skin, hair, and nails



THE GRENZ ZONE™
DISSECTING DERMATOLOGY
DIFFERENTLY

1. What type of keratins are found in stratum spinosum?
 - a. Types 1 and 10
 - b. types 5 and 14
 - c. Types 7 and 11
 - d. types 9 and 11.

2. Melanocytes synthesize and secrete pigment granules called mmelanosomes. What causes the different skin types and races?
 - a. Darker pigmented races/skin types have more melanocytes.
 - b. Lighter skin types have more trans-melanin.
 - c. Darker skin types have more eumelanin.
 - d. Darker skin types have more pheomelanin.
 - e. Lighter skin types have more eumelanin.

3. What answer best explains why botulinum toxin injections are effective in treating hyperhidrosis?
 - a. Botulinum toxin has direct parasympathetic effects at the nerve plate impacting activity of apocrine glands.
 - b. Botulinum toxin impacts sympathetic nerves by blocking acetylcholine transmission and thus decreases eccrine gland activity.
 - c. Botulinum toxin inhibits inhibitory neurotransmitter and thus activates the pilosebaceous unit.
 - d. Botulinum toxin paralyzes the arrector pili muscle thus decreasing palmar/plantar sweat production.

4. A 28-year-old female medical student presents to your clinic with the complaint of hair loss. “My hair is coming out in clumps”. On examination you notice generalized mild thinning of the hair without focal areas of hair loss. Four months ago she took her Step1/Level1 medical boards. What is the most likely cause of her hair loss?
- a. Alopecia areata
 - b. Alopecia universalis
 - c. Telogen effluvium
 - d. Androgenic alopecia
 - e. Anagen effluvium

Explanations

1. **Answer a.** The stratum spinosum is superficial to the stratum basale and deep to the stratum granulosum. It is named for spiny appearing desmosomes between cells. Keratins 1 and 10 are expressed in this layer. Remember that these keratins are mutated in epidermolytic hyperkeratosis (aka bullous congenital ichthyosiform erythroderma). A helpful mnemonic to remember the layers of the epidermis is “**C**alifornians **L**ike **G**irls in **S**tring **B**ikinis” for the stratum **c**orneum, stratum **l**ucidum, stratum **g**ranulosum, stratum **s**pinosum, stratum **b**asale. Remember, the stratum lucidum is only present on the palms/soles and appears clear (lucid) on H&E.
2. **Answer c.** Melanocytes derive from neural crest cells and are normally present in a ratio of 1 melanocyte for every 10 keratinocytes. Different races and skin types actually have the same number of **melanoCYTES** but differ in the number, size, type, and distribution of **melanoSOMES**, with fairer skin types having more lighter-colored **pheomelanin** and darker skin types having more of the dark **eumelanin**.
3. **Answer b.** Eccrine glands have sympathetic muscarinic receptors. Botulinum toxin binds acetylcholine released from sympathetic nerves, which act on our eccrine sweat glands. Remember Apocrine glands produce oils and are located in the “4-A’s”- the axilla, the areola, the anogenital region, and the auditory canal, where they contribute to cerumen (earwax) formation.
4. **Answer c.** Telogen effluvium is early cessation of anagen phase so that >20% of hairs are in telogen phase. This occurs approximately 3-5 months after a trigger such as an

emotionally stressful event, severe illness, or pregnancy (prolonged anagen phase until delivery). Alopecia areata is **non-scarring** immune mediated hair loss that involves hair loss in discrete patches. Alopecia Universalis is similar to alopecia areata but involves all body hair. Androgenic alopecia is a non-scarring alopecia involving the frontal and vertex regions of the scalp. Anagen effluvium is cessation of active growth phase and loss most commonly due to chemotherapeutic agents.

Episode 2- The Dermatology Exam

1. Vertical pressure on bullae causing lateral spread of the bullae is known as?
 - a. KOLB sign
 - b. Absoe-Hansen sign
 - c. Nikolsky sign
 - d. Chadwick sign
 - e. Grey Turner's sign

2. Which of the following is **NOT** a vascular skin lesion?
 - a. Telangiectasias
 - b. Petechiae
 - c. Purpura
 - d. Ecchymosis
 - e. Ephelids

3. What mnemonic is used to describe rashes (adopted from Derm Notes: Dermatology Clinical Pocket Guide by Anatoli Freiman and Benjamin Barankin)?
 - a. SICK LAB
 - b. LES T CABS
 - c. OPQRST
 - d. MY HIPP
 - e. THANG

Explanations

1. **Answer b.** Absoe-Hansen sign. KOLB sign (Keratoderma blenorrhagicum, Onychogryphosis, and Linear Balanitis is a made-up syndrome described by Dr. Kolb's

coresidents who think they are funny). Nikolsky sign is lateral pressure on **unblistered** skin causing shearing of the epidermis. Chadwick sign is a purplish discoloration of the cervix and vagina that occurs with pregnancy. Grey Turner's sign is flank ecchymosis from retroperitoneal bleeding due to pancreatic necrosis and hemorrhage.

2. **Answer e.** Google these lesions for images.
 - a. Telangiectasias-small, discrete bv's blanch with pressure
 - b. Petechiae-**nonblanching** red brown macules <5mm
 - c. Purpura-**nonblanching**, >5mm. If palpable, think about inflammation of the lesions as edema is what makes them palpable.
 - d. Ecchymosis, i.e a bruise. a
 - e. Ephelids ie. a freckle is not a vascular lesion.

3. **Answer b.**
 - a. **SICK LAB**- Mnemonic for Psoriasis triggers. **S**tress/Smoking, **I**nfection (Group A Strep/URI, hypo**C**alcemia, **K**oebnerization, **L**ithium, **A**ntimalarials/**ACE**/**A**lcohol, **B**etablockers (and others such as CCB's, NSAIDS, and paradoxically the TNF-alpha inhibitors)
 - b. **LES T CABS**-**L**ocation, **E**rythema, **S**urface (smooth, rough, warty, crusted, scaly), **T**ype of lesion (patch, papule, etc), **C**olor, **A**rrangement (grouped, generalized, unilateral, linear), **B**order/shape (well circumcised vs poorly defined, circular, oval, polycyclic), **S**pecial sites (mouth, genitalia, nails, hair)
 - c. **OPQRST**-HPI of rash/lesion-**O**nset, **P**revious episodes/**P**rogression of disease since onset/**P**alliating factors/**P**rovoking factors, **Q**uality of symptoms (itching, burning), **R**adiation of symptoms, **S**everity of symptoms, treatments tried.
 - d. **MY HIPP**- Mnemonic for drug induced Systemic Lupus Erythematosus (SLE)-**M**inocycline, **H**ydralazine, **I**soniazid, **P**rocaïnamide, **P**enicillamine. (see episode 11)
 - e. **THANG**-Mnemonic for drug induced Subacute Cutaneous Lupus Erythematosus (SCLE). **T**erbinafine, **H**CTZ, **A**CE-I, **N**SAIDS, **G**riseofulvin (see episode 11)

Episode 3- Intro to Reaction Patterns with Dr. Gropper

1. Which reaction pattern does psoriasis belong to?
 - a. Papulosquamous
 - b. Eczematous
 - c. Vascular
 - d. Dermal Disorders
 - e. Vesiculobullous

Explanation:

1. Answer a.

Episode 4- Psoriasis

1. Which medication class used to treat psoriasis can paradoxically trigger psoriasis?
 - a. Methotrexate
 - b. Topical corticosteroids
 - c. Hydroxychloroquine
 - d. TNF alpha inhibitors
 - e. ACE inhibitors

2. Which of the following is a trigger for guttate psoriasis?
 - a. Hepatitis C
 - b. Alcohol
 - c. Cigarette smoking
 - d. Group A Strep
 - e. Hyponatremia

3. Which of the five types of psoriasis is most associated with HLA-B27
 - a. Oligoarthritis with swelling and tenosynovitis of the hands
 - b. Rheumatoid arthritis-like
 - c. Arthritis mutilans-rarest and most severe
 - d. Asymmetric DIP with nail damage
 - e. Ankylosing Spondylitis

4. A biopsy is performed on a psoriatic plaque, which layer of the epidermis is most likely decreased or absent?
 - a. Stratum corneum
 - b. Stratum lucidum
 - c. Stratum granulosum
 - d. Stratum spinosum
 - e. Stratum basale

5. Which of the following psoriasis treatments can cause hyperbilirubinemia, hyperuricemia (gout), hyperlipidemia, hyperkalemia?
- Acitretin (Soriatane)
 - Apremilast (Otezla)
 - Cyclosporine
 - Methotrexate
 - Calcipotriene

Explanations

- Answer d.** TNF- α inhibitors are used to treat psoriasis but can also trigger psoriasis in rare cases. Topical steroids are indicated to treat psoriasis, however systemic corticosteroids can exacerbate psoriasis (Von Zumbusch-generalized, rapid onset of psoriasis associated with systemic steroid withdrawal). The remainder of medications listed are not known to be both a treatment and trigger for psoriasis.
- Answer d.** Guttate psoriasis has raindrop-shaped papules/plaques in younger patients 2-3 weeks following a Strep infection or URI. Although alcohol and smoking can be triggers for psoriasis, they do not classically cause guttate psoriasis. Hypocalcemia can trigger psoriasis, not hyponatremia.
- Answer e.**
- Answer c.** The characteristic histologic findings include; confluent parakeratosis, Munro's microabscesses "neuts in the horn", decreased or absent granular layer, regular acanthosis with thinning over the dermal papilla, which contains dilated capillaries.
- Answer c.** Cyclosporine. Remember "BULK-up"- BhyperBilirubinemia, UhyperUricemia (gout), hyperLipidemia, ("up" to remember elevated levels of each of these)hyperKalemia ("up" to remember elevated levels of each of these). Cyclosporine can also cause hypertension, nephrotoxicity, gingival hyperplasia, hypertrichosis, hypomagnesemia, headache, and vertigo.

Episode 5 Psoriasis (Part II)

- Which cytokine released by Th17 cells is most directly involved with psoriasis pathogenesis?
 - IL-10
 - IL-17
 - IL-5
 - IL-24

- e. TGF-B
2. IL-17 and IL-22 are proinflammatory. What impact does this have on the epidermis?
 - a. Keratinocyte proliferation
 - b. Thinning of stratum basale
 - c. Apoptosis of fibroblasts in the dermis
 - d. Maturation and denucleation of keratinocytes in stratum corneum
 - e. Thickening of stratum granulosum
 3. What is calcipotriene's mechanism of action?
 - a. Blocks p40 subunit common to IL-12 and IL-23
 - b. Decreases pro-inflammatory cytokines such as TNF-a and increase IL-10
 - c. Inhibits dihydrofolate reductase thus inhibiting purine synthesis in S phase.
 - d. Inhibits phosphodiesterase type 4 (PDE4), leading to increase in cAMP levels which inhibit TNF-a, IL-17, and IL-23.
 - e. Vitamin D analog, decreased keratinocyte proliferation. Blocks IL-2, IL-6, and IFN-gamma.
 4. What are advantages of IL-17 inhibitors when compared to TNF-a inhibitors?
 - a. Work quickly
 - b. No increased risk for CHF
 - c. Do not cause Guillain-Barre syndrome
 - d. Do not cause lymphoma
 - e. All of the above

Explanations:

1. **Answer b.** Th17 cells are stimulated by IL-12 and IL-23 and themselves release IL-17, IL-22. Ustekinumab (Stelara) blocks the p40 subunit common to IL-12 and IL-23 and thus inhibits Th17 cell activation.
2. **Answer a.**
3. **Answer e.** Vitamin D analog, decreased keratinocyte proliferation. Ustekinumab (Stelara) Blocks IL-2, IL-6, and INF-gamma Blocks p40 subunit common to IL-12 and IL-23. Topical corticosteroids decreases pro-inflammatory cytokines such as TNF-a and increase IL-10. Methotrexate inhibits dihydrofolate reductase thus inhibiting purine synthesis in S phase. Apremilast (Otezlla) inhibits phosphodiesterase type 4 (PDE4), leading to increase in cAMP levels which inhibit TNF-a, IL-17, and IL-23.
4. **Answer e.**

Episode 6 Seborrheic Dermatitis

1. Patients with seborrheic dermatitis tend to have low sebum levels of which of the following
 - a. Triglycerides
 - b. Cholesterol
 - c. Free fatty acids
 - d. LDL
 - e. HDL
2. In addition to seborrheic dermatitis, what other conditions does *Malassezia furfur* cause?
 - a. Pityriasis rosea
 - b. Pityriasis rubrum
 - c. Tinea versicolor
 - d. Chronic contact dermatitis
 - e. Tinea faciei
3. What disorder below is associated with severe seborrheic dermatitis?
 - a. HIV/AIDS
 - b. Parkinson's disease
 - c. Epilepsy
 - d. Cerebral vascular accidents
 - e. All of the above
4. What would biopsy of seborrheic dermatitis show?
 - a. Confluent parakeratosis, Munro's abscesses, regular acanthosis with thinning over the dermal papilla, which contains dilated capillaries.
 - b. Regular acanthosis (regular rete ridge depth and thickened epidermis), spongiosis, shoulder parakeratosis.
 - c. Band-like distribution of atypical lymphocytes at dermal epidermal junction.
 - d. Parakeratosis with mild acanthosis and spongiosis. Mild lymphocytic infiltrate at the dermal epidermal junction with predominance of CD4+ T-cells (CD4+ may have T-cell clonality)

Explanations:

1. **Answer c:** Those impacted with seborrheic dermatitis have **higher** levels of triglycerides and cholesterol with **lower** levels of fatty acids in their sebum. Free fatty acids are antimicrobial to the *Malassezia* species. *P. acnes* converts

- triglycerides to free fatty acids. Thus, those with SD tend to have lower skin populations of *P. acnes* (inverse relationship).
2. **Answer c:** *Malassezia Furfur (Pityrosporum ovale)* is also implicated in tinea versicolor, neonatal acne, pityrosporum folliculitis.
 3. **Answer e.** Severe or refractory seborrheic dermatitis is associated with neurologic disorders such as parkinson's disease and epilepsy as well as HIV/AIDS. Strongly consider further history gathering to include sexual and IV drug histories in these patients. In those with established HIV, seborrheic dermatitis typically improves with anti-retroviral medications and decreasing viral loads.
 4. **Answer b.** Answer a is psoriasis. Answer c is mycosis fungoides. Answer d is parapsoriasis.

Episode 7- Mycosis Fungoides

1. What condition should you consider on your differential when you see psoriasis in sun protected areas?
 - a. Inverse psoriasis
 - b. Extramammary paget's
 - c. Secondary syphilis
 - d. Mycosis fungoides
 - e. Fixed drug eruption
2. What ratio increases as mycosis fungoides progresses?
 - a. CD4:CD8
 - b. CD15:CD30
 - c. CD3:CD4
 - d. IL17:IL22
3. On histology, what is the term for atypical lymphocytes that appear in clusters in the epidermis?
 - a. Munro's microabscess
 - b. Pautrier's microabscess
 - c. Spongiform pustules of Kogoj
 - d. Papillary microabscess

Explanations:

1. **Answer d.**

2. **Answer a.** Normal 1:1 in other inflammatory disease. <4:1 is consistent with less progression and longer survival. >10:1 means a poorer prognosis (seen in Sezary Syndrome)
3. **Answer b.** Pautrier's microabscesses are characteristic of mycosis fungoides. Munro's microabscess are polymorphonuclear leukocytes (neutrophils) found in the stratum corneum (present in Psoriasis), spongiform pustules of Kogoj are epidermal pustules formed by infiltration of neutrophils into necrotic epidermis in pustular psoriasis. Papillary microabscess is seen in pemphigus vulgaris

Episode 8- Parapsoriasis/Pityriasis Rubra Pilaris

1. What clinical feature of parapsoriasis may help to distinguish it from mycosis fungoides?
 - a. Age of onset is earlier with mycosis Fungoides
 - b. The lesions of parapsoriasis typically lack induration
 - c. The lesions of parapsoriasis lack CD4+ T-cells
 - d. Infectious nature

2. What feature of pityriasis rubra pilaris with nail involvement may differentiate it from psoriasis?
 - a. Lack of nail thickening
 - b. Lack of nail yellowing
 - c. Lack of nail bed edema
 - d. Lack of pitting
 - e. Lack of nail brittleness

3. What type of PRP has the association of follicular spines, acne conglobata, and hidradenitis suppurativa?
 - a. Type 1 (classical adult)
 - b. Type 2 (atypical adult)
 - c. Type 3 (classical juvenile)
 - d. Type 4 (localized/circumscribed juvenile)
 - e. Type 5 (atypical juvenile)
 - f. Type 6 (HIV-associated PRP)

Explanation:

1. **Answer b:** Parapsoriasis most commonly affects middle age individuals in the 5th decade with M>F 3:1. Mycosis fungoides has an onset typically in the 6th and 7th decades.
2. **Answer d:** PRP and psoriasis nails both have thickened yellow brittle nails but PRP does NOT have nail pitting. Nail bed edema can be seen in half-in-half nails, Terry's Nails, and muehrcke's nails (Stop dreaming about your avocado toast and google search these conditions 😊)
3. **Answer f.**

Episode 9 Pityriasis Rosea/Secondary Syphilis/Tinea Versicolor

1. What are the viral associations with pityriasis rosea?
 - a. Coxsackie A
 - b. HHV 6 and 7
 - c. HHV 5 and 8
 - d. Molluscum contagiosum pox virus
 - e. Parvovirus B19
2. Which other condition has a trailing scale besides ppityriasis rrosea?
 - a. Lichen planus
 - b. Pityriasis rubrum pilaris
 - c. Pityriasis alba
 - d. Erythema annulare centrifugum
 - e. Granuloma annulare
3. Which of the following does NOT typically show mounds of parakeratosis on histology?
 - a. Pityriasis rosea
 - b. Erythema annulare cetrifugum (EAC)
 - c. Guttate psoriasis
 - d. Small plaque parapsoriasis
 - e. Tinea versicolor
4. Which of the following does NOT classically fall into ppityriasiform disorders?
 - a. Secondary ssyphilis
 - b. Pityriasis rrosea
 - c. Pityriasis rrubrum ppilaris
 - d. Tinea vversicolor

Explanations:

1. **Answer b.** Remember pityriasis rosea is associated with “bugs or drugs”: Viral association **prior** to the onset of rash (HHV 6 and 7), drugs such as ACE-I, NSAIDs, beta blockers, and gold.
2. **Answer d.** Stop dreaming about your next pair of tight pants and look at some images of EAC and compare 😊.
3. **Answer e.** Think “**PEGS**” for conditions with mounds of parakeratosis. Pityriasis rosea, Erythema annulare centrifugum, Guttate psoriasis, Small plaque parapsoriasis. Tinea versicolor will show “spaghetti and meatballs” on KOH prep.
4. **Answer d.** Pityriasis rubra pilaris is classified in the psoriasiform Disorders.

Episode 10-Lichenoid Disorders

1. Which of the following conditions do NOT possess the attribute of koebnerization?
 - a. Pyoderma gangrenosum
 - b. Psoriasis
 - c. Vitiligo
 - d. Lichen planus

2. Which type of lichen planus affects middle-eastern adults and presents as red/brown plaques on the sun-exposed areas of face, neck, and extremities?
 - a. Graham- Little-Piccardi-Lasseur Syndrome
 - b. Lichen planopilaris
 - c. Inverse lichen planus
 - d. Actinic lichen planus
 - e. Drug induced lichen planus

3. What are the six P’s” of lichen planus?
 - a. Pimply, Pungent, Perspiring, Poisonous, Prickly-peasant, with Plentiful Pannus.
 - b. Dodge, Duck. Dip, Dive and Dodge.
 - c. Pruritic, Purple, Polygonal, Planar, Papules, and Plaques
 - d. Pain, Paresthesia, Pallor, Pulselessness, poikilothermia

Explanations:

1. **Answer a.** Pyoderma gangrenosum and Bechet’s manifest “pathergy” which non-specific ulceration(s) at sites of trauma.

2. **Answer d. GLPL Syndrome** (answer a) has the clinical findings of scarring alopecia of the scalp caused by lichen planopilaris(LPP), non-scarring hair loss at the pubic and axillary lesions, follicular papules that appear as keratosis pilaris and classic LP lesions of the skin and the mucosa. **LPPPlanopilaris** has erythema and perifollicular scale around the hair follicle on the scalp and can lead to scarring alopecia. LPP can be differentiated from Discoid Lupus as LPP has more superficial inflammation at the infundibulum versus Discoid Lupus that is Deeper at the Isthmus. **Inverse Lichen Planus** impacts the intertriginous areas of axilla, inguinal, and inframammary fold. **Drug Induced Lichen Planus** typically affects older patients w/ generalized lesions, more eczematous, photo-distributed, NO Wickham striae, and spares the mouth and genitals. Reactions can be delayed up to 1 year! Look for eosinophils on pathology. Common triggers are ACE-I, BB, NSAIDS, gold, HCTZ, antimalarials, TNF-alpha inhibitors.
3. **Answer c.** Answer a refers to Dr. Grumpy pants description of a medical student. Answer b is a famous quote by Patches O'houlahan (Movie-Dodgeball). He also said, "If you can dodge a wrench, you can dodge a ball". Answer d are the 5-p's of compartment syndrome .

Episode 11-Annular Disorders

1. What species is most likely involved in a rash that resembles tinea cruris but involves the scrotum?
 - a. *Trychophyton Tonsurans*
 - b. *Microsporum Canis*
 - c. Paracoccidiomycosis
 - d. Sporothrix
 - e. Candida
 - f. Malassezia species
2. What superficial tinea infection does not necessarily require oral medications?
 - a. Tinea corporis
 - b. Tinea capitis
 - c. Tinea faciei
 - d. Majocchi granuloma
3. Which of the following condition(s) are associated with anti-Ro or anti-La antibodies?
(may be more than one)

- a. Subacute cutaneous lupus erythematosus (SCLE)
 - b. Sjogrens syndrome
 - c. Rheumatoid arthritis
 - d. Pityriasis rubra pilaris
 - e. Neonatal lupus
4. Which antibody is positive in about 80% of drug induced SCLE cases?
- a. Anti-histone
 - b. Anti- La
 - c. Anti-Ro
 - d. Double stranded DNA
 - e. Single stranded DNA
 - f. Anti-smith
 - g. Anti-ribonuclear protein (anti-RNP)
5. Which combination(s) is/are most accurate regarding drug-induced SCLE? (may have more than one correct answer)
- a. Less cutaneous changes, increased arthralgias, increased serositis, decreased malar rash
 - b. More cutaneous changes, less arthralgias, less serositis.
 - c. Commonly caused by drugs such as Minocycline, Hydralazine, Isoniazid, Procainamide, Penicillamine
 - d. Associated with anti-histone antibodies
 - e. Associated with anti-Ro antibodies
 - f. Commonly caused by drugs such as Terbinafine, Hydrochlorothiazide, ACE-I, NSAIDs, Griseofulvin.
- a. What condition(s) have lesions that classically exhibit a trailing scale”? (may have more than one correct answer) Pityriasis rosea
- b. Erythema annulare centrifugum
 - c. Tinea corporis
 - d. Tinea cruris

Explanation:

1. **Answer e.** Tinea cruris classically spares the scrotum. If scrotum is affected, think Candida.
2. **Answer a.** Pearl- Tinea infections involving the hair follicle require oral treatments due to the fact that topical treatments cannot penetrate to the depth of the hair follicle into the deep dermis or superficial SQ. Answers b,c,d involve the hair follicles.

3. **Answers a, b, and e:** SCLE, sjogrens, and neonatal lupus are all associated with anti-Ro and anti-La antibodies.
4. **Answer c:** Anti-Ro is most commonly associated with drug induced SCLE. Anti-histone is associated with drug-induced SLE. Answer g is associated with mixed connective tissue disorders and the remainder of answers can be seen in SLE.
5. **Answer b, e, f:** Remember **“THANG”**: **T**erbinafine, **H**CTZ, **A**CE-I, **N**SAIDS, **G**riseofulvin for drug induced SCLE. And **“MyHIPP”**: **M**inocycline (+p-ANCA), **H**ydralazine, **I**soniazid, **P**rocainamide, **P**enicillamine for drug-induced Systemic lupus erythematosus. SCLE is associated with anti-Ro and has cutaneous findings over systemic findings.
6. **Answer a and b:** Tinea has leading scale. KOH will not show hyphae and mycelia in EAC or PR. This is a good way to differentiate EAC and Tinea.

Episode 12-Erythroderma

1. What is the most common cause of erythroderma?
 - a. Psoriasis
 - b. Dermatitis (atopic, allergic contact, seborrheic, chronic actinic dermatitis, stasis dermatitis)
 - c. Drug reactions such as SJS, TEN, DRESS, drug rash
 - d. Cutaneous T-cell lymphomas (erythrodermic mycosis fungoides and Sezary syndrome)
 - e. Infections: Viral exanthems, Norwegian scabies, staph scalded skin syndrome
 - f. Auto-immune Conditions such as lupus, graft versus host, bullous pemphigoid
 - g. Physical causes such as burns
2. Which lab finding would suggest an atopic cause of erythroderma?
 - a. HLA-B27
 - b. CD4:CD8 >10:1
 - c. Anti-Ro and La
 - d. Eosinophilia
 - e. IgA complexes at the dermal papillae
3. Of the etiologies of erythroderma listed, which is most likely to have eosinophilia?
 - a. Psoriasis
 - b. Drug reactions
 - c. Infections
 - d. Autoimmune

- e. Cutaneous T-cell lymphomas
- f. Physical Causes

Explanations:

1. **Answer a:** Psoriasis is the most common cause of erythroderma making up around 20% of cases. Usually involves a patient with pre-existing psoriasis that flares in response to withdrawal of steroids, cyclosporine, or methotrexate. Or can be triggered by "SICK LAB". **S**tress/**s**moking, **I**nfections (strep), hypo**C**alcemia (pustular psoriasis), **K**oebnerization, **L**ithium, **A**nti-malarials/**A**CE-I, **A**lcohol, **B**eta-blockers. Erythroderma due to psoriasis can also be triggered by obesity, NSAIDS, Terbinafine, and paradoxically by the TNF alpha inhibitors.
2. **Answer d:** Erythroderma due to atopic dermatitis will also have elevated IgE levels. HLA-B27 can be associated with Psoriatic Arthritis, CD4:CD8 ratio greater than 10:1 is consistent with Sezary syndrome (also look for Sezary cells >1000 per microliter and or increased CD4 cells that are CD7+ and CD26-). Anti-ro and La, and ANA are associated with erythrodermic forms of lupus. IgA complexes with anti-transglutaminase is associated with dermatitis herpetiformis which is the skin manifestation of celiac disease.
3. **Answer b.** Drug reactions and atopic dermatitis are associated with eosinophilia. Atopic dermatitis may have elevated IgE levels.

Episode 13- (Eczematous) Contact Dermatitis

1. A reaction to oxybenzone in sunscreen is due to?
 - a. Oxybenzone is a base which causes irritant contact dermatitis
 - b. Requires sensitization due to primed CD4+ T-cells.
 - c. Usually causes an immediate response
 - d. Usually has a delayed response due to sensitized CD8+ cells.
 - e. 80% of the population will have a reaction to oxybenzone in high enough concentrations.
2. What ingredient found in lip balms that is made by bees can cause an allergic contact dermatitis?
 - a. Nitrogen mustard
 - b. Oxybenzone
 - c. Lanolin

- d. Propylene glycol
 - e. Ethylenediamine
 - f. Propolis
 - g. Urushiol oils
 - h. Paraphenylenediamine
3. What is the most common ingredient causing positive patch tests in the United States?
- a. Nickel
 - b. Chromates
 - c. Cobalt
 - d. Gold
 - e. Mercury
 - f. Balsa of Peru
 - g. Para-phenylenediamine
 - h. Formaldehyde
4. What genus are poison ivy, poison oak, and poison sumac from?
- a. *Cnidocolus Stimulosus*
 - b. *Urtica Dioica*
 - c. *Laportea Canadensis*
 - d. Toxicodendron
 - e. *Mycobacterium Kansasii*
5. What ingredient in baby wipes causes an allergic contact dermatitis on baby's buttocks?
- a. Methyl-iso-thiazolinone
 - b. Quaternium 15
 - c. Balsam of Peru
 - d. Chromates
 - e. Mercaptobenzothiazole

Explanations:

1. **Answer d.** Oxybenzone is an ingredient in sunscreen and is a common cause of allergic contact dermatitis. ACD requires an initial exposure whereby allergen presenting cells (APC's) plus the antigen lead to sensitization with primed CD8 T-cells. The second exposure involves the primed CD8 T-cells plus the antigen and results in an inflammatory response within 1-2 days.
2. **Answer f:**

3. **Answer a:** Nickel is the most common ingredient causing positive patch testing. It is found in earrings, belt buckles, and pant buttons. Chromates (another metal), are commonly found in leather, cement, and green felt on pool tables.
4. **Answer d:** Answer a *Cnidiosculus stimulosus* (spurge nettle), Answer b *Urtica dioica* (stinging nettle) causes contact urticaria. Answer c *Laportea canadensis* (wood nettle). Answer e *Mycobacterium kansasii* is a microorganism associated with blackberries.
5. **Answer a:** Methyl-iso-thiozolanone is found in baby wipes. Quaternium-15 is a preservative found in soaps and shampoos. Balsam of Peru is found in cosmetic products such as fragrances. Chromates are found in leathers, cement, and pool table felt, Mercaptobenzothiazole is found in rubbers.

Episode 14- Stasis Dermatitis/Cellulitis/ Asteatotic Eczema (Red Leg Differential)

1. Which of the following are NOT one of the four cardinal signs of inflammation?
 - a. Dolor
 - b. Pallor
 - c. Rubor
 - d. Calor
 - e. Tumor

2. A patient presents with swollen, itchy, scaly, and non-painful red legs. The redness improves with elevating the leg for 30 seconds. What is the most likely diagnosis?
 - a. Allergic contact dermatitis
 - b. Irritant contact dermatitis
 - c. Cellulitis
 - d. DVT
 - e. Stasis dermatitis
 - f. Necrotizing fasciitis

3. Which condition is most likely exacerbated by low humidity, harsh soaps, prolonged of frequent hot showers, and heating with wood stoves?
 - a. Cellulitis
 - b. Psoriasis
 - c. Eczema craquele
 - d. Stasis dermatitis
 - e. Tinea

Explanation:

1. **Answer b.** Pallor is not one of the four Cardinal Signs of inflammation. Red (rubor), hot (calor), swollen (tumor), and tender (dolor) are all present when there is inflammation (such as cellulitis).
2. **Answer d:** These are classic examination findings for stasis dermatitis. Remember that in some cases Stasis Dermatitis can be unilateral if there is a history of surgery or trauma in the limb. Also, cellulitis can uncommonly be bilateral and would be painful. The erythema seen in cellulitis will not improve within 30 seconds of leg elevation.
3. **Answer c:** Eczema craquelé, (also known as asteatotic eczema), is a diffuse xerosis with fine scaling that progresses to inflammation and cracking of the skin (resembling cracked porcelain). The patient experiences pruritus and can be painful when cracking of the skin is deep enough to cause fissures. Treatment is to avoid triggers and applying emollients immediately after showering to lock the moisture in. Topical corticosteroids and antihistamines for itching may also be considered in addition to skin hydration.

Episode 15-Atopic Dermatitis

1. Acute atopic dermatitis has an overactive Th2 response. Which of the following is consistent with increased Th2 response?
 - a. Increased IL-17, IL-21, IL-22
 - b. Increased IL-4, IL-5, IL-13
 - c. Increased IFN-gamma, IL-2, TNF- α , IL-12
 - d. Increased TGF- β , IL-35, IL-10
2. What gene mutation is involved in atopic dermatitis?
 - a. Keratins 1 and 10
 - b. Filaggrin
 - c. LMNA point mutation
 - d. PSOR 1 mutation

Explanations:

1. **Answer b:** answer a is increased Th17 response which is involved in the immune response to extracellular bacteria, Fungi, and autoimmunity. Answer c is increased in Th1 response in cell-mediated immunity such as intracellular pathogens, autoimmunity,

and inflammation. Answer d is Treg response and is involved in immune tolerance and regulation of immune responses. Remember that in the Th2 response, IL-4 activates more Th2 cells, IL-5 activates eosinophils, and IL-13 promotes IgE production

2. **Answer b.** Filaggrin is mutated in atopic dermatitis resulting in less natural moisturization factor. Keratins 1 and 10 are mutated in epidermolytic hyperkeratosis. LMNA mutation is associated with Progeria. PSOR 1 is mutated in psoriasis.