





12- Drug Eruptions

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 **References:** Doctor slides, Team 436

Color Index:

-  Important
-  Doctor's Notes
-  Extra

[Editing File](#)



Objectives:
Not given



Drug Eruptions

Introduction

- The skin is one of the most common targets for adverse drug reactions.
- 1-5% of patients receiving **antibiotics** and **anticonvulsants** may develop a drug eruption.
- ~2% of all drug-induced skin reactions are considered “**Serious**”
- Skin reactions to drugs are responsible for **~3% of all disabling injuries that occur during hospitalizations.**
- Either due to:
 - 1) Immunologic response.
 - 2) Non-immunologic (Overdose, side effect, drug-drug interaction metabolism...)

Detailed drug history is very important in diagnosing drug reactions: What is the drug? The dose? How much did you take? For how long have you been taking it? Have you ever taken it before or not?

Diagnostic approach for drug eruptions

Clinical characteristics:

- Type of primary lesion.
- Distribution and number of lesions.
- Mucous membrane involvement, facial edema (Because some reactions occur in face).
- Associated signs and symptoms (Because sometimes the things that happen to skin might occur in other organs).

Chronological factors*:

- Document all drugs to which the patient has been exposed.
- Date of eruption, time interval.

Literature search (Everyday there is a case of a new drug eruption)

*It is very important to know when the drug was given and when the eruption started because it will give you a clue. Some drugs have a short interval between their consumption and eruption, while others have a longer time interval between drug and eruption.

Major drug-induced eruptions

Exanthematous Eruptions

Urticaria

Anaphylaxis

Fixed Drug Eruption

Acute generalized exanthematous Pustulosis (AGEP)

Drug reaction with eosinophilia and Systemic symptoms (DRESS)

Stevens-Johnson Syndrome (SJS)

Toxic epidermal Necrolysis (TEN)

1) Exanthematous Drug Eruptions

- The **most common** drug reaction affecting the skin.
- Classically **begins 7 to 14 days** after the start of a new medication.
- Begins as erythematous macules (**symmetric**) that sometimes becomes palpable. (maculopapular)
- Begins on the **trunk and upper extremities** and progressively becomes confluent. (grouped) الطفح الدوائي بطبيعته يحب يتجمع
- **Mucous membranes are usually SPARED.** Mucus membrane involvement in : SJS, TEN, EM due to meds
- **Pruritis** (low grade) and **low-grade fever** and often present.

[Fever is not always due to infection, could be immunological because of cytokines ,TH-1 mediator or IL-1]

- The eruption **disappears spontaneously after 1-2 weeks** without complications.

[If we stop the medication it will resolve within 1-2 weeks. Sometimes even when the the drug isn't stopped it resolves, the immune system gets used to it.]

- The following classes of drugs have a **significantly higher** incidence: **Aminopenicillins, Sulfonamides, Cephalosporins and anticonvulsants (phenytoin)** . (Anticonvulsants could cause any skin eruption) **Allopurinol, NSAIDS**

- Very clear confluent distribution, you can't see clear solitary macules or papules
- if you press on it, it's blanchable
- Started at trunk then extremities
- Looks different from TEN's features: Nikolsky, detachment, blistering, target-like



Urticariated:
annular and
edematous

Numerous pink papules on the trunk due to a cephalosporin (A). Confluence of lesions on the trunk (B) and annular plaques on the forehead (C) Secondary to Phenobarbital

Always Look for the following

- **Edema of the face** (because it might be a different diagnosis) + **blood eosinophilia (DRESS).**
- **Mucous membrane lesions or painful dusky skin (SJS, TEN).**
- It could be the beginning (no nikolsky or blistering yet) of SJS or TEN
- The clue is: mucocutaneous involmnet

Histology:

- Nonspecific changes, eosinophils may be present. (We do histology when we are in doubt)

The major DDx

- Viral exanthem (often indistinguishable). Usually has no itching.
- Drug etiology favored in adults, viral favored in pediatric patients.
- The presence of peripheral blood eosinophilia favors a drug reaction.

(if viral, you'll find lymphocytes)

In pedia, there's always a confusion if it's viral or drug because most viruses present as maculopapular. Even biopsy sometimes wouldn't help. They build the decision on other symptoms and what is most appropriate with the presentation

Treatment

- **Supportive** (symptomatic: antihistamine)
- **Discontinue the offending drug (risk vs benefit).**
- **Topical antipruritics and corticosteroids may help to alleviate pruritis.** Or systemic antihistamine
- **Systemic glucocorticoids**
- So continuing the drug is not life threatening and discounting it sometimes is not in the favor of the patient (pneumonia , UTI).
- We tell the primary physician that we will observe, meaning daily derma checkups, if it is still exanthmatous. we're good. If it started to become SJS or TEN or vasculitis **STOP** the drug.
- **Vancomycin is one of the most common causes of exanthmatous.**

Summary of exanthomatous : (1) **Morphology:** Macpapular (2) Generalized (3) Blanchable (4) Starts at trunk (5) Itchy (6) Possible fever (7) 1-2 weeks to appear (8) 1-2 week to resolve

2) Urticaria, Angioedema & Anaphylaxis

A. Urticaria:

- Urticaria is either acute or chronic
- Here we will discuss acute
- Urticaria is edematous, red, blanchable plaque
- Example: After a new hair dye
- 90% of people will have an attack of acute urticaria once in their lives
- Chronic urticaria: pink spots appear then elevate and disappear in less than an hour. Then others appear.
- Acute urticaria: After an antibiotic for example, within half hour they appear. GP can treat this
- **Transient erythematous and edematous papules and plaques that are usually associated with pruritis.**
- They can appear **anywhere** in the body including palms, soles and scalp.
- **Duration is usually a few hours to 24 hours.**
- **Skin is normal after they resolve.** Without complications
- **Acute: Less than 6 weeks.** the condition not the lesion . always think of drugs but more common is infections
- **Chronic: Persist longer.** think of: food, infection, autoimmune (SLE), endocrine (hypo/hyper thyroid)
- **Drugs associated with <10% of all cases of urticaria (acute > chronic)**
- Mostly **antibiotics** (Penicillins, cephalosporins, ACE , and CCB).
- **Treatment:**
 - **Discontinue drug.** (but if necessary, we can continue, harm vs benefit)
 - **Antihistamines.** Why do we give antihistamine? Because it is type-1 immunity, IgE mediated there's mast cells and histamine.
 - **Systemic or topical glucocorticoids**

-WHEELS
Type 1 for BA
-Edema النفخة

We must look at the face
to know if there's
angioedema



Urticaria secondary
to penicillin.
Several of the
lesions have a
figurate
appearance.

B. Angioedema:

- Involvement of mucous membrane, edema of lips and eyes, SOB because the mucosa of respiratory system is involved
- Not all urticaria angioedema and not all angioedema urticaria. But they can occur both at the same patient, so there are 3 categories.
- **There are many causes:** inherited (due to some missing enzymes in the complement system), drugs, etc..
- **Transient edema of the dermal, subcutaneous and submucosal tissue.**
- **Associated with urticaria in 50% of cases.**
- May be complicated by life-threatening anaphylaxis. If not managed immediately and properly
- **ACE inhibitors (1 day to several years after starting).** (due to immune system changes)
- Usually on the **face** (eyelids, lips), less often on genitals and extremities.
- Unilateral or asymmetric.
- **Can involve the larynx, epiglottis, oropharynx and intestinal wall in severe and more advanced cases, what you are concerned about is that it will progress to anaphylaxis .**
- Drug induced angioedema causes: **ACE inhibitors, Penicillins and NSAIDs.**
- Life threatening go to ER because the respiratory mucous membrane might close the whole tract and there will be no oxygen then
- Some patients think that taking antihistamine is enough, NO
- Anaphylaxis: Patient is unstable with systemic involvement (hypotension)



• Be careful this is not nephrotic syndrome because it would be periorbital edema only.

• Here you can see the lips and eyelids are edematous. She goes to the ED

2) cont. Urticaria, Angioedema & Anaphylaxis

C. Anaphylaxis:

- An **acute life-threatening** reaction that can result from exposure to a number of drugs.
- Penicillin (1 per 5000).
- Combines **skin with systemic manifestations** (hypotension, tachycardia).
- Serious cases tend to appear **within minutes** and more common with parenteral administration as compared to oral ingestion.
- **Treatment:** of **angioedema** and **anaphylaxis** caused by drugs **ABC's**
 - **Discontinue drug and strict avoidance in the future.**
 - **Systemic steroids.**
 - **SubQ epinephrine in cases of life-threatening angioedema or anaphylaxis.** (Never in urticaria)
 - So antihistamine pill is not enough, patient must come to the ER to measure oxygen level in blood and check if they need an oxygen mask, steroid injection and epinephrine injection.
 - Sometimes we give angioedema patients the epinephrine injection to keep it at home with them to they gain more time if the reaction occurs.
 - Drug induced anaphylaxis and angioedema are managed similarly

3) Photosensitivity

- **Cutaneous photosensitivity may be:**
 - idiopathic
 - Due to Endogenous photosensitizers (Porphyrins). Rare
 - Due to Exogenous photosensitizers (Medications). **More common.** This is what we will discuss
- **The photosensitivity drug reactions are classically divided into 2 major types:**
 - 1- Phototoxic (more common).**
 - 2- Photoallergic.**

A) Phototoxicity:

- Fairly common and predictable. **we are all at risk**
- **Can occur in any person who receives a sufficient amount of a drug together with sufficient exposure to UVR.**
- **Clinically:** an exaggerated sunburn in a shorter than expected time.
- Limited to sun-exposed areas and followed by hyperpigmentation **complication.**
- Most common drugs: **Tetracyclines** (doxycycline keep on mind that we give it in acne), **NSAIDs**, **Fluoroquinolones** (for UTIs).
- Administering a short half-life drug in the evening decreases the risk **like patients using topical retinoids, doxycycline.**



- How did we know that this is phototoxic not urticaria or exanthematous? Because of photosensitive distribution
- Bulla is a sign of Inflammation
- Looks like severe sunburn (phototoxic reaction)
 - Sharply demarcated (the Exposed area to the light)
 - This could lead to hyperpigmentation

Phototoxic reaction in a patient receiving methotrexate
The erythema and bullae are obviously limited to sun-exposed sites and resemble an exaggerated sunburn.

Patients on methotrexate can also experience 'sunburn recall' phenomena

B) Photoallergy:

- Occur as a result of **cell-mediated hypersensitivity** (to an allergen activated or produced by the effect of light on a drug).
- **UVR is required to convert the drug into an immunologically active compound (Photo-allergen) that induces the immune response.**
- **More chronic** than phototoxic. **They don't realise they just itch.**
- **Clinically:** Pruritic and resemble dermatitis or lichen planus but primarily in sun-exposed sites.
- **Most common drugs:** Thiazide diuretics, Sulfonamides antibiotics, Sulfonylureas and phenothiazines (all contain sulfur).
- **Two Components: Drug and Light.** This looks like lichen planus (violaceous, flat topped papules, shiny) The difference is that these aren't on flexure (classic location of lichen planus), they are on photosensitive areas.
- Could be lichenoid or drug induced lichen planus that is related to UVR

• **Treatment:** of phototoxicity and photoallergy:

Drug withdrawal, Topical steroids, physical barriers, reduce sun exposure + **broad-spectrum sunscreens.**

Chronic or eczematous rash



Photolichenoid drug eruption due to hydrochlorothiazide.

The lesions favored the extensor surfaces of the forearms.

4) Vasculitis

- Causes of vasculitis: infection, drugs, autoimmune (SLE, CT disease), hepatitis.
- **~10%** of the cases are due to drugs. In exanthematous, SJS or TEN we would say that the most likely cause is drugs. But here it is only 10% of the causes.
- **Clinically:** • **Purpuric** papules on the **lower extremities. (non-blanchable)**
- Systemic involvement is very unusual **when it is drug related.**
- **Occurs 7-21 days after drug administration** and **less than 3 days** following re-challenge **bc it is a type 3 hypersensitivity reaction**, it will take less time to develop than the first time of exposure to drug (7-21 days first time) .
- **Most common drugs:** Penicillins, NSAIDs, Sulfonamides and cephalosporins.



Lower Limb Purpura

5) Neutrophilic drug eruptions

Meaning that there are neutrophils under the skin, the others were eosinophils

A) Acute generalized exanthematous pustulosis (AGEP) :

- Acute febrile drug eruption.
- **Numerous small, non-follicular, sterile (no bacteria) pustules**, arising within large areas of **edematous erythema.** It appears faster than acne.
- **More than 90% of cases are drug-induced.**
- The onset is usually **within 2 days** **very early** of starting the medication.
- Lesions begin on the face or intertriginous zones (**groin, axillae**) and then **disseminate** within a few hours.
- **The lesions last for 1 to 2 weeks and are followed by a superficial desquamation (and skin peeling).**
- **DDx:** Acute pustular psoriasis. (by history and biopsy)
- Drugs: **Antibiotics** most common (Beta-lactam and macrolides), **CCB** and **Antimalarials** (for SLE).



Numerous small follicular and non follicular pustules in an ill looking patient.

Hundreds of tiny 1-2 mm sterile pustules in background of erythema .

Acute generalized exanthematous pustulosis (AGEP).

A A positive patch test result 4 days following the application of 0.75% metronidazole in a patient with a previous pustular drug eruption to that medication. Diffuse erythema of the buttock (due to cephalosporin, B) and face (due to metronidazole, C) studded with sterile pustules. Spongiform pustules are seen within the epidermis of lesional skin (D).

B) Sweet's syndrome (Acute febrile neutrophilic dermatosis) **not important:**

- This syndrome is characterized by **fever, peripheral blood neutrophilia**, and **painful erythematous plaques** that favor **the face and upper extremities**.
- Drugs represent <5% of all cases and **starts about a week after the onset of drug administration**.

- Involving subcutaneous fat
- The skin presentation might be a plaque or a tumor (lymphoma)
- The body's immune reaction to the tumor
- Most likely it caused by malignancy

• Scenario: a patient came in with pancytopenia, and they were confused at the time wondering what could it be. After a while an eruption appeared, and they thought it was cellulitis because it was painful, red and on her face. So they gave her antibiotics and it didn't improve then shifted to antifungal because she's immunocompromised but still no response. It started to deteriorate and spread all over her body and in general looking ill. After calling the dermatology for consultation they told them this is sweet syndrome this is acute lymphocytic leukemia, go for bone marrow and peripheral blood stem.

Well demarcated,
bright edematous
plaque
DDX: SLE



6) Drug Reactions with Eosinophilia and Systemic Symptoms (DRESS) drug-induced hypersensitivity syndrome

- If you see **exanthematous on the body and edema of the face** think of DRESS
- AKA Drug-induced hypersensitivity syndrome (DIHS).
- Due to **alteration in the metabolism of drugs** + immune mechanisms.
- Possible role for viruses **HHV-6** and **HHV-7?**
- Drugs: **Anticonvulsants** (phenobarbital, Carbamazepine and phenytoin) and **sulfonamides**
- **Clinically:**
 - Starts **2-6 weeks** after drug initiation.
 - **Fever** (85%) and a cutaneous eruption (75%) are the most common symptoms. **Looks like infection**
 - Begins as a **morbilliform** (maculopapular) eruption, which **later becomes edematous**, with follicular accentuation.
 - The face, upper trunk and extremities are the initial sites of involvement.
 - **Edema of the face** is a hallmark of DRESS.
- **Lymph nodes** are often enlarged. syndrome (DIHS).
- **The most common and most severe site of visceral involvement is the liver.** (majority of deaths associated with this syndrome)
- **Other organs involved:** Heart, lungs, kidneys and thyroid **becomes hypothyroid**.
- **Prominent eosinophilia** is a very characteristic feature.
- If seen by medicine, they will think it is an infection or TB
- **Treatment:** very serious life threatening
 - **Early withdrawal** the offending drug. (may not be sufficient for obtaining a full recovery)
 - Topical steroids for mild cases.
 - Systemic steroids for **life-threatening heart and lung involvement**.
- **The criteria:** facial edema, high liver enzymes and lymph nodes involvement

Drug reaction with eosinophilia and systemic symptoms (DRESS)/drug-induced hypersensitivity syndrome (DIHS).

Multiple edematous papules are present.



7. Bullous eruptions

- **Fixed drug eruption.**
- Linear IgA bullous dermatosis.
- Drug-induced bullous pemphigoid.
- Drug-induced pemphigus.
- Steven-Johnson syndrome and TEN

Fixed drug eruption

- Lesions develop **1-2 weeks after a first exposure** and within 24 hours within subsequent exposures.
- One or a few **round, sharply demarcated, erythematous violaceous and edematous plaques** are seen.
- **Sometimes a dusky, violaceous hue and a central blister may be seen**
- Favors the lips, face, **hands, feet and genitalia.**
- **The lesions progressively fade over several days (leaving PIH behind). (brown discoloration)**
- **Lesions recur at exactly the same sites upon re-administration of the drug.** (but different morphology)
- **Recurrent**
- There is a generalized form of FDE (similar clinically to EM/SJS).
- A **non-pigmenting variant of FDE occurs mainly with pseudoephedrine.**
- **Drugs:** **Sulfonamides** (in burn creams), **NSAIDs**, Barbiturates, Tetracyclines and Carbamazepine.



Very round well-defined erythematous plaque



Brown plaque like LP

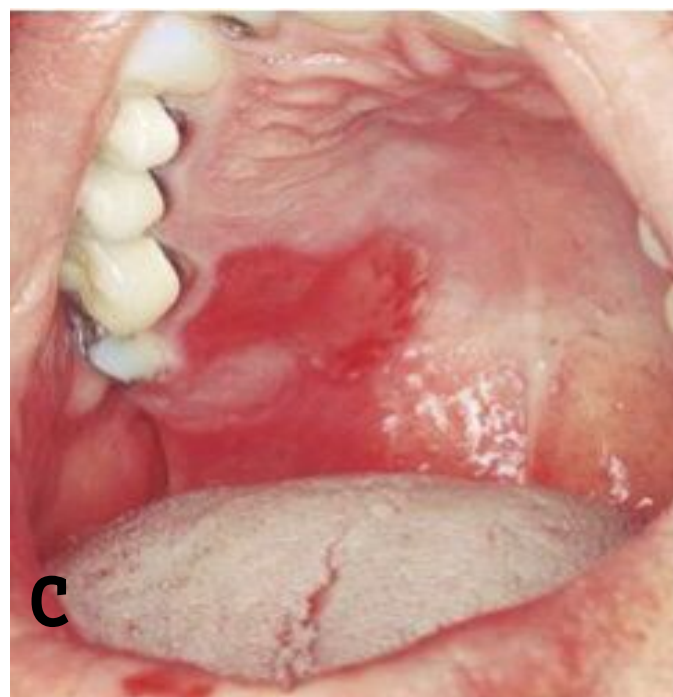


Hyper pigmented center also sometimes you can get blister

On the outside: Red
Inside: Violaceous .



Brown plaque with a bullous in the center



Mucosal erosion: could affect the mouths mucosa



Areas of hyperpigmentation

Fixed drug eruptions.

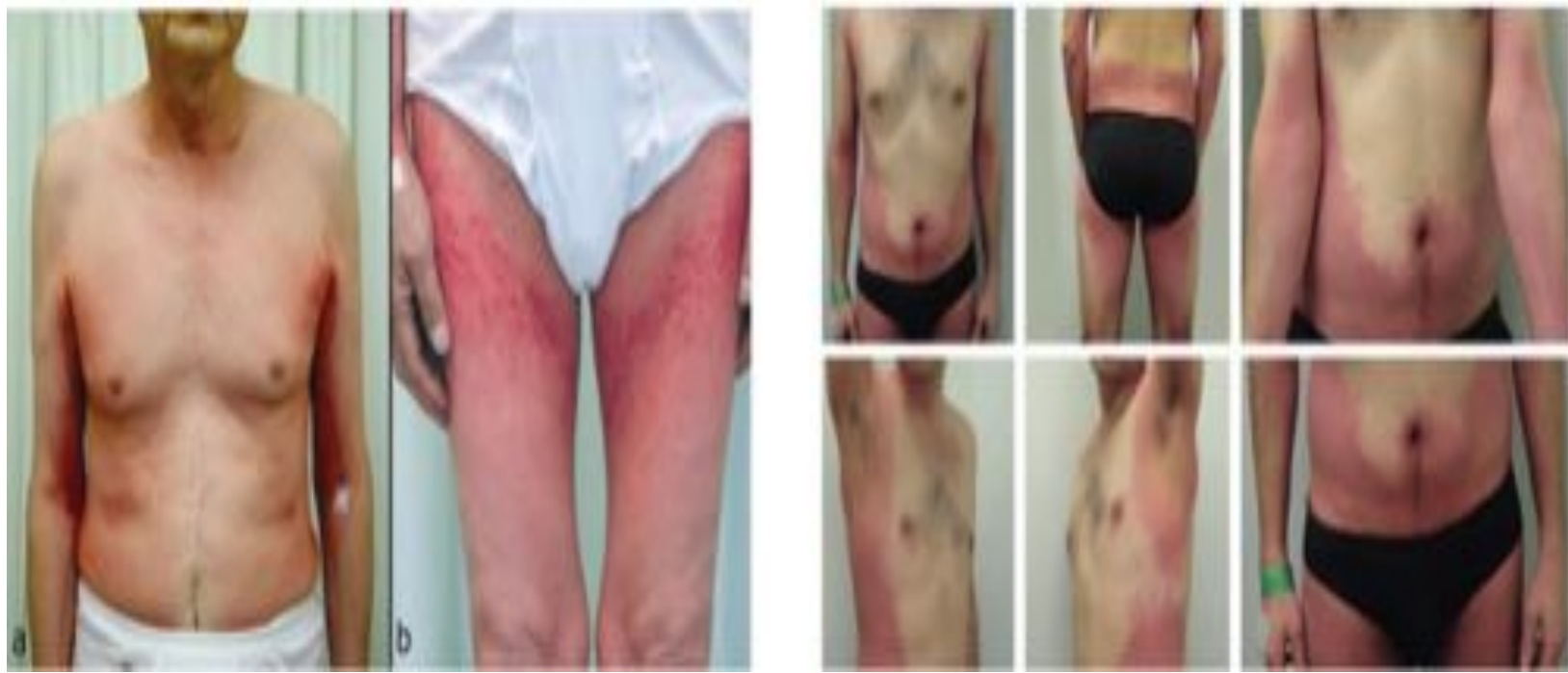
Well-demarcated erythematous (A) to violet brown plaques that can develop a detached epidermis (B), bulla (C) or erosion (D,E) centrally. As lesions heal, circular or oval areas of hyperpigmentation are commonly seen (F). Histologically, serous crust, a few necrotic keratinocytes, mild vacuolar changes at the dermoepidermal junction, papillary dermal edema and melanophages can be seen as well as a mononuclear infiltrate (G). Responsible drugs were phenolphthalein (A), naproxen (B), ciprofloxacin (D), allopurinol (E) and trimethoprim-sulfamethoxazole (F).

Summary:

- **Location:** extremities and genitalia
- **Morphology:** different
- Duration 1-2 weeks
- Leaves pigmentation (so if a patient come with pigmentation you MUST ask was it red and what are the drag that you take?)

8) Symmetrical drug-induced intertriginous and flexural exanthema (SDRIFE): Not Important

-Sharply demarcated, symmetrical areas of erythema over the anogenital region after exposure to systemic drugs.
 -Aminopenicillin & Cephalosporin are the most common drugs. There is usually involvement of at least one flexural site.



SYMMETRICAL DRUG-RELATED INTERTRIGINOUS AND FLEXURAL EXANTHEMA (SDRIFE) - CLINICAL CRITERIA

- Exposure to a *systemically* administered drug*, occurring with either the initial or a repeated dose (excluding contact allergens)
- Sharply demarcated erythema of the gluteal/perianal area and/or V-shaped erythema of the inguinal/perigenital area
- Involvement of at least one other intertriginous site/flexural fold
- Symmetry of affected areas
- Absence of systemic symptoms and signs

9) Others :

- **Anticoagulant-induced skin necrosis.**
- **Serum sickness-like eruption.**
- **Drug-induced lupus.**
- **Drug-induced psoriasis.**
- **Acneiform eruptions.**
- **Pigmentary changes.**
- **Pseudolymphoma.**
- **Chemotherapy reactions.**

A) Anticoagulant-induced skin necrosis

- Sudden red spots > necrosis > ulcer
- Rare, sometimes life-threatening.
- Induced by **Warfarin or Heparin.**
- Begins 2 to 5 days after therapy.
- Erythematous, **painful** plaques evolve into **hemorrhagic** blisters and **necrotic** ulcers.
- **Mainly over the breasts, thighs and buttocks. (fatty areas)**
- Patients with hereditary **deficiency of protein C** are at **highest risk.**
- So, if one patient is taking an anticoagulant order protein C
- **Tx: Discontinue** warfarin & start **Vitamin K** + I.V infusion of **protein C.**

You might think it is bleeding, but it is actually necrosis.



Heparin-induced thrombocytopenia with thrombosis syndrome.

A) Ischemia and necrosis of the foot.

B) Petechiae due to thrombocytopenia and an irregular area of cutaneous necrosis due to thrombosis.

B) Serum sickness-like eruption type-3 immune reaction

- Mainly in **children.**
- **Type-3:** antigen-antibody complement mediated. So they attach to the skin or blood vessels
- Immediately after taking oral or IV drug, they show symptoms that are not just drug eruption by deficiency of complement in blood like anaphylaxis but here there's fever and hypo-complement in blood)
- **Appears on skin as:** purpura.
- Fever, Arthralgias, arthritis, rash and lymphadenopathy.
- **1 to 3 weeks** after drug exposure.
- Unlike true serum sickness, **hypocomplementemia**, vasculitis and renal disease are absent.
- Occurs in approximately 1 in 2000 children given cefaclor. **Rare**



Looks like vasculitis but with fever and arthralgia. It is more extensive than vasculitis

C) Drug-induced Lupus

Drug-Induced systemic lupus:

- Fever, weight loss, pericarditis and pulmonary inflammation.
- Skin involvement is rare but includes: **malar-erythema**, photo eruption and discoid lesions **in normal SLE its v. common and even diagnostic criteria.**
- **Vasculitis, renal and neurologic involvement is rare.**
- Starts over a year after the medication is initiated.
- **+ve anti-histone Abs in 95% of cases (-ve DsDNA).**
- Clinical symptoms resolve within 4 to 6 weeks.
- Procainamide, hydralazine, chlorpromazine, **isoniazid**, methyldopa, quinidine, D-penicillamine and **Minocycline treatment of acne.**
- Dealt by rheumatology

Drug induced subcutaneous lupus:

- **Psoriasiform and annular** lesions on the upper trunk and extensor arms.
- **Hydrochlorothiazide**, CCBs, Terbinafine, NSAIDs, Griseofulvin.
- **Resolution of the rash may or may not occur after discontinuation of the responsible drug.**

D) Drug-induced Psoriasis

• Drugs can affect a patient in 3 different ways:

- 1) Exacerbation of pre-existing psoriasis.
- 2) Induction of lesions of psoriasis in clinically normal skin in a patient w psoriasis.
- 3) De novo psoriasis.

• **Terbinafine**, NSAIDs, **Antimalarials**, **ACE** inhibitors, **Lithium** and **B-blockers**.
Thiazide

- **TNF-induced Psoriasis** (in IBD patient) .especially affect palms and soles like
- Lesions of drug-induced psoriasis usually regress within weeks to a few months of discontinuing the inciting drug.

• **How to know that it is drug induced psoriasis not typical psoriasis? Atypical presentation in drug induced (location missing silver scales)**

- First thing to do is we see psoriasis lesion is to check drugs, sometimes we treat the psoriasis and forget to stop the medication so it won't improve
- If we stop the drug it will get better and NEVER come back



Psoriasiform eruptions due to TNF- inhibitors. A Widespread papulosquamous lesions in a patient being treated with infliximab for gastrointestinal GVHD. Histologically, there was no evidence of cutaneous GVHD. B Sterile pustulosis of the plantar surface developed in this patient with rheumatoid arthritis who had received infliximab for the previous 5 years. Neither patient had had a reduction in immunosuppression prior to the onset of the psoriasiform eruption.

E) Acneiform eruptions

❖ **here more on trunk (regular acne more on face)**

- Represent ~1% of drug-induced skin eruptions.
- Clinically, just like acne but **comedones are absent.**
- **Corticosteroids, Androgens**, hydantoins, **lithium**, progestin-containing OCPs.
- **Monomorphic.**

Small size homogenous papules and plaques



Pigmentary patch

F) Pigmentary changes patient come complaining of facial pigmentation, so we review the drugs. This is **diffuse**

• **Hyperpigmentation:**

Usually more pronounced in sun-exposed areas.

- Minocycline (**brown-black photosensitive**) -> subacute lupus
- Antimalarials (**hydroxychloroquine = grey-blue**) used for SLE
- Amiodarone (**blue-grey**)
- Silver, gold and arsenic
- Bleomycin **chemotherapy**

• **Hypopigmentation:**

- Chronic use of topical **steroids.**

If the scenario says pigmentation on face or sun exposed area keep on mind drugs!!



Gray-violet discoloration of the face due to amiodarone.

Biopsy specimens demonstrate yellow-brown granules within dermal macrophages. Note sparing of the lower eyelid. .

Questions:

1) A 22-year-old female presented to dermatology clinic with an oval red patch with central blister on upper back 2 days after using NSAID. She had a similar lesion in the same location 4 months ago after using the same treatment. Which one of the following is the most likely diagnosis?

- A. Pemphigus Vulgaris
- B. Fixed Drug Eruption
- C. Erythema Multiforme
- D. Recurrent Discoid Eczema

Answer: B

2) 70 years old man developed fixed drug eruption, after stopping all his medication the lesions have gone, what drug caused this?

- A. Doxycycline
- B. Statin
- C. ACE inhibitors

Answer: A

3) A 60-year-old female with multiple medical problems has been admitted to the hospital 7 days ago. She was started on several medications. She developed black necrotic patches over both breasts for the last 3 days. Which one of the following drugs is most likely the cause?

- A. Insulin
- B. Warfarin
- C. Gentamicin
- D. Carbamazepine

Answer: B

4) An ER doctor admits a 70 years old patient with fever, sore throat, malaise and fatigue- The patient was treated at home with an antibiotic and antipyretic- The family was alarmed when he developed acute, itchy exanthematous rash and brought him to hospital- On examination his oral mucosa was free- No past history of systemic disease. What is the most probable cause of the rash in this patient?

- A. Viral infection
- B. Malignant neoplasm
- C. Drugs
- D. Streptococcal throat infection

Answer: C

5) A known epileptic patient on phenytoin presented with a morbilliform rash that started on the face. On examination he looks sick and has periorbital edema, fever with tender right hypochondrium and lymphadenopathy. His lab showed eosinophilia, atypical lymphocytes and raised liver enzymes. What is the probable diagnosis?

- a. Infectious mononucleosis
- b. Dress Syndrome
- c. Red man Syndrome
- d. Steven Johnson syndrome

Answer: B

6) A 22 yrs old male presented to the ER with 2 weeks history of morbilliform rash that started on the face and proceeded to generalized redness and scaling. On examination he looks sick and has periorbital edema, fever, tender right hypochondrium, lymphadenitis, and muscle aches. He is known epileptic and started phenytoin 1 month ago. His lab showed eosinophilia, atypical lymphocyte, and elevated LFT. What is the most likely diagnosis ?

- A. Red man syndrome**
- B. Steven Johnson Syndrome**
- C. Drug hypersensitivity syndrome**
- D. Infectious mononucleosis syndrome**

Answer: C

7) A 25 years old male come the dermatology clinic complaining of 4 months history of itchy eruption, which waxes and wanes that is triggered by exercise he described the lesion as small punctuated and monomorphic wheels that is less than half an hour.

- A. Solar urticaria**
- B. Cholinergic urticaria**
- C. Dermatographism**
- D. Cold urticaria**

Answer: B

8) A 19 year old man with acne vulgaris on Minocycline referred to venereal disease clinic with edematous erythematous sharply marginated skin eruptions with blister formation on genital mucosa for two days. He had similar lesions 2 years ago. What is the most likely diagnosis ?

- A. Syphilis infection**
- B. Genital warts**
- C. Erythema multiforme**
- D. Fixed drug eruption**

Answer: D

