Dermatological Em”urgencies”

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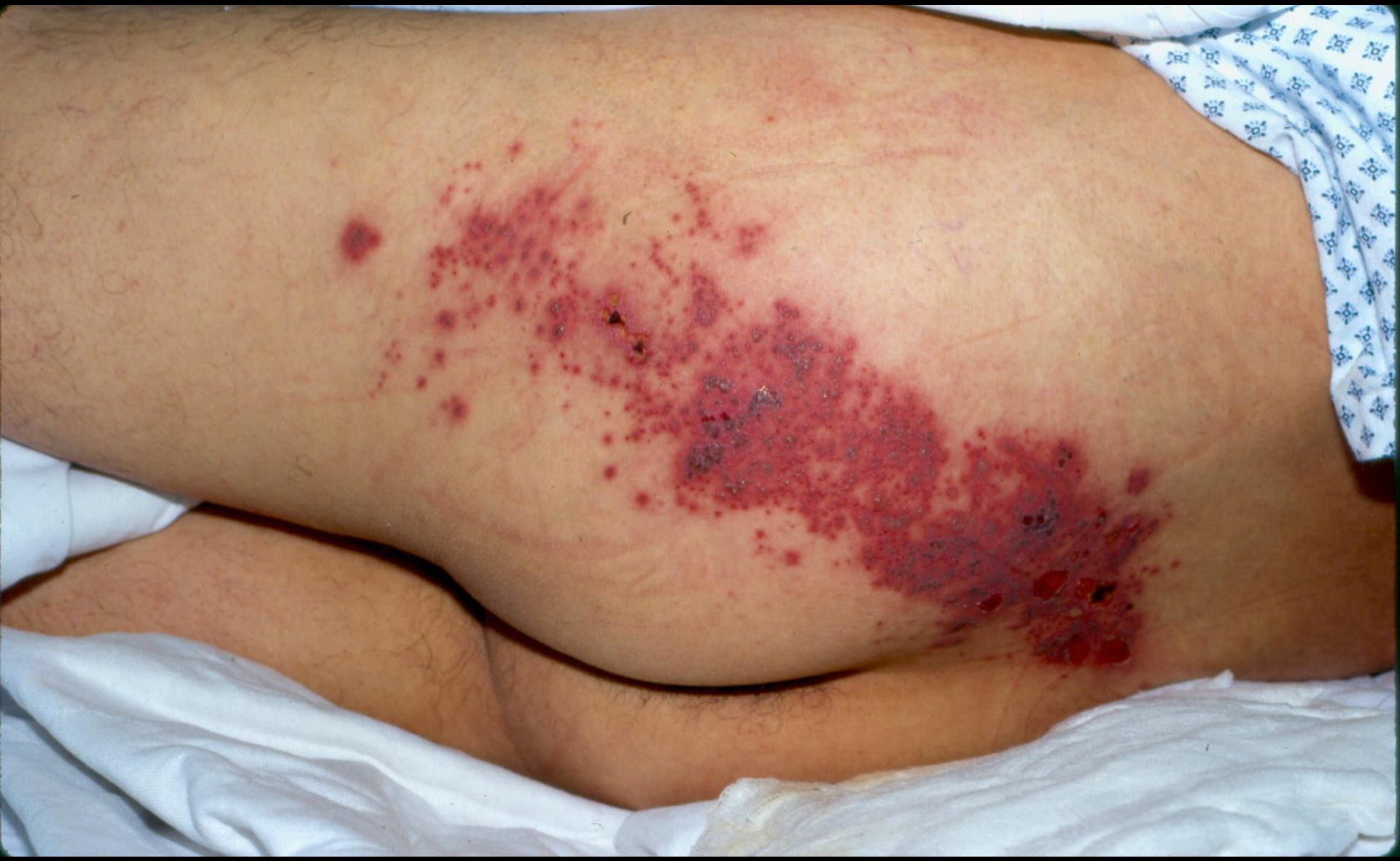
Derm Emergency ?



Band-like area of vesicles (hemorrhagic vesicles)

zoster

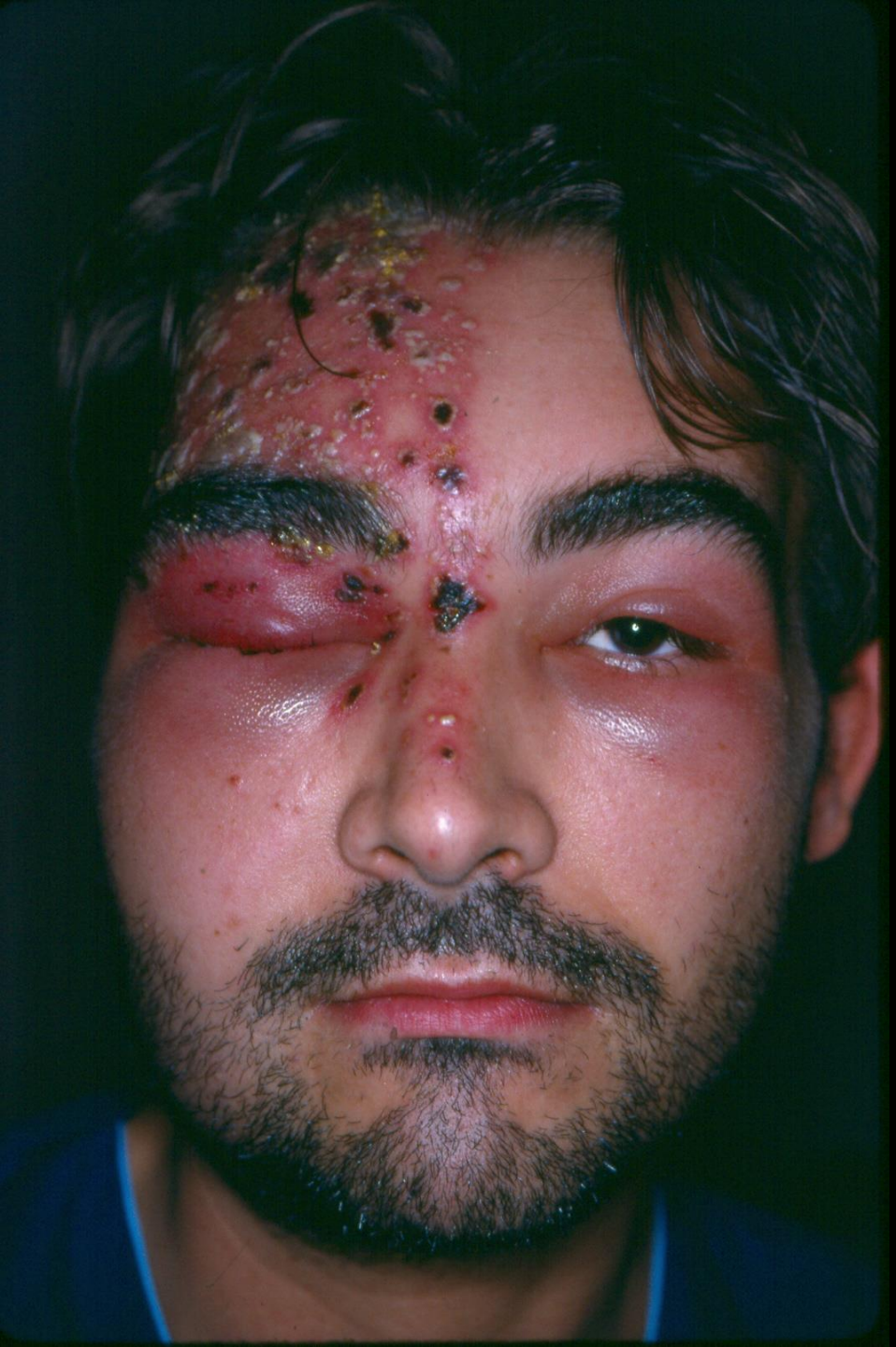

Limited dermatomal involvement
Monomorphous hemorrhagic crust on red base

Zoster

- Emergency or Urgency ?
  - Immunocompetent vs immunosuppressed
  - Age – risk of postherpetic neuralgia
  - Timeline to begin antiviral therapy
  - Location of affected dermatome

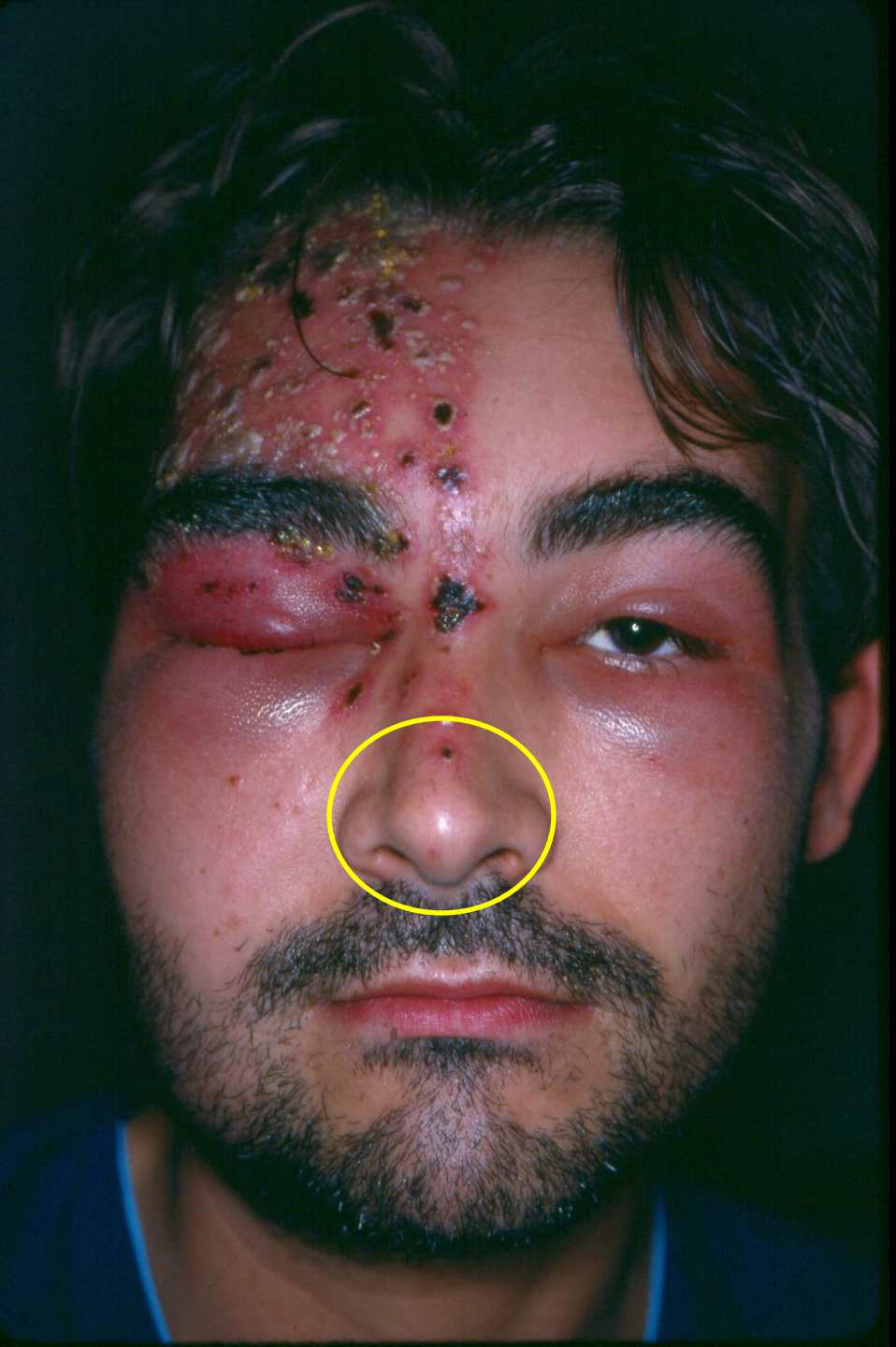
Trigeminal Zoster

- 20% of healthy adults
- 50% of immunocompromised persons
- 20% lifetime chance of developing zoster
- Severity and incidence increases significantly with age
- Ophthalmic zoster
  - 7% of cases
  - 20-70% develope associated ocular disease including blindness



zoster

- Stops at midline
- Which lesions are concerning?
- When do you consult ophthalmology?

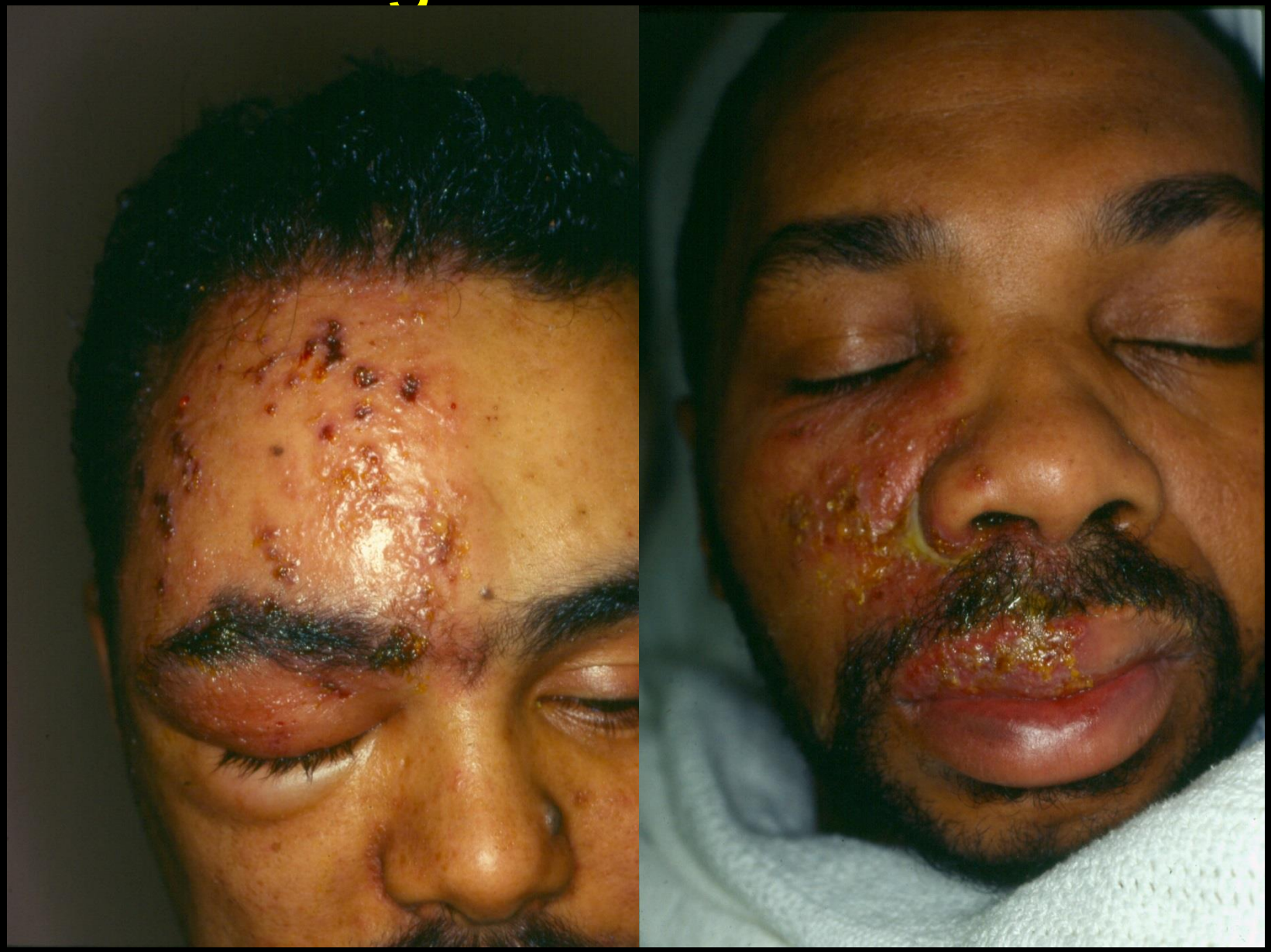


zoster

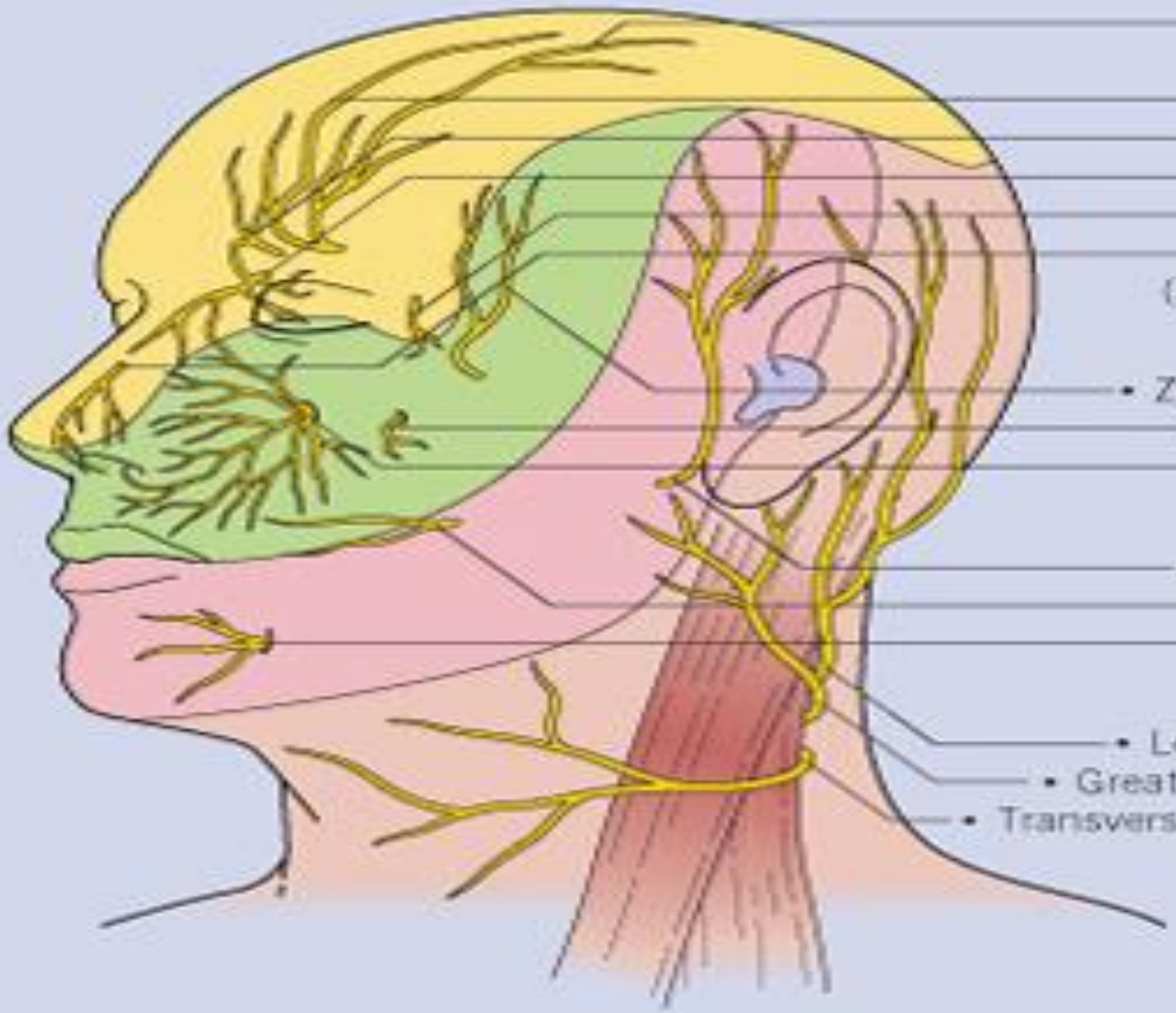
- Which lesions are concerning?
- When do you consult ophthalmology?

Tip of nose - nasociliary branch also innervates cornea

Trigeminal zoster



TRIGEMINAL (CRANIAL NERVE V) AND CERVICAL PLEXUS CUTANEOUS SENSORY NERVES



Ophthalmic nerve (V_1)
- Supraorbital nerve (lateral branch)
- Supraorbital nerve (medial branch)
- Supratrochlear nerve
- Infratrochlear nerve
- Lacrimal nerve
- External nasal branch (anterior ethmoidal nerve)

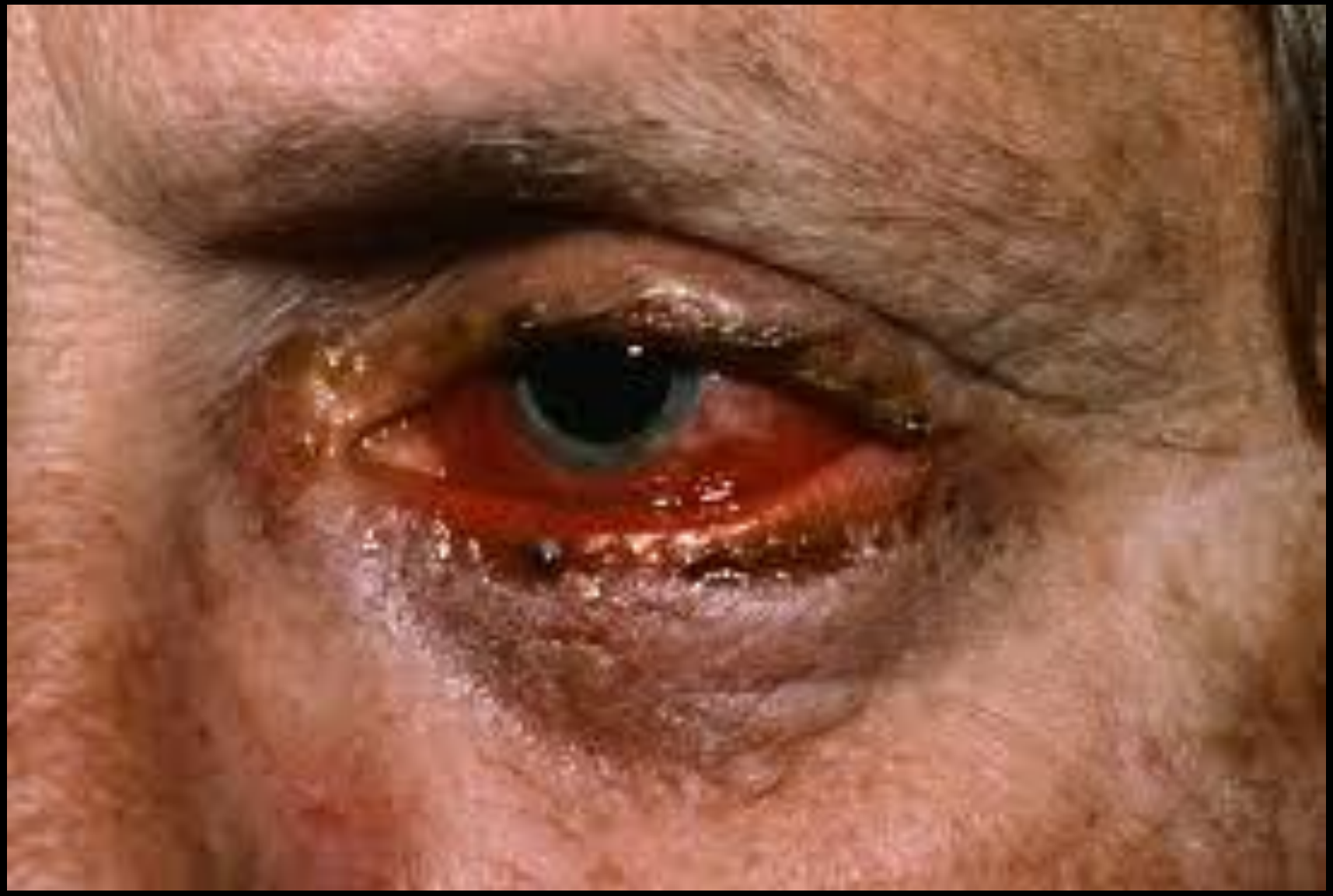
Maxillary nerve (V_2)
- Zygomaticotemporal nerve
- Zygomaticofacial nerve
- Infraorbital nerve

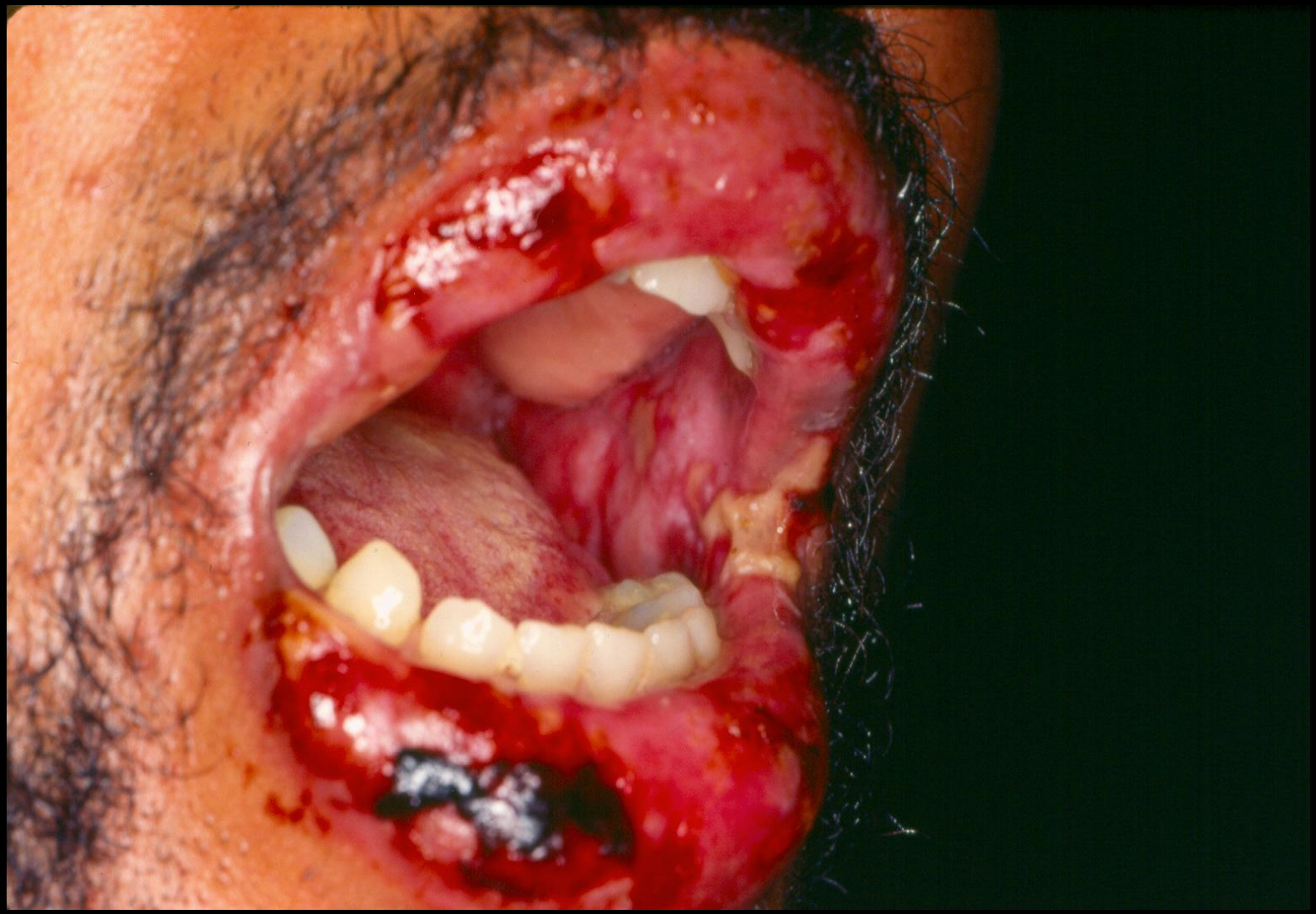
Mandibular nerve (V_3)
- Auriculotemporal nerve
- Buccal nerve
- Mental nerve

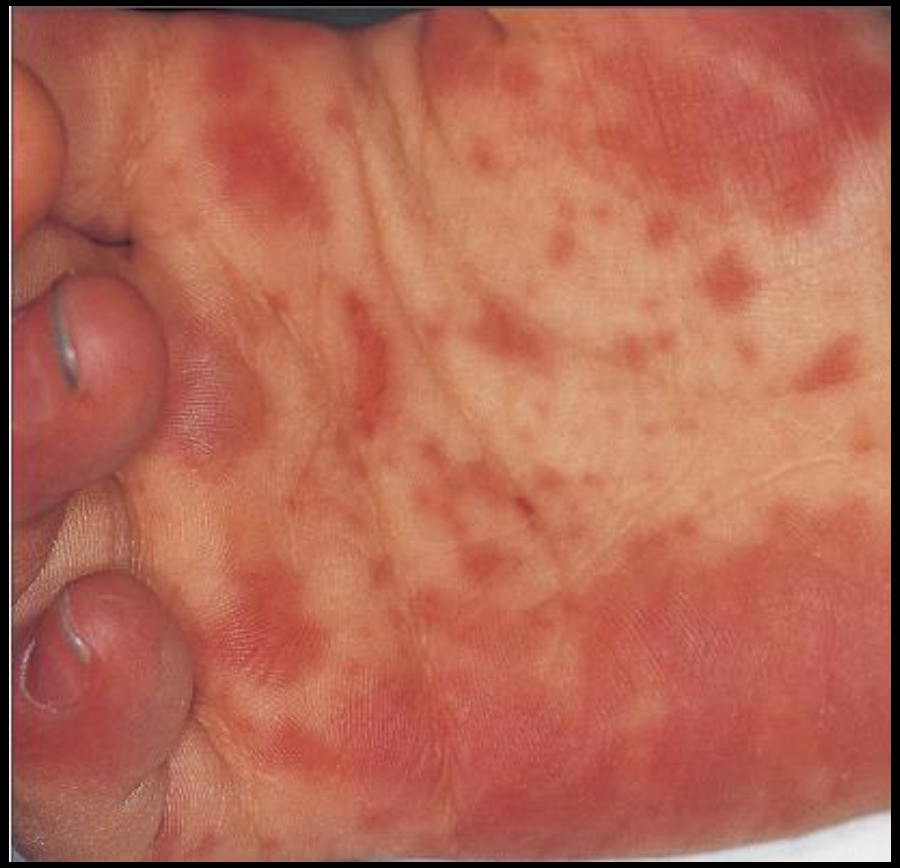
Cervical plexus
- Lesser occipital nerve (C2)
- Great auricular nerve (C2, C3)
- Transverse cervical nerve (C2, C3)

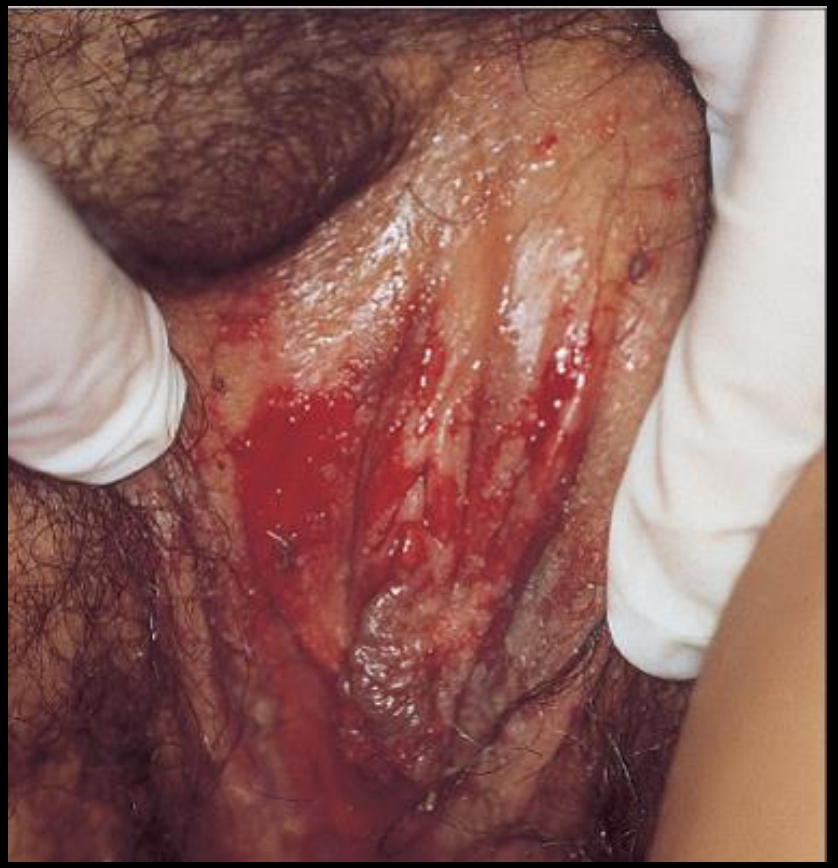
Therapy: zoster

- Acyclovir
  - 800 mg 5x/d x 7-10d
- Valtrex (valacyclovir)
  - 1000 mg tid x 7d
- Famvir (famciclovir)
  - 500 mg tid x 7d
- Silvadene cream
  - Decrease pain
- Pain can last 6-8 weeks after resolution of skin lesions
- Capsaicin cream
  - 0.025%, 0.075%
  - tid-qid









Stevens-Johnson syndrome

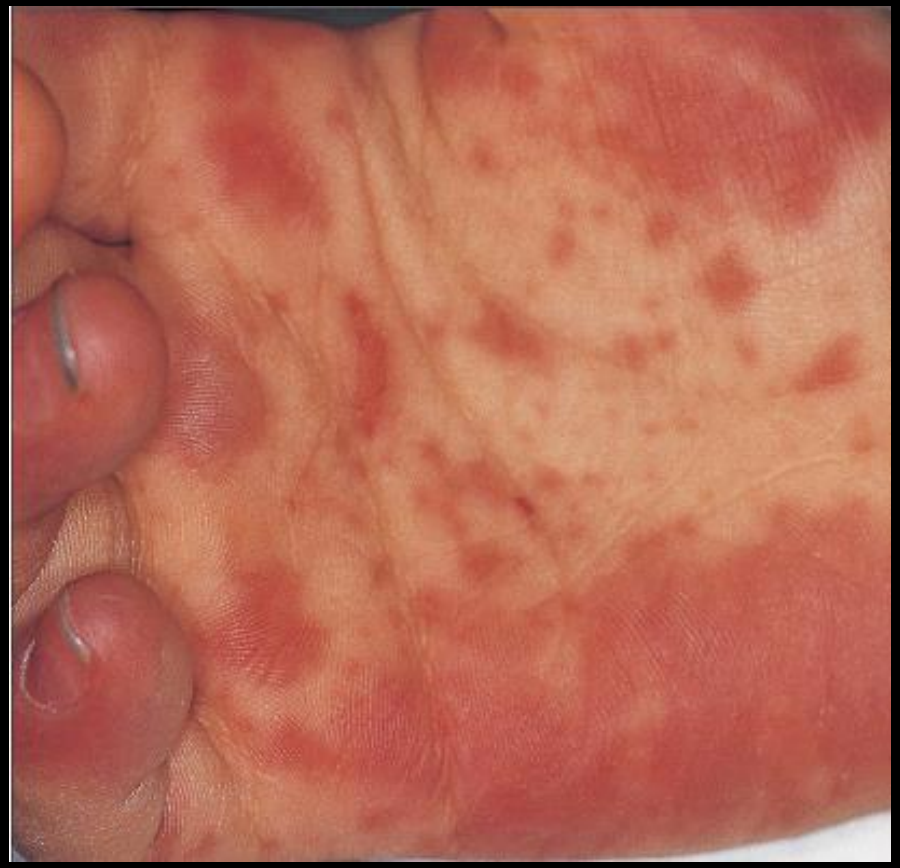
- Erythema multiforme *minor* - most commonly induced by infection with herpes simplex

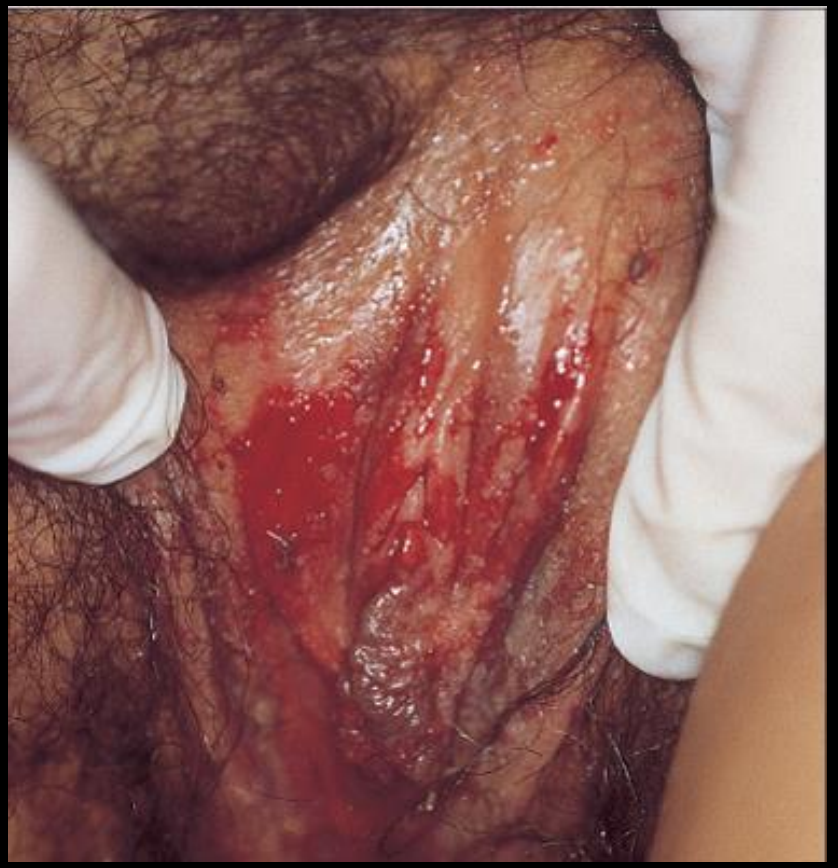
- Stevens-Johnson syndrome (erythema multiforme *major)* and toxic epidermal necrolysis - most commonly precipitated by drugs
  - NSAIDs, antibiotics (penicillins and sulfonamides), anticonvulsants, allopurinol

Stevens-Johnson Syndrome

- Prodrome of respiratory symptoms and fever
- Involvement of two or more mucosal sites
  - Oral mucosa, hemorrhagic crusts on lips, conjunctivitis, genitals
- Generalized lymphadenopathy
- May have target-like cutaneous lesions
- Arthralgia
- Prolonged course lasting 3 or more weeks
- Treatment = supportive care

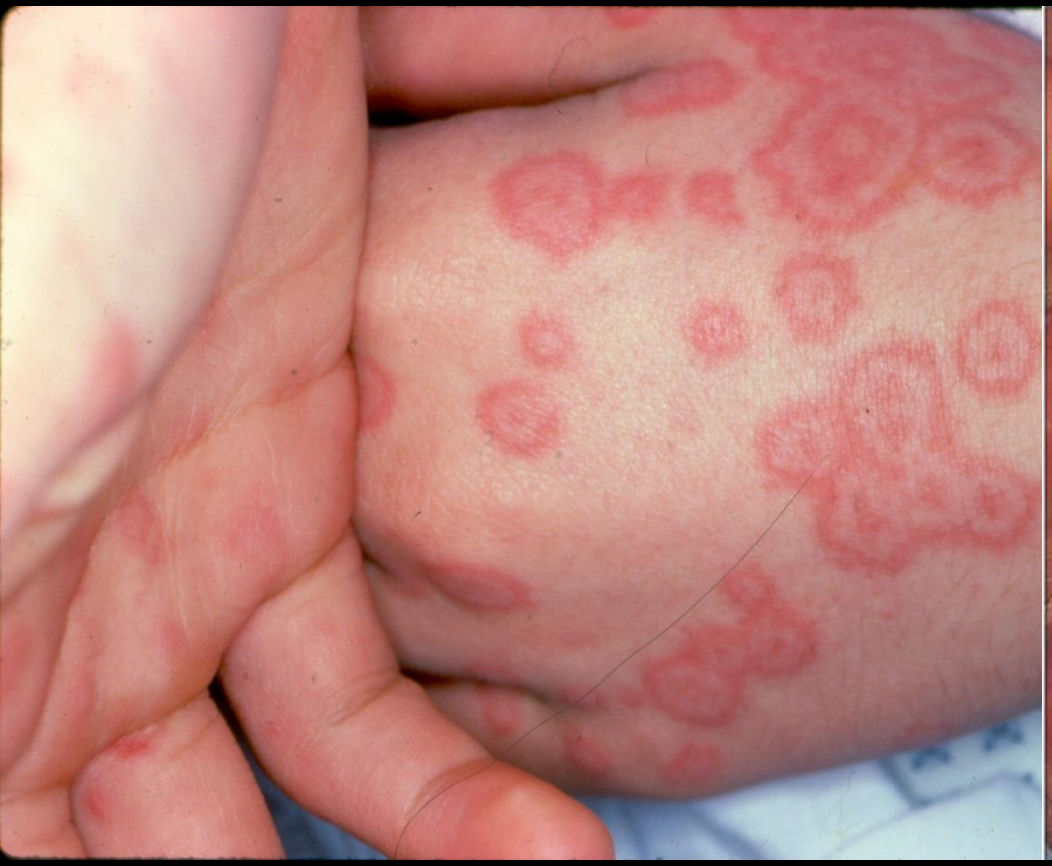
Stevens-Johnson Syndrome

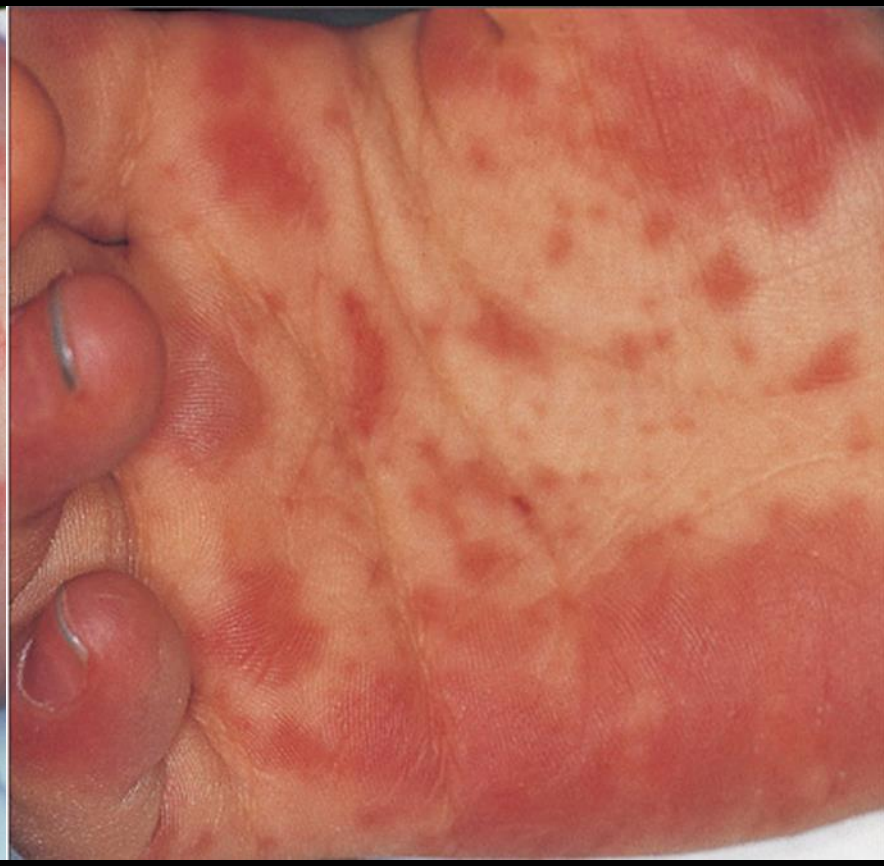




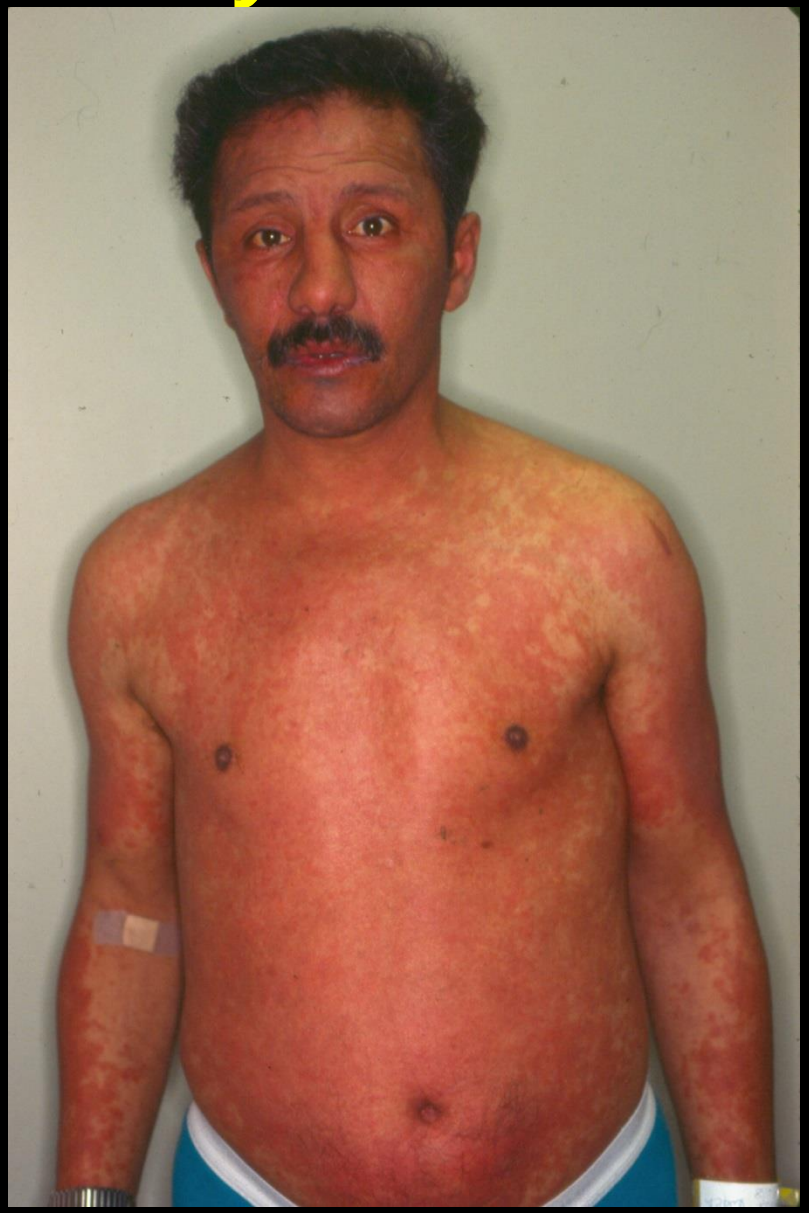
Erythema multiforme – hsv

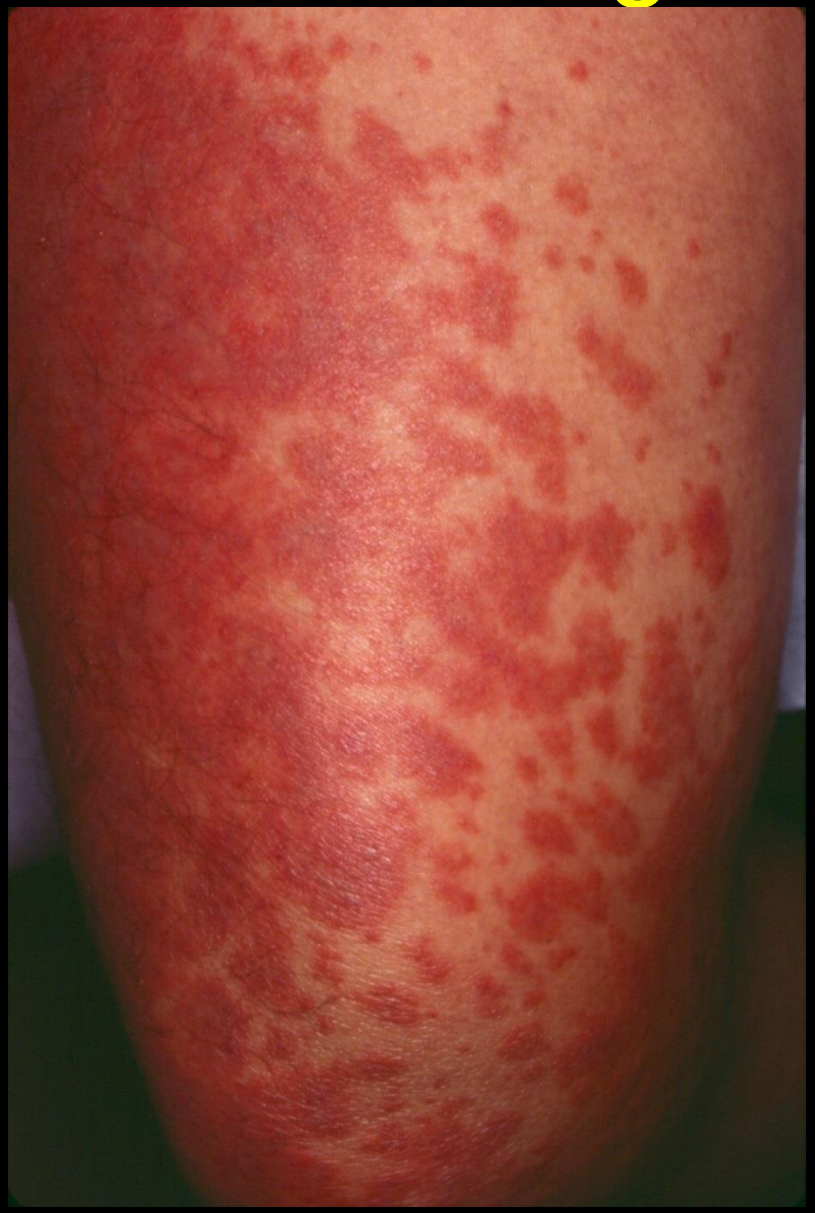
SJS



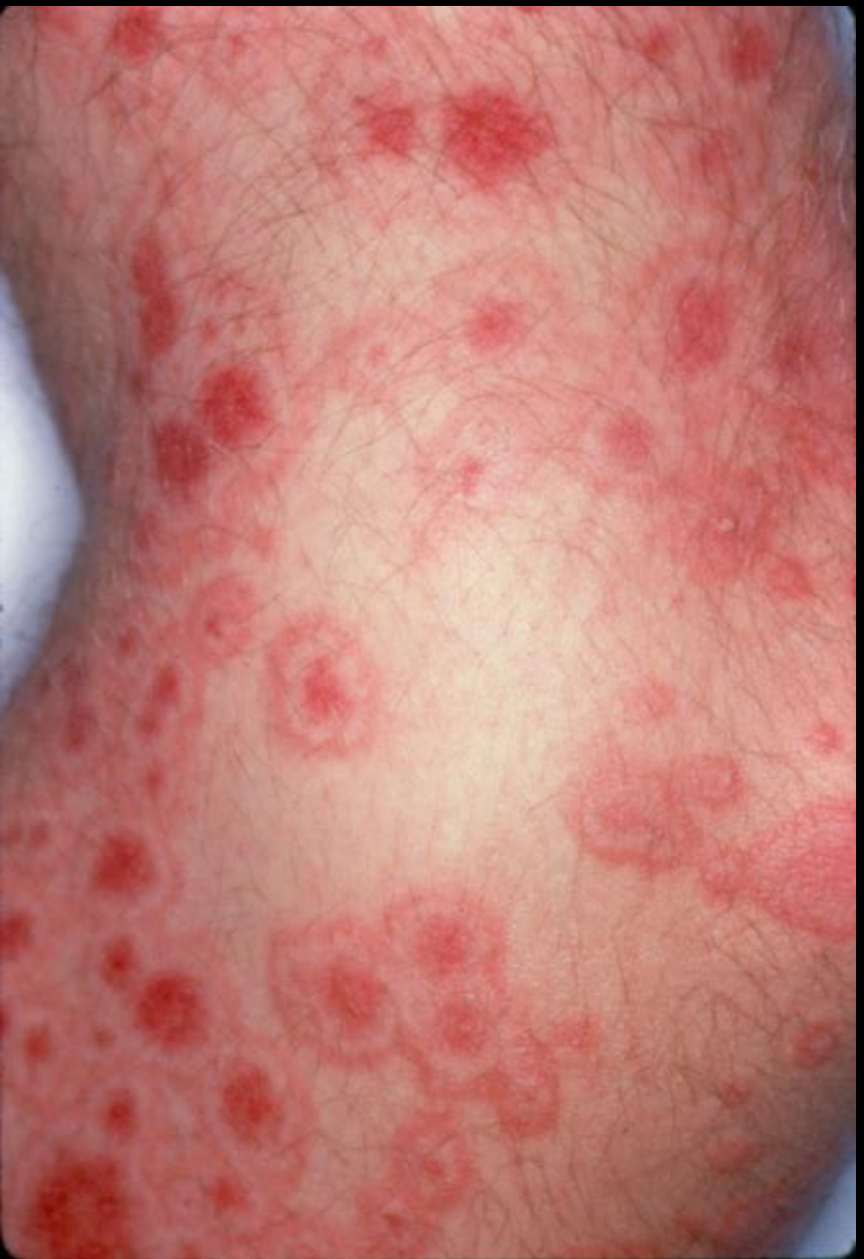


Erythema multiforme - drug

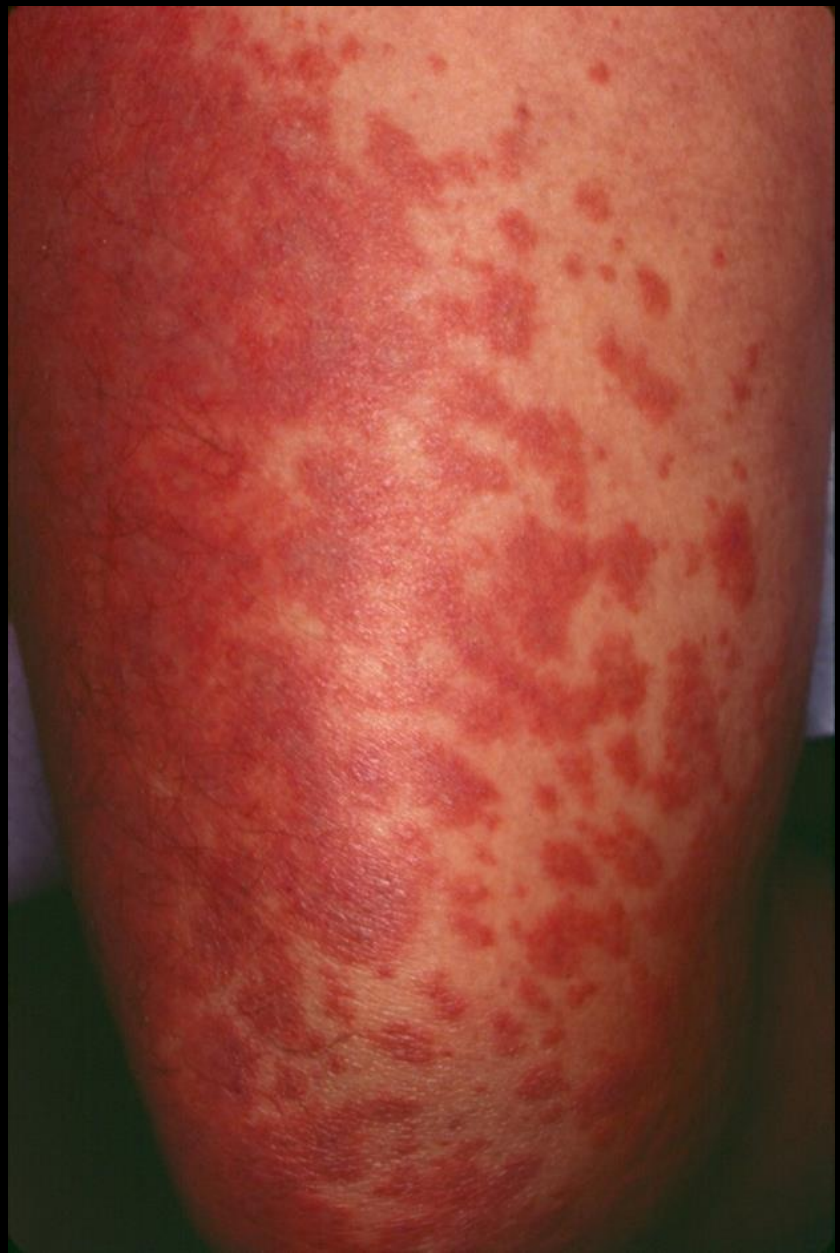




EM 3 zones



SJS 2 zones



Stevens-Johnson syndrome

Drug	NSAIDs (ibuprofen, naproxen), sulfonamides, anticonvulsants, penicillins, doxycycline, tetracyclines
Bacterial	Mycoplasma pneumoniae, Yersinia, Mycobacterium tuberculosis, Treponema pallidum, Chlamydia, Others (Streptococcus, Salmonella typhi, Pneumococcus, Enterobacteria)
Fungal	Coccidioidomycosis, Histoplasmosis
Viral	Enteroviruses, Adenoviruses, Measles, Mumps, Influenza, Others
X irradiation	
IBD	
Vaccination	BCG

Stevens-Johnson Syndrome

- Upper respiratory illness - fever, cough, rhinitis, sore throat
- headache, vomiting, diarrhea and malaise
- After 1-14 days - abrupt onset of symmetrical red macules with central blister formation
- extensive areas of epidermal necrosis
- Oral mucosa always involved
- Purulent conjunctivitis - photophobia and pseudomembrane formation with the eyelids appearing to be adherent

SJS – laboratory abnormalities

Fluid + electrolyte imbalance	100%
Elevated ESR	100%
Leukocytosis	60%
Eosinophilia	20%
Anemia	15%
Elevated LFTs	15%
Leukopenia	10%
Proteinuria + microscopic hematuria	5%

SJS - complications

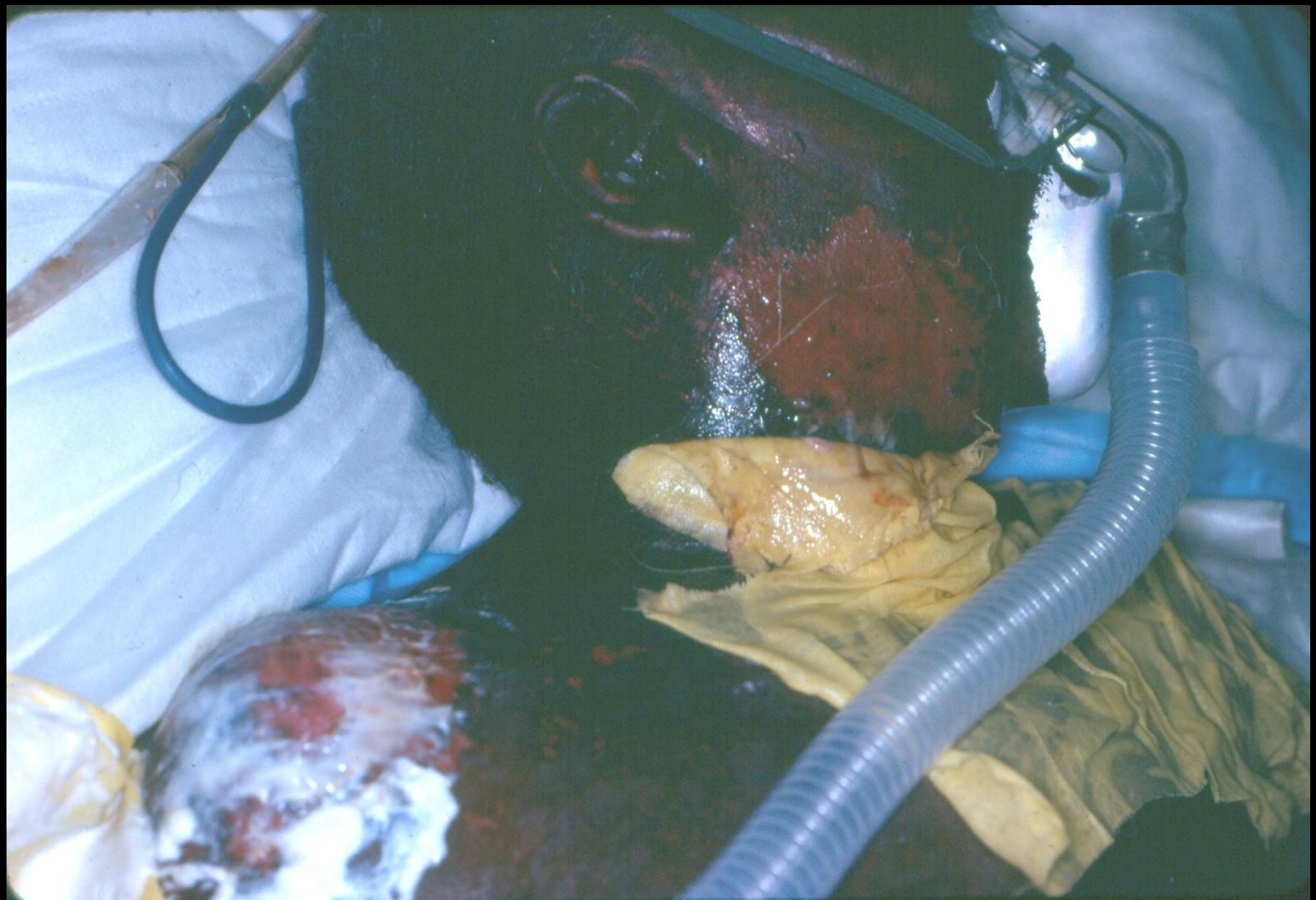
- protracted course - 4-6 weeks
- significant morbidity and mortality of up to 30%
- dehydration, electrolyte imbalance, secondary bacterial infection of the skin, mucosa or lungs, cutaneous scarring and dyspigmentation
- Ocular sequelae - pseudomembrane formation, immobility of the eyelids, symblepharon, entropion, trichiasis, corneal scarring and blindness

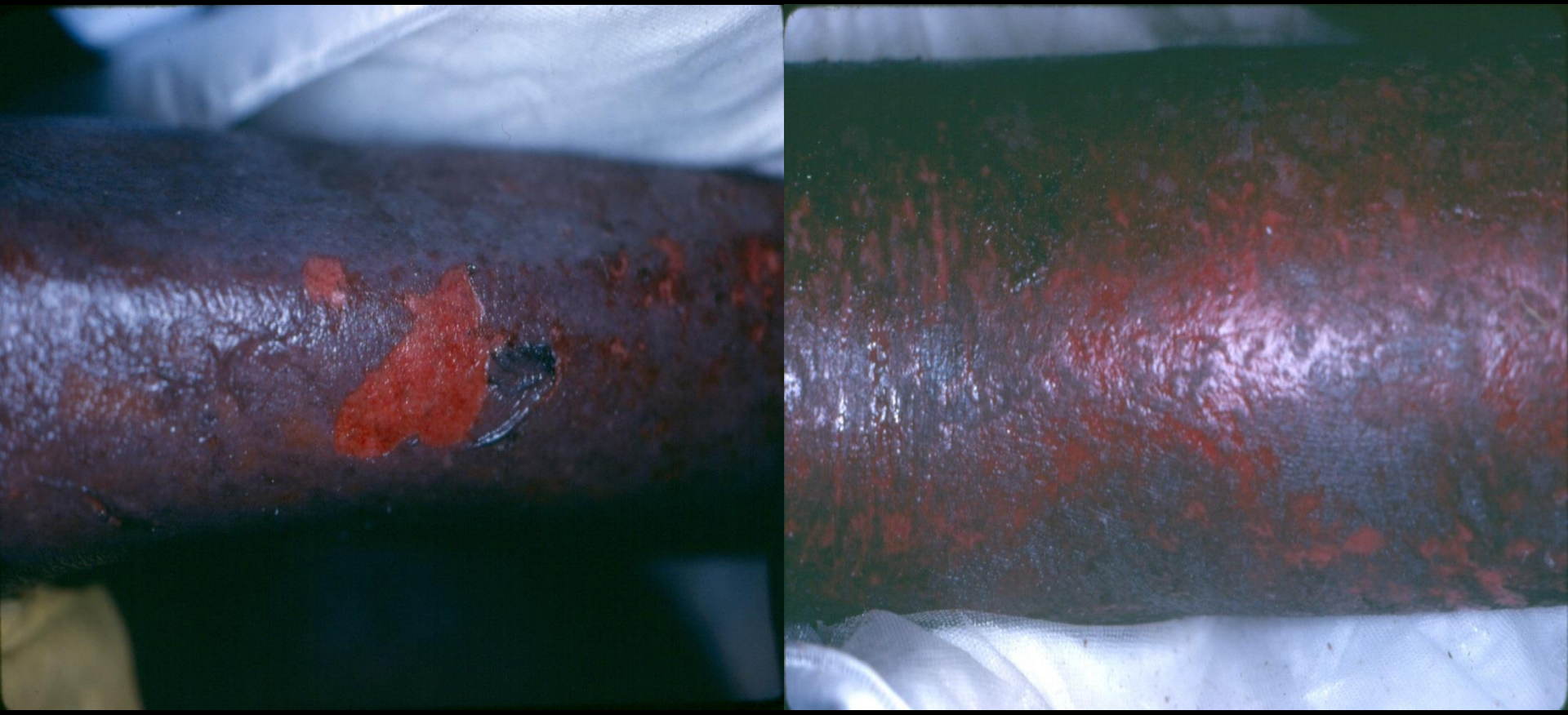
SJS – complications (continued)

- Lacrimal duct scarring - excessive tearing, anterior uveitis and panophthalmitis
- esophageal strictures, anal strictures, vaginal stenosis, and urethral meatal stenosis
- Severe pneumonitis and pneumothorax - 2 weeks or later into the course of the disease
- Shedding of the nails - permanent anonychia

DDX of SJS

	SJS	Kawasaki Disease	Paraneoplastic pemphigus
Lips	Red, painful, hemorrhagic crust	Red, no crusts, chapped	Oral necrosis rare
Eyes	Red with exudate	Red, no exudate	
Other	Vaginal, rectal, airway involvement	Coronary artery involvement	Characteristic DIF with acantholysis





Toxic Epidermal Necrolysis

- Rare, potentially fatal, adverse cutaneous drug reaction
- tenderness and erythema of the skin and mucosa and extensive mucocutaneous exfoliation
- NSAIDs, antibiotics, antiepileptics
- 7-21 days after initiation of drug
- Average mortality rate = 25-35%

TEN

- High fever, extreme skin pain, anxiety, and asthenia
- unpredictable course
- initially benign-appearing dermatosis - progress rapidly
- Prognosis highly correlated with the extent of skin detachment

Toxic epidermal necrolysis - treatment

- Early diagnosis
- Immediate discontinuation of the causative drug(s)
- Rapid initiation of supportive care
- Specific therapies to selectively block keratinocyte apoptosis = IVIG

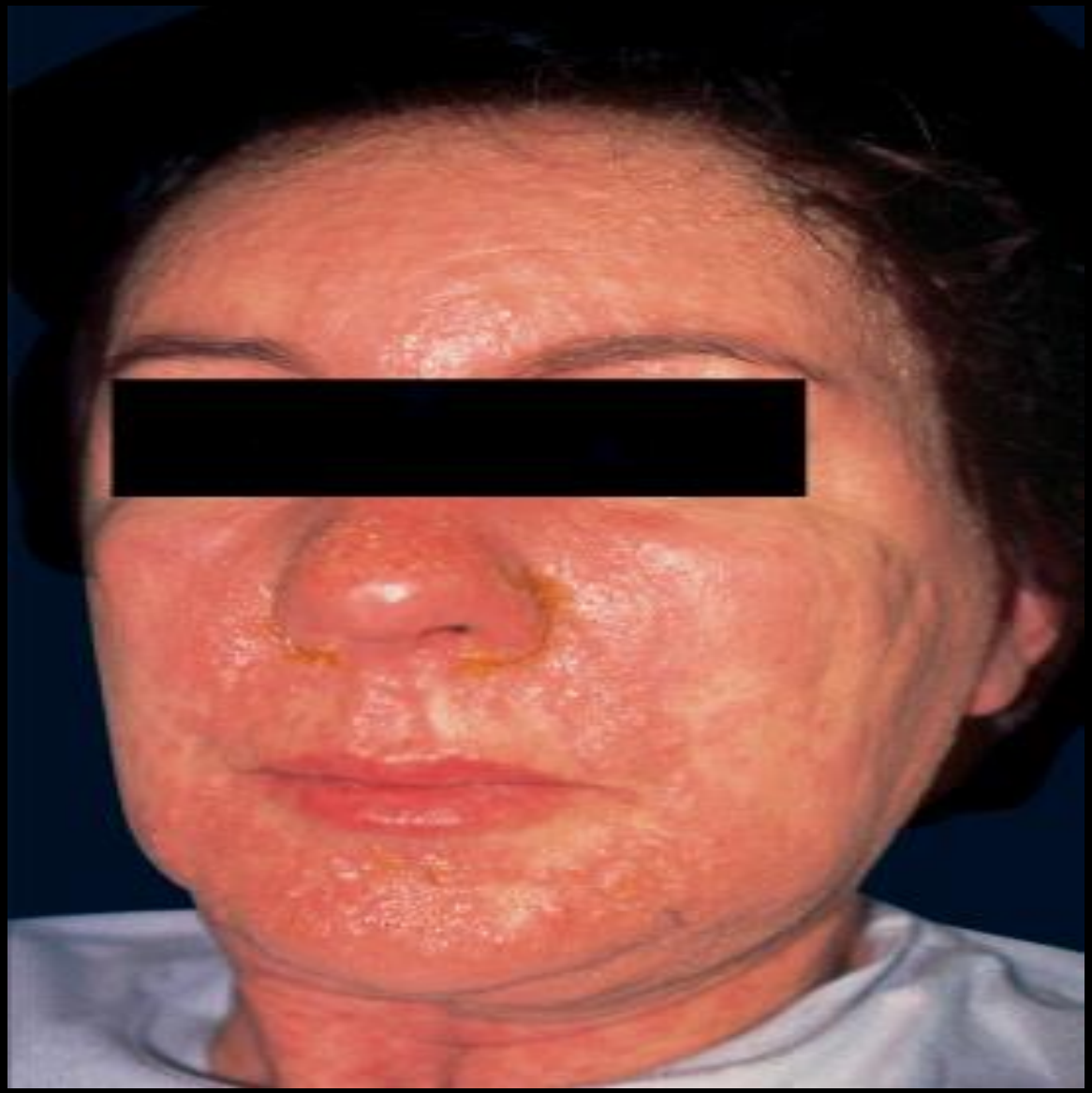
Differential diagnosis of SJS and TEN

	SJS	TEN
Lesions	Two or more mucosal sites	Large denuded areas
Histology	Focal epidermal necrosis	Extensive areas of epidermal necrosis

	SJS	SJS-TEN	TEN
Primary lesion	Atypical targets, dusky red lesions	Atypical targets, dusky red lesions	Poorly delineated erythematous plaques Epidermal detachment - spontaneous or by friction Atypical targets Dusky red lesions
Distribution	Isolated lesions Confluence (+) on face and trunk	Isolated lesions Confluence (++) on face and trunk	Isolated lesions (rare) Confluence (+++) on face, trunk, and elsewhere
Mucosal involvement	Yes	Yes	Yes
Systemic involvement	Usually	Always	Always
Detachment (%BSA)	< 10 %	10-30 %	> 30 %
Skin histology	Interface dermatitis (++) Necrolysis (+)	Interface dermatitis (++) Necrolysis (++)	Interface dermatitis (+) Necrolysis (+++)

Medications associated with SJS and TEN

- Allopurinol
- Aminopenicillin
- Amithiozone
- Barbiturates
- Carbamazepine
- Chlormezanone
- Phenytoin
- Lamotrigine
- Phenylbutazone
- Pyroxicam
- Sulfadiazine
- Sulfadoxine
- Sulfasalazine
- Trimethoprin-sulfamethoxazole



Drug rash with eosinophilia and systemic symptoms (DRESS)

- Defect in detoxification of anticonvulsants and sulfonamides
  - anticonvulsants - inability to detoxify toxic arene oxide metabolites
  - sulfonamides - acetylator phenotype and susceptibility of lymphoid cells to toxic metabolite hydroxylamine
- Cross reactivity between phenytoin, carbamazepine, and phenobarbital
- Immune mechanisms - interleukin-5, released by activated T lymphocytes, contributes to the generation of eosinophilia

DRESS

- Incidence 1:1,000 – 1:10,000 exposures
- Incidence higher in African-Americans and Caribbean basin
- Hypersensitivity syndrome 2 to 6 weeks after the responsible drug started
  - later than most immunologically mediated skin reactions
- Fever and cutaneous eruption - most common symptoms of DRESS (85% and 75% of cases, respectively)

DRESS - cutaneous

- Begins as morbilliform eruption
  - later edematous
  - follicular accentuation
  - vesicles, tense bullae induced by dermal edema, follicular as well as nonfollicular pustules, erythroderma and purpuric lesions
- Face, upper trunk and extremities - usually initial sites of involvement
- Edema of the face - hallmark of DRESS

DRESS - extracutaneous

- Lymph nodes - often enlarged
- ± arthralgias/arthritis
- Liver - most common (usually most severe) site of visceral involvement
  - Hepatitis sometimes fulminant
  - Responsible for majority of deaths (10% of cases)
- Myocarditis, interstitial pneumonitis, interstitial nephritis, thyroiditis
- Gastrointestinal bleeding with allopurinol
- Hematological

  - prominent eosinophilia

  - mononucleosis-like atypical lymphocytosis
- Cutaneous and visceral involvement - persist several weeks or months after drug withdrawal

DRESS DDX

- other cutaneous drug eruptions
- acute viral infections
- idiopathic hypereosinophilic syndrome
- lymphoma
- pseudolymphoma

Toxic shock syndrome

- Staphylococcal = TSS
- Streptococcal = STSS

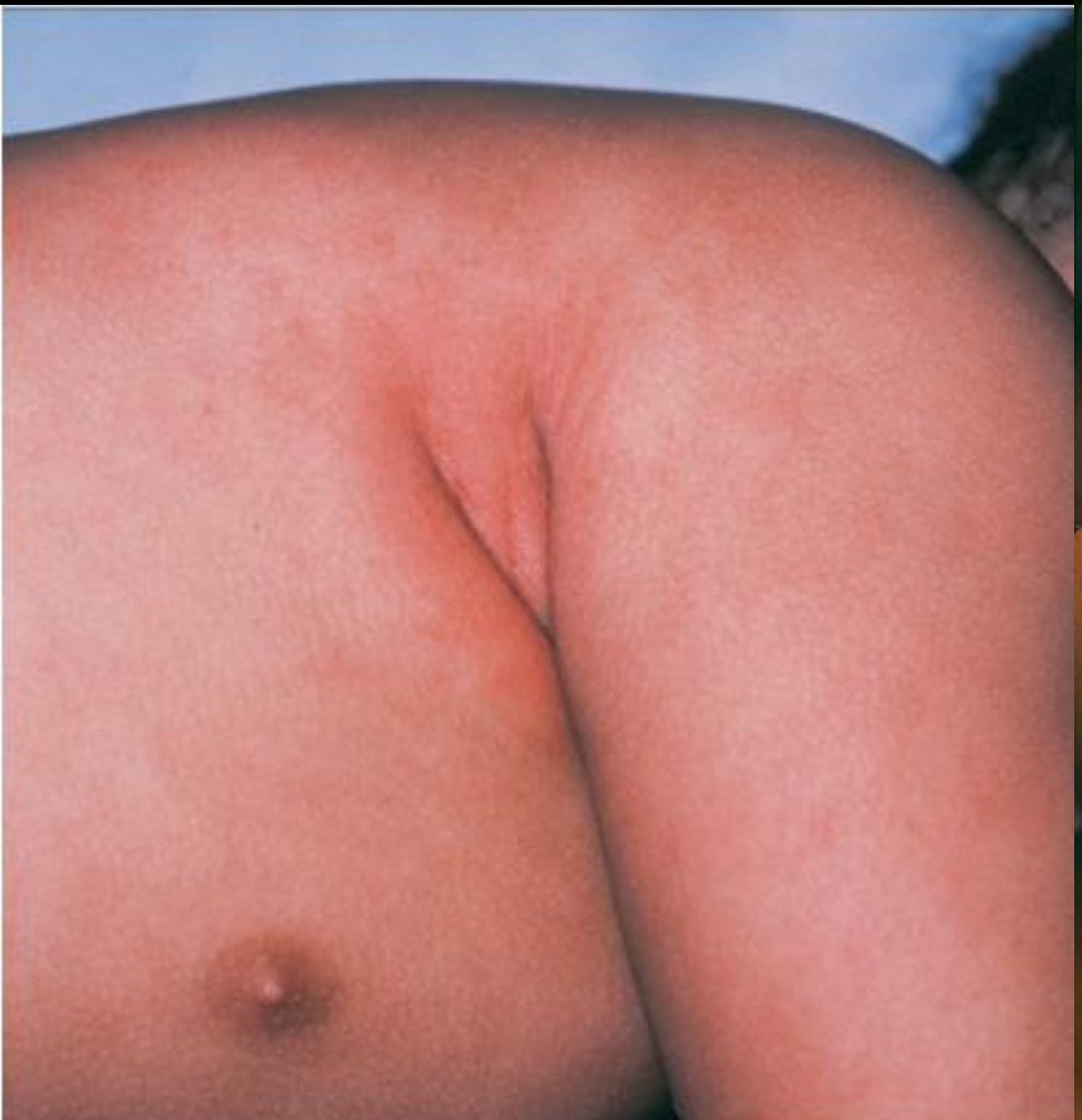
Staphylococcal toxic shock syndrome

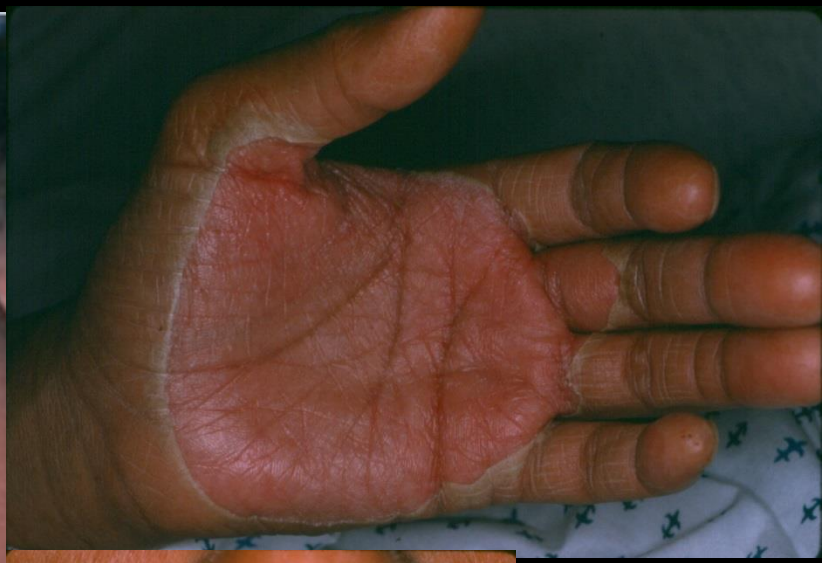
- Rapidly progressive, often fatal
- Infection or colonization - certain strains of *S. aureus* - produce toxic shock syndrome toxin-1 (TSST-1)
- Major risk factor - absence of antibodies against TSST-1
- TSST-1
  - direct toxic effects on multiple organ systems
  - impairing clearance of endogenous endotoxins derived from gut flora
  - acting as 'superantigen'

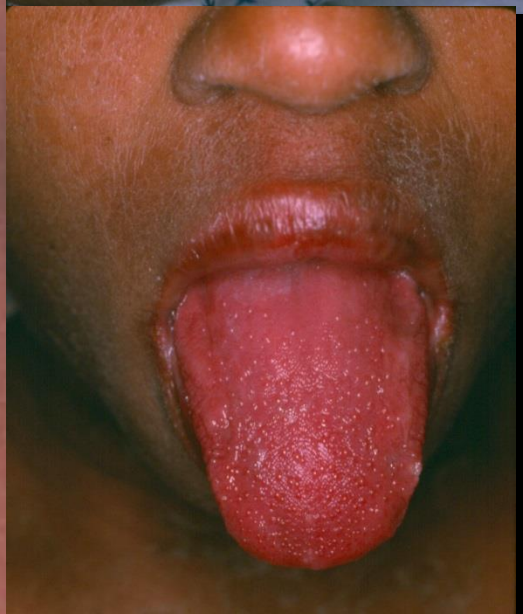
Staphylococcal toxic shock syndrome

- diffuse scarlatiniform exanthem
- starts on the trunk and spreads centripetally
- Erythema and edema of palms and soles
- Erythema of mucous membranes, strawberry tongue, hyperemia of conjunctiva
- Generalized non-pitting edema
- Desquamation of hands and feet occurs 1-3 weeks after onset of symptoms.

Staphylococcal Toxic Shock Syndrome







Differential Diagnosis of TSS

- Streptococcal Toxic Shock Syndrome
- TSS can resemble Kawasaki's disease, scarlet fever, staphylococcal scalded skin syndrome, early toxic epidermal necrolysis, Rocky Mountain spotted fever, and leptospirosis

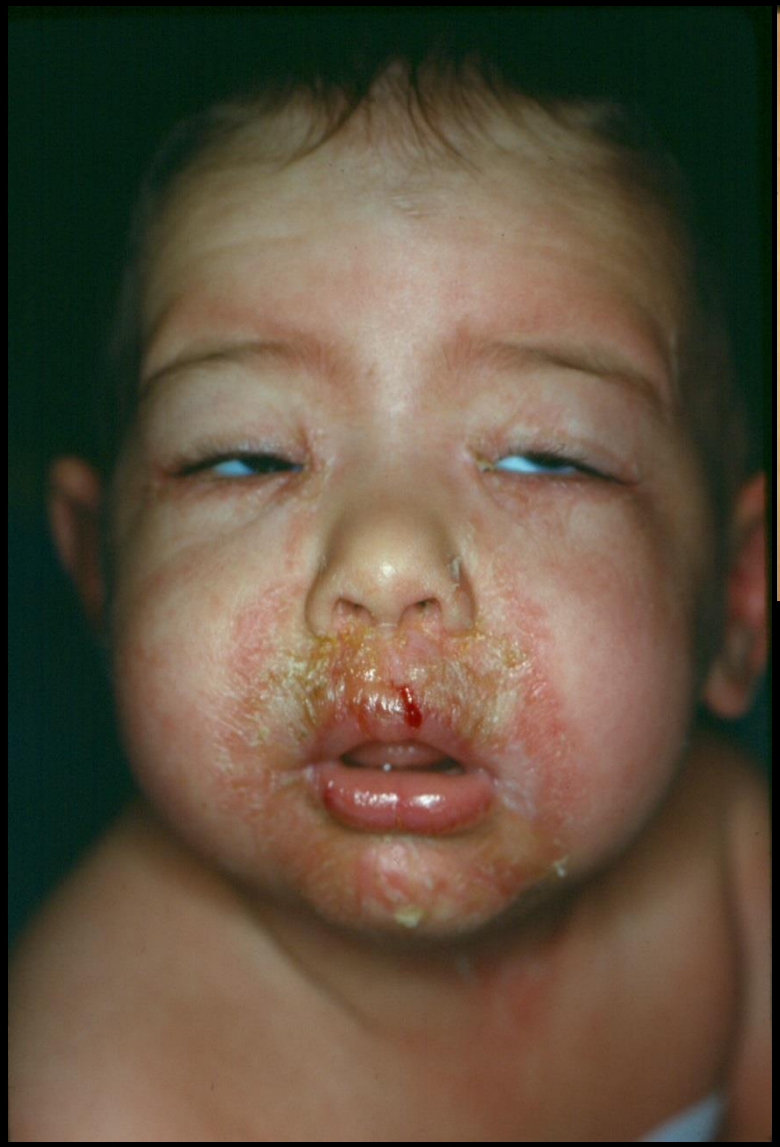
Streptococcal Toxic Shock Syndrome

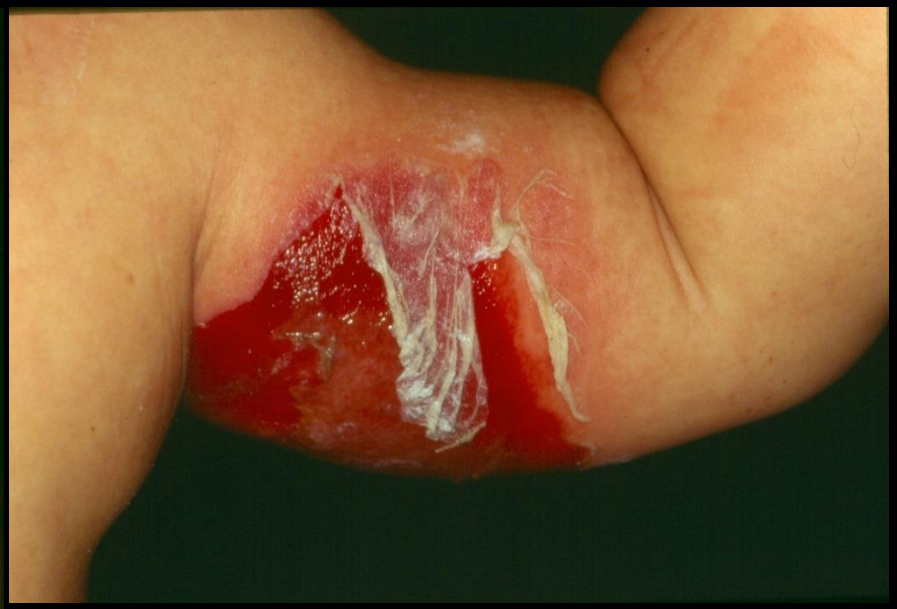
- Rapidly progressive, often fatal illness
- Group A Strep
- Commonly presents with fever, shock, multiorgan system failure, and soft-tissue infection.
- Healthy people 20 - 50 years of age
- Disruption of cutaneous barriers usually serves as a portal of entry
  - up to 50% of patients no known source for GAS bacteremia

Streptococcal Toxic Shock Syndrome

- Most cases of STSS require intensive supportive therapy.
  - Hypotension treated with aggressive intravenous fluid and vasopressors.
  - Clindamycin thought to inhibit the production of bacterial toxins (the cause of shock) = first-line treatment.
  - Early surgical intervention (e.g. drainage, debridement, fasciotomy, amputation) in appropriate cases is very important in the treatment of STSS and can be lifesaving.

	Staphylococcal	Streptococcal
Typical patient	Young (15-35 years), healthy	Young (20-50 years), healthy
Diffuse macular erythema	Very common	Less common
Vesicles and bullae	Rare	Uncommon
Localized extremity pain	Rare	Common
Soft tissue infection	Rare	Common
Hypotension	100%	100%
Renal failure	Common	Common
Predisposing factors	Surgical packing, surgical meshes, abscesses, contraceptive sponge, tampon*	Lacerations, bites, bruises, varicella
Positive blood cultures	< 15%	> 50%
mortality	< 3%	30-70%





Staphylococcal Scalded Skin Syndrome

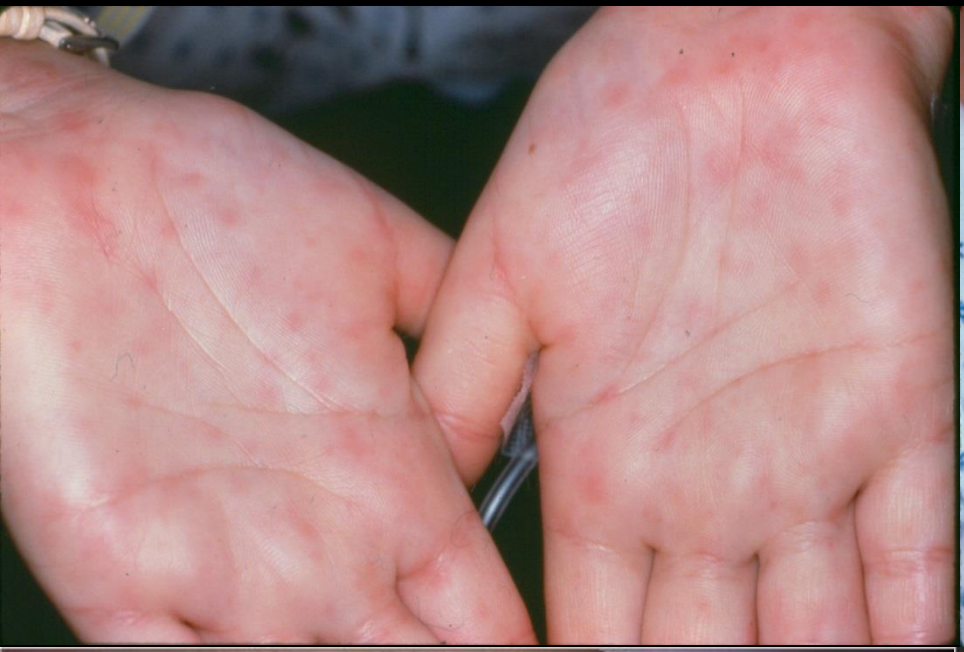
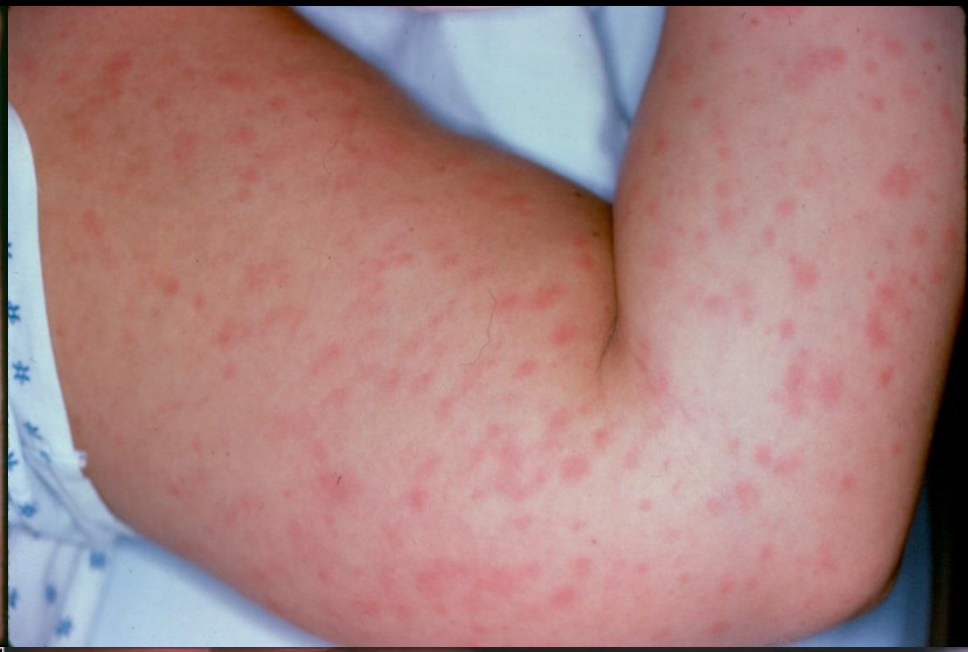
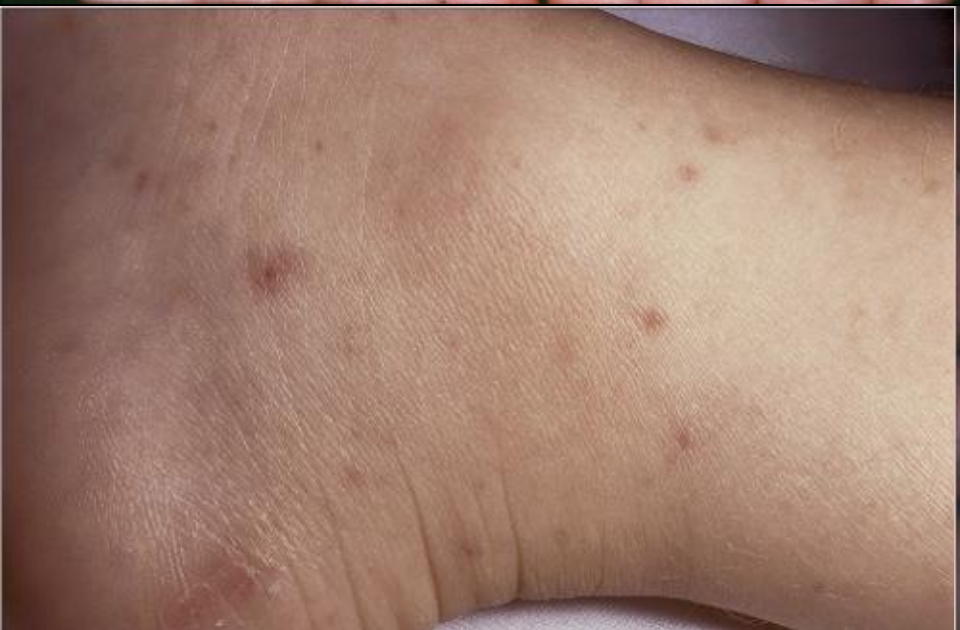
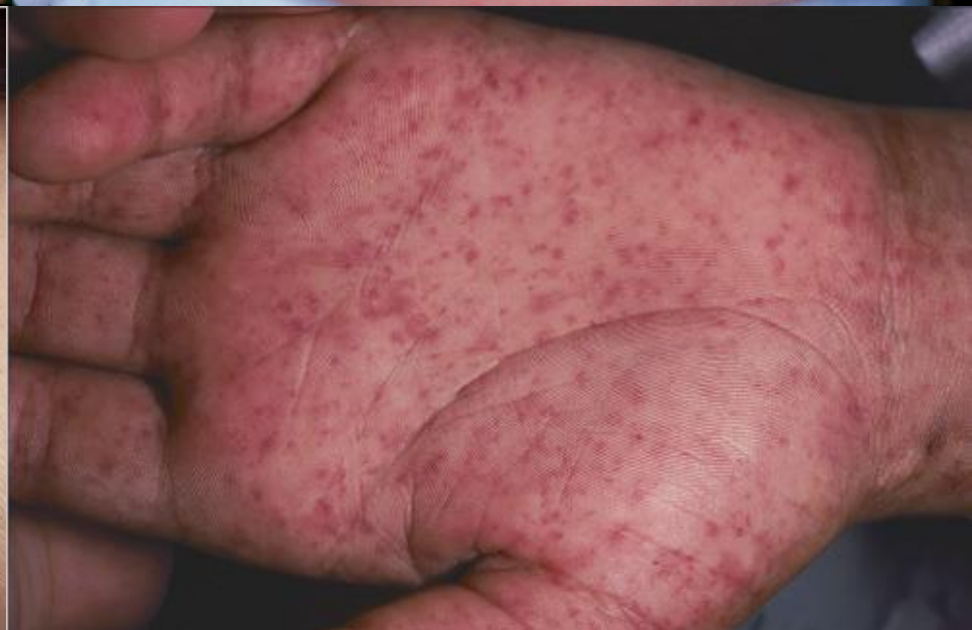
- Staphylococcus aureus
- Phage group II strains (types 3A, 3C, 55, 71)
- ET-A (chromosomally encoded)
- ET-B (plasmid encoded)
- ET-A - serine protease that targets desmoglein 1 (desmosomal cadherin involved in cell-cell adhesion)
- Toxins renally excreted - infants, who naturally have immature kidneys, and adults with chronic renal insufficiency most commonly affected

SSSS

- Prodrome - malaise, fever, irritability, and severe tenderness of skin
- Purulent rhinorrhea or conjunctivitis
- Starts as erythema - often localized to head
- Within hours - remainder of body involved
- Skin develops wrinkled appearance - flaccid bullae within superficial epidermis
- 1-2 days - bullae sloughed
- Flexural areas - first to exfoliate

SSSS

- “Sad man” facies - perioral crusting and fissuring with mild facial edema
- 3-5 days - scaling and desquamation
- 10-14 days - skin re-epithelializes and heals without scarring
- Resolves in 1-2 weeks - normally without any sequelae
- Mortality rate - 3% for children, over 50% in adults

Rocky Mountain Spotted Fever

- Rickettsia rickettsii
- Dermacentor/Ixodes
- Incubation period - 6 to 8 days following tick bite
- Initial clinical manifestation = flu-like syndrome characterized by fever (>39°C), chills, headache, myalgia, malaise and non-specific gastrointestinal symptoms (nausea, vomiting, diarrhea, abdominal pain).
- Cutaneous eruption not constant but undergoes typical evolutionary pattern - typically appears 2 to 4 days after onset of fever.
- Initial skin manifestation - erythematous macules, frequently localized to the wrists and ankles

RMSF

- Eruption becomes maculo-papular with central petechiae
- Spreads centripetally and becomes diffuse, involving the trunk, extremities, palms and soles, sparing the face
- Cutaneous eruption absent in nearly 10% of patients (spotless RMSF)
- Purpuric or necrotic appearance linked to more severe disease
- Portal of entry can present as black spot, surrounded by an inflammation (eschar or 'tache noire‘)

RMSF

- Multivisceral symptoms characterize severe cases and correlate with overall severity and prognosis.
- Neurological symptoms include seizures, ataxia and meningitis. Sensory neuropathy, cranial nerve palsies and paraparesis have been occasionally reported.
- Pulmonary symptoms include cough, dyspnea and pleural effusions. Respiratory distress syndrome has also been reported. Radiographically, diffuse alveolar or interstitial infiltrates may be observed.
- Jaundice, gastrointestinal bleeding or necrosis is rare. Hepatomegaly is observed in 12 to 25% of the cases.

RMSF

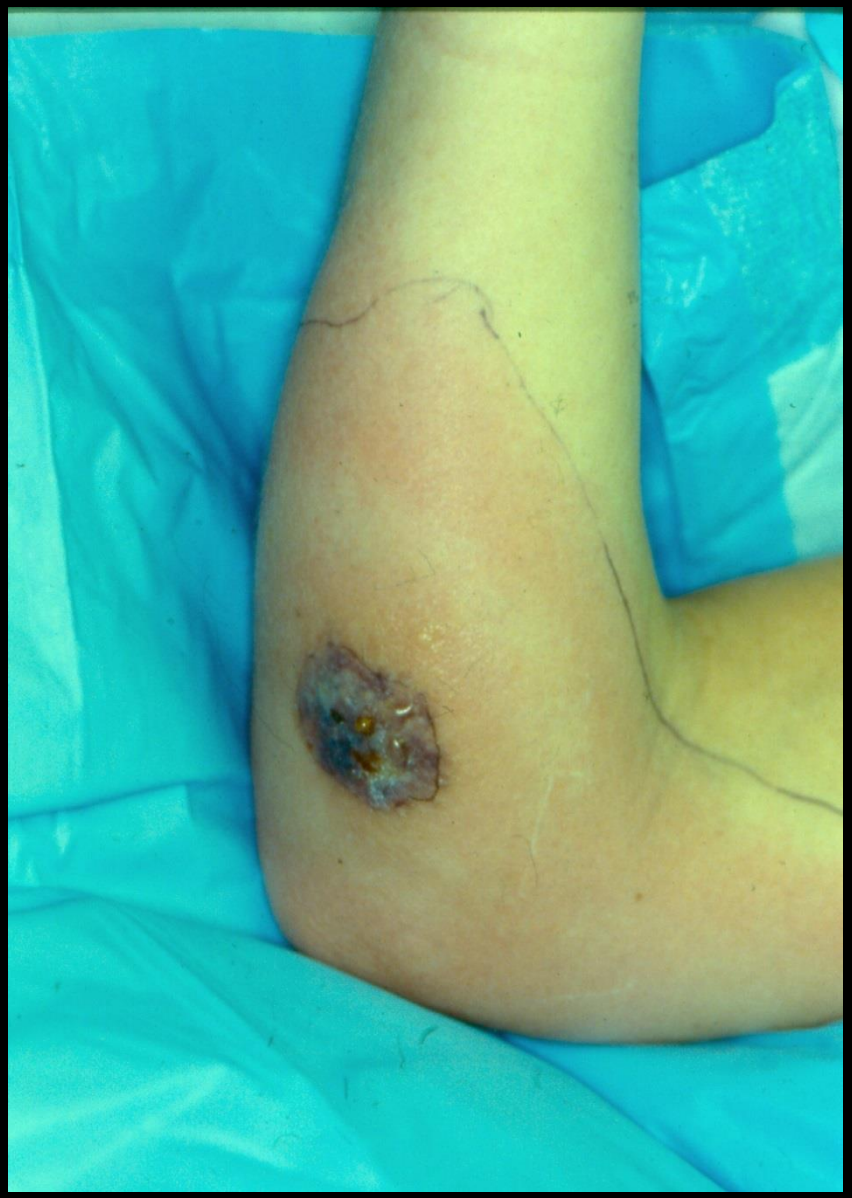
- Myocarditis is seen unfrequently.
- Papilledema and retinal thrombosis or arterial occlusion have been reported.
- Renal failure is possible.
- Clinical picture late in the disease has similarities to disseminated intravenous coagulation.

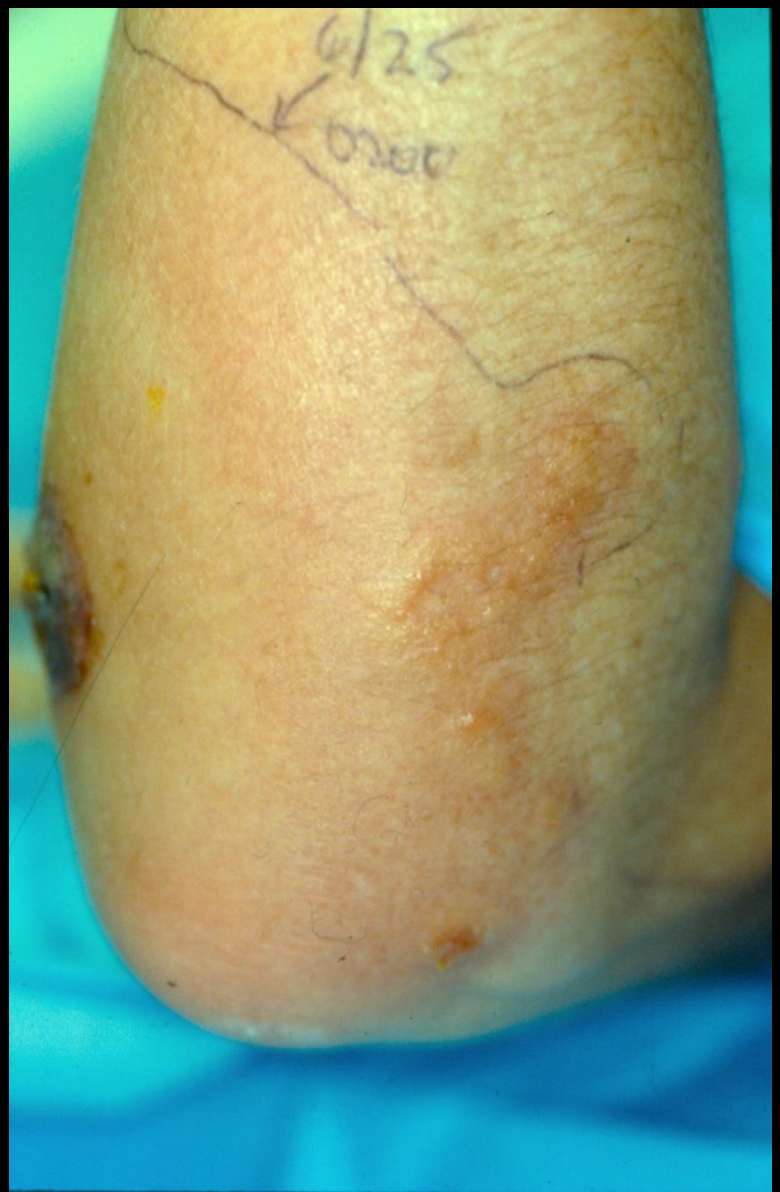
- Mortality is reported in 20 to 25% of the untreated cases. In untreated elderly patients mortality is 50% or higher.
- Tx – doxycycline 200mg/d x 7d

RMSF

- Routine laboratory tests are not specific: CBC normal or shows moderate leukocytosis, leukopenia, anemia, thrombocytopenia which parallels severity of involvement
- Hyponatremia is frequent and is the consequence of hypovolemia-induced secretion of antidiuretic hormone.
- Hepatic enzyme levels are often elevated, as well as serum bilirubin, creatinine kinase and lactate dehydrogenase.

red-white-blue

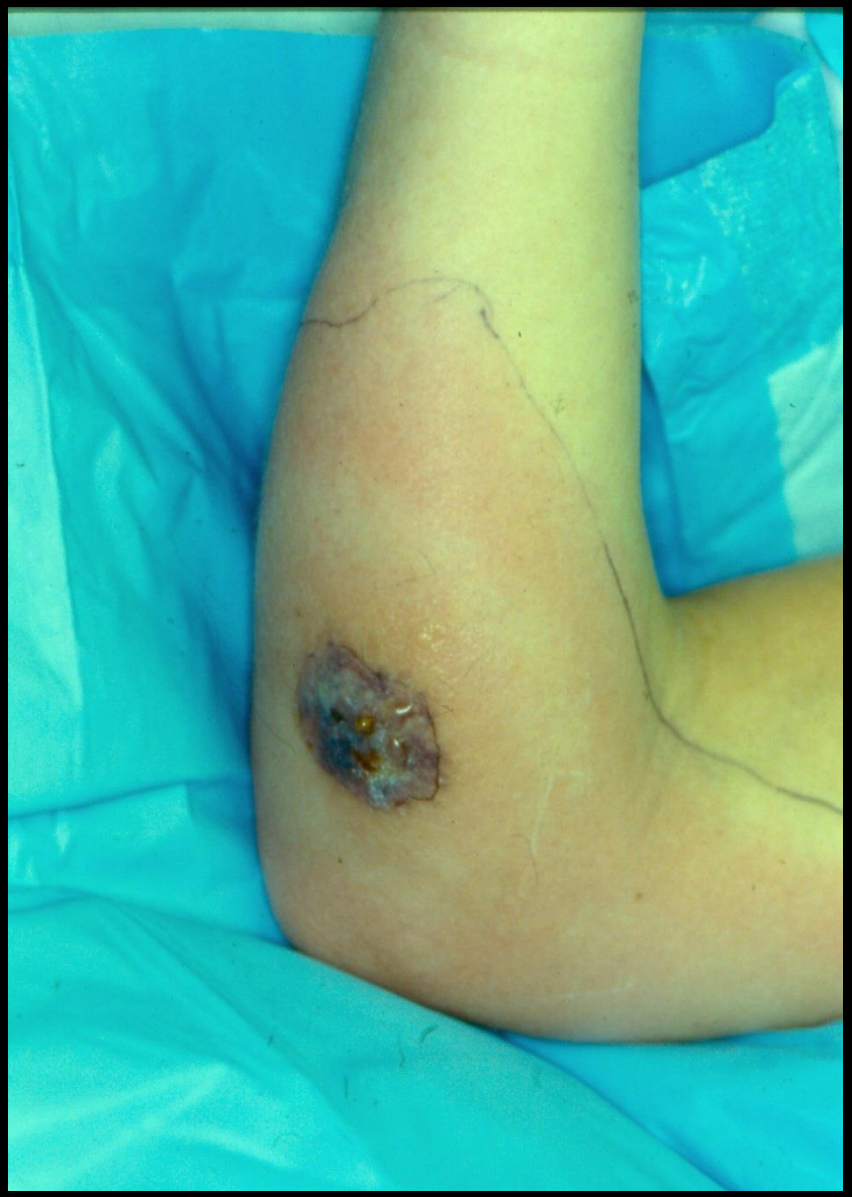


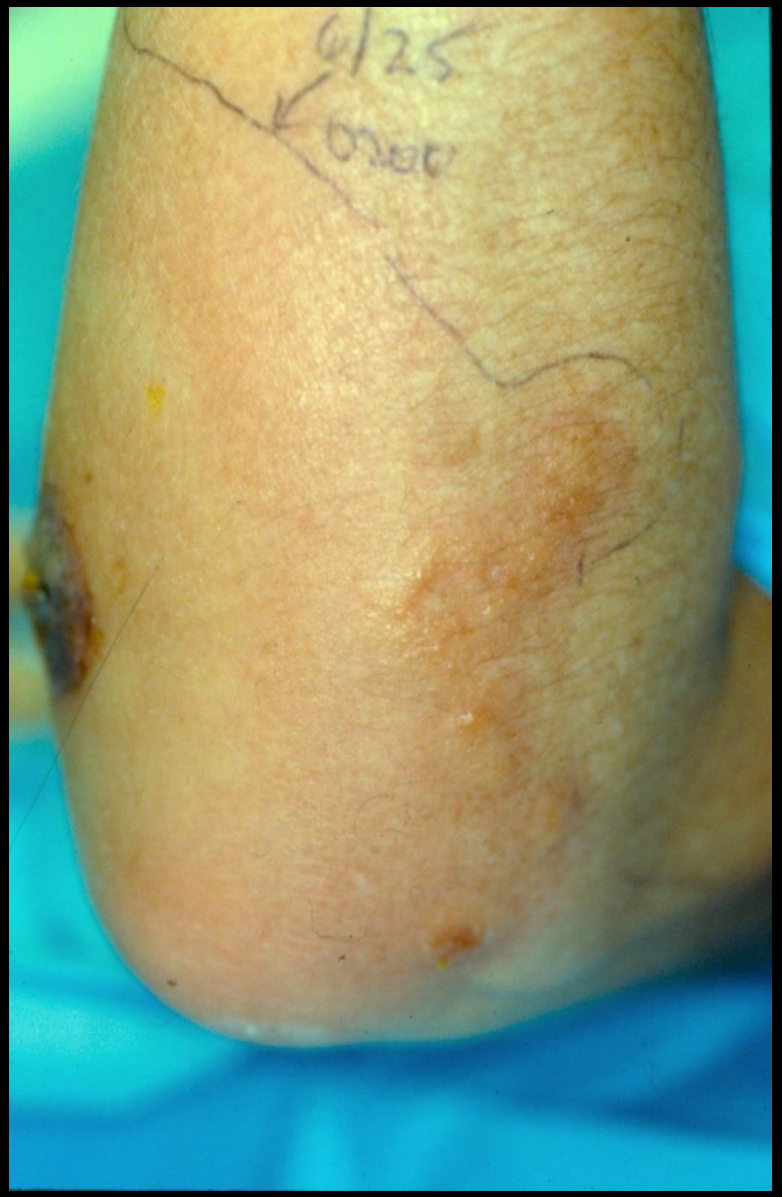


Spider bite

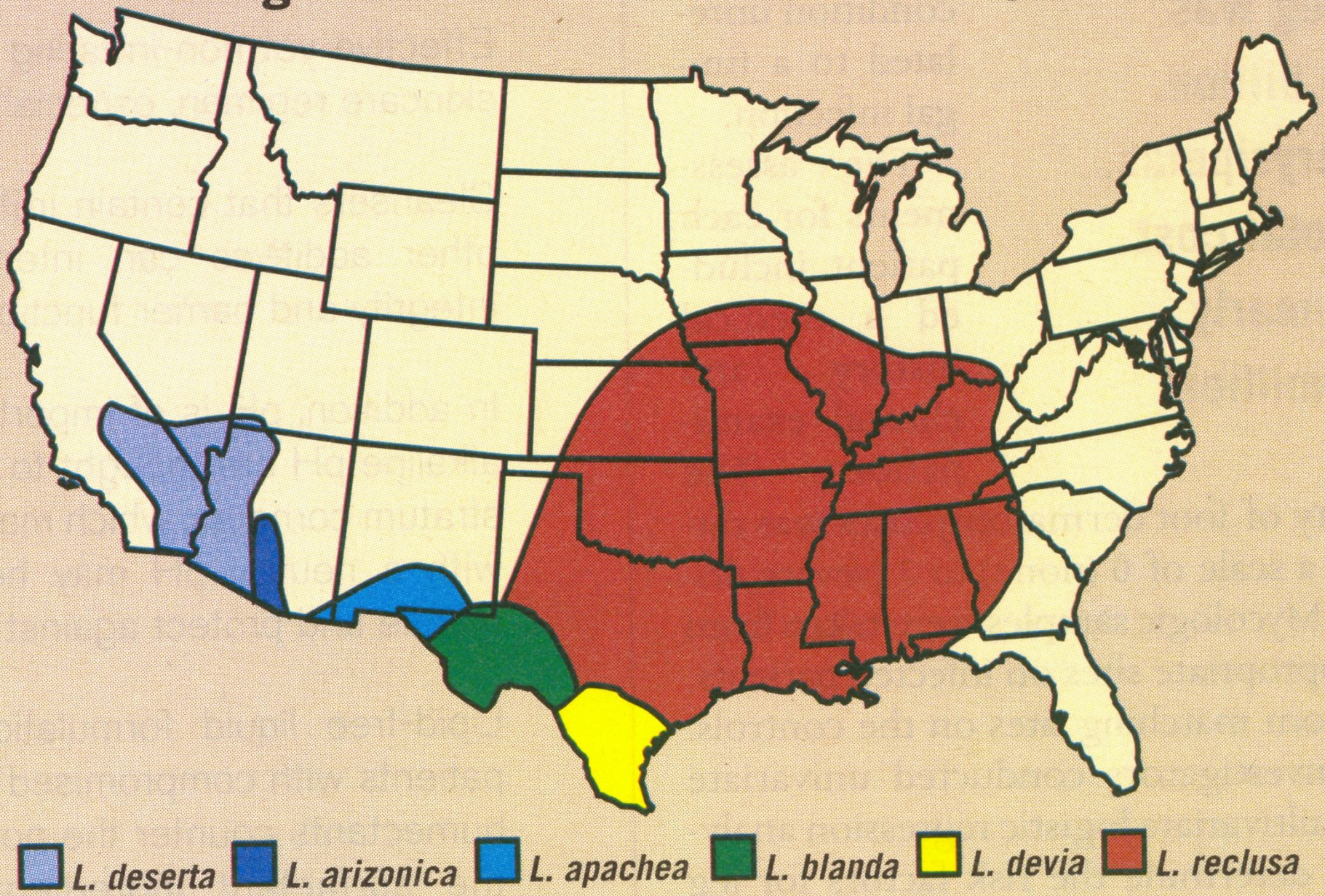
- Many species of spiders cause necrotic lesions
- Loxoceles not present in CT
- Tissue necrosis secondary to neutrophil response to sphingomyelin
- Red-white-blue lesions

Spider bite – red-white-blue





Range of Recluse (*Loxosceles*) Spiders



Source: Department of Entomology, University of California, Riverside

Spider bite management

- Limit immunological response to sphingomyelin
  - ice
- Analgesia
- ± dapsone
- Avoid surgical debridement initially

Topics covered

- Trigeminal Zoster
- Stevens-Johnson syndrome
- Toxic Epidermal Necrolysis
- DRESS
- Toxic Shock Syndrome
- Staphylococcal Scalded Skin Syndrome
- Rocky Mountain Spotted Fever
- Spider Bite