Rhinitis, sinusitis, food and drug allergy, and allergic skin disorders [Part 2]

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What food allergies do most children grow out of?

- A. Peanut and apple
- B. Wheat and seafood
- C. Milk and tree nuts
- D. Eggs and milk

- Answer:

What food allergies do most children grow out of?

- A. Peanut and apple
- B. Wheat and seafood
- C. Milk and tree nuts
- D. Eggs and milk

- Answer: D

What vaccine is contraindicated in patients allergic to egg?

- A. MMR
- B. tetanus
- C. yellow fever
- D. influenza
- E. herpes zoster

What vaccine is contraindicated in patients allergic to egg?

- A. MMR
- B. tetanus
- C. yellow fever
- D. influenza
- E. herpes zoster

- Ans- C

Food Anaphylaxis

- 2-3% of adults
- peanuts, tree nuts, soy, shellfish, fish, egg, milk, wheat
- milk and eggs- may outgrow
- delay in epi increases death
- Those who need 2 or more doses of epi, have delayed use of epi or hypotension are more likely to have severe late phase
- observe 6-8 hours because delay reaction
- asthmatics have increase risk of death
- Dx with history and support with skin testing or in-vitro-IgE specific test
- Rx- avoidance and epipen

Gluten is in?

- A. Milk
- B. Nuts
- C. Corn
- D. Barley

- Answer:

Glutin is in?

- A. Milk
- B. Nuts
- C. Corn
- D. Barley

- Answer: D

Celiac Disease

- Gluten is a protein and the antigen
- Gluten is in wheat, barley and rye (? oats).
- Serology:
  - IgA anti-tissue transglutaminase (best test 98%/95%)
  - IgA antibodies to endomysium (good but less sensitive)
  - IgG and IgA antibodies to gliadin are considerably less reliable
- Dermatitis herpetiformis- associated rash with testing to anti-tissue transglutaminase and IgA antibodies to endomysium
- 1:500 are IgA deficit so remember to check IgA

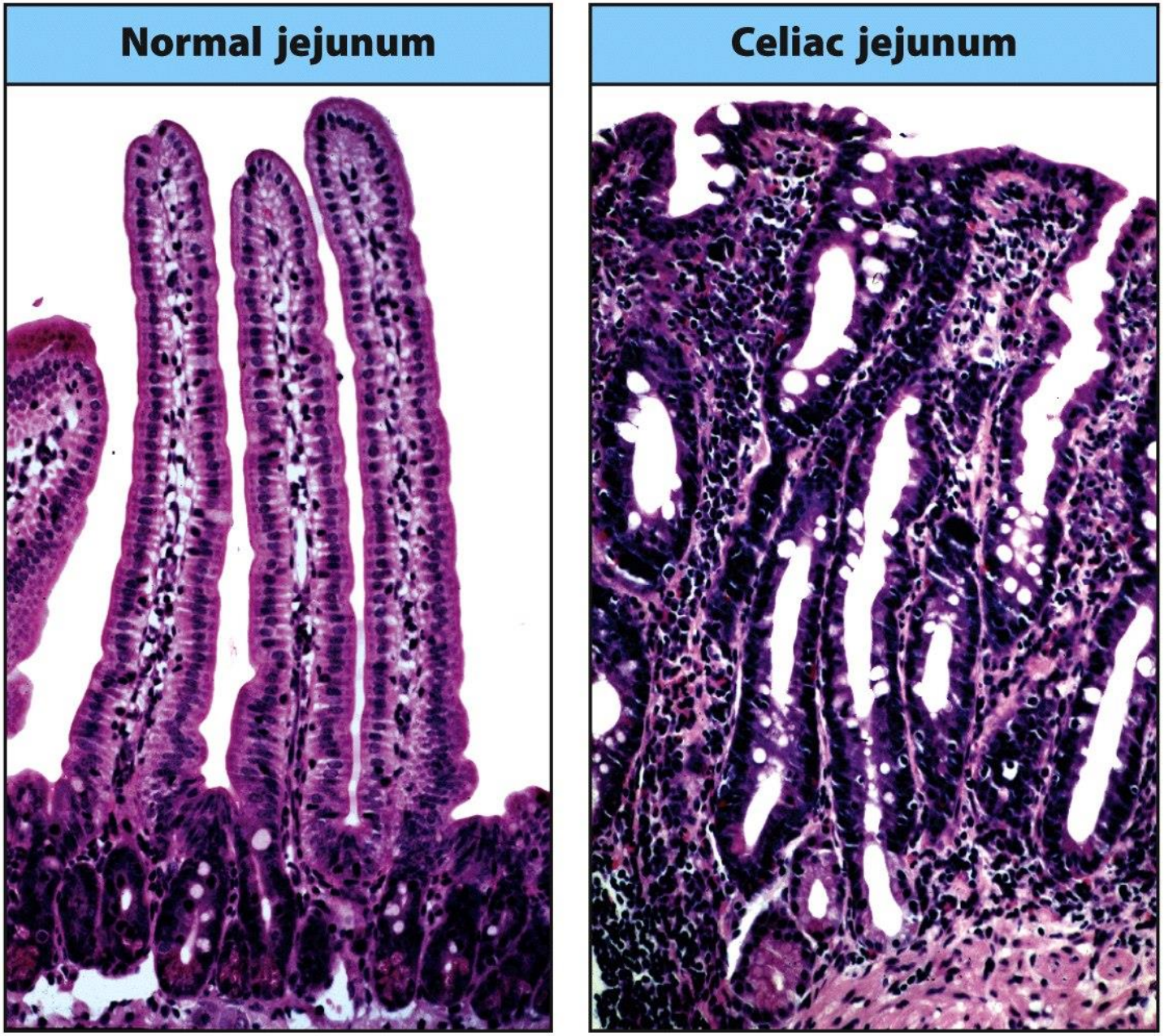
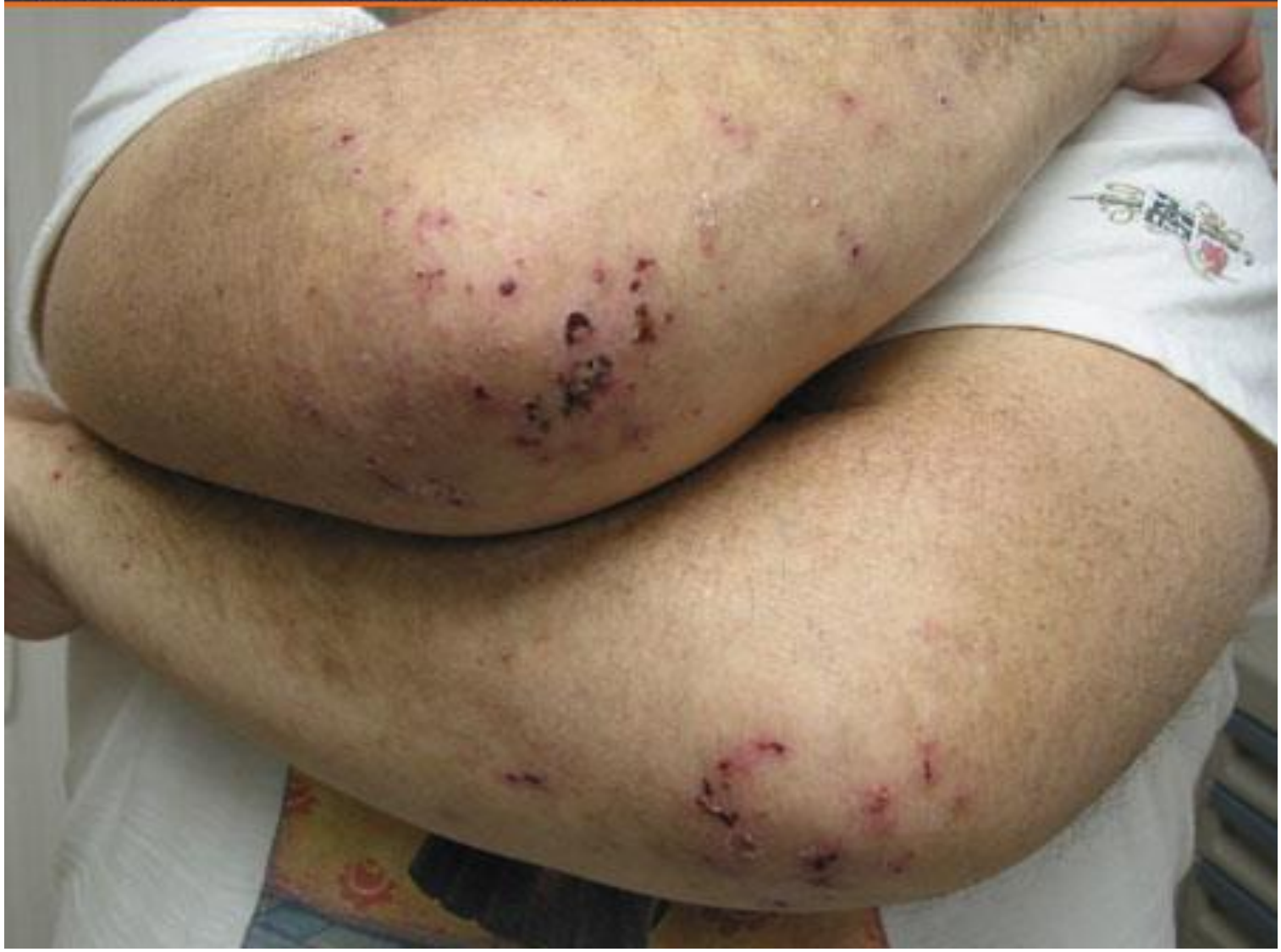


Figure 13-21 Immunobiology, 7ed. (© Garland Science 2008)

Patient- Peter

- Peter is a 40 year old white male from Finland.
- He presents with papules, blisters and “sores” on his elbows and buttocks that are extremely itchy and some times painful.
- Otherwise he is in good health and is not taking any medications.



What test would you obtain to help in diagnosis?

- A- Chest X-ray
- B- Abdominal flat plate
- C- Skin biopsy
- D- Skin scraping

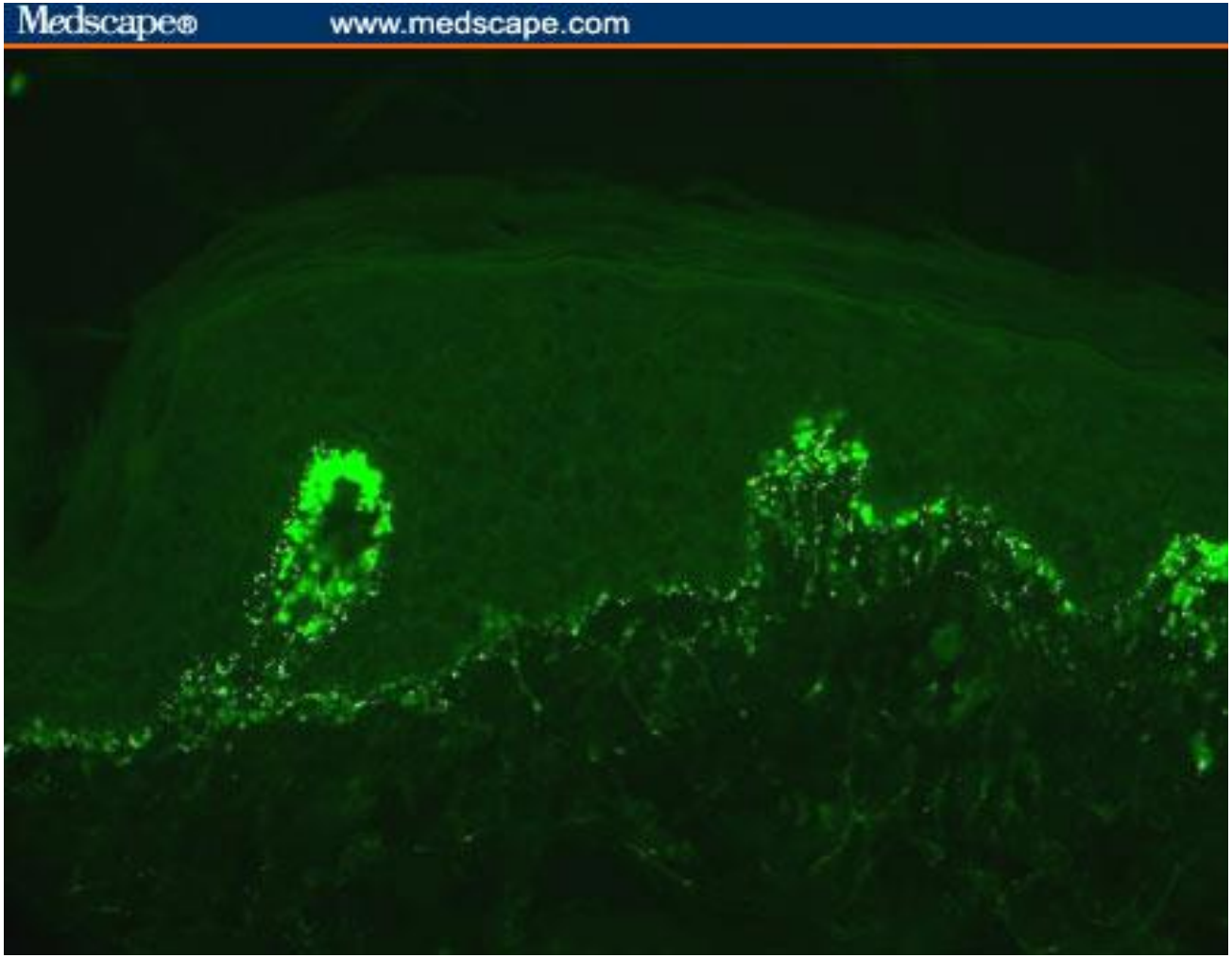
Ans

What test would you obtain to help in diagnosis?

- A- Chest X-ray
- B- Abdominal flat plate
- C- Skin biopsy
- D- Skin scraping

Ans- C

3+ granular staining of dermal papillary tips with immunoglobulin A (IgA)



Your patient has Dermatitis Herpetiformis. You would treat him with?

- A. Doxycycline
- B. Penicillin
- C. Plaquenil
- D. Dapsone

- Answer:

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- D. Dapsone

- Answer: D

Treat Gluten Enteropathy and Derm. Herp.

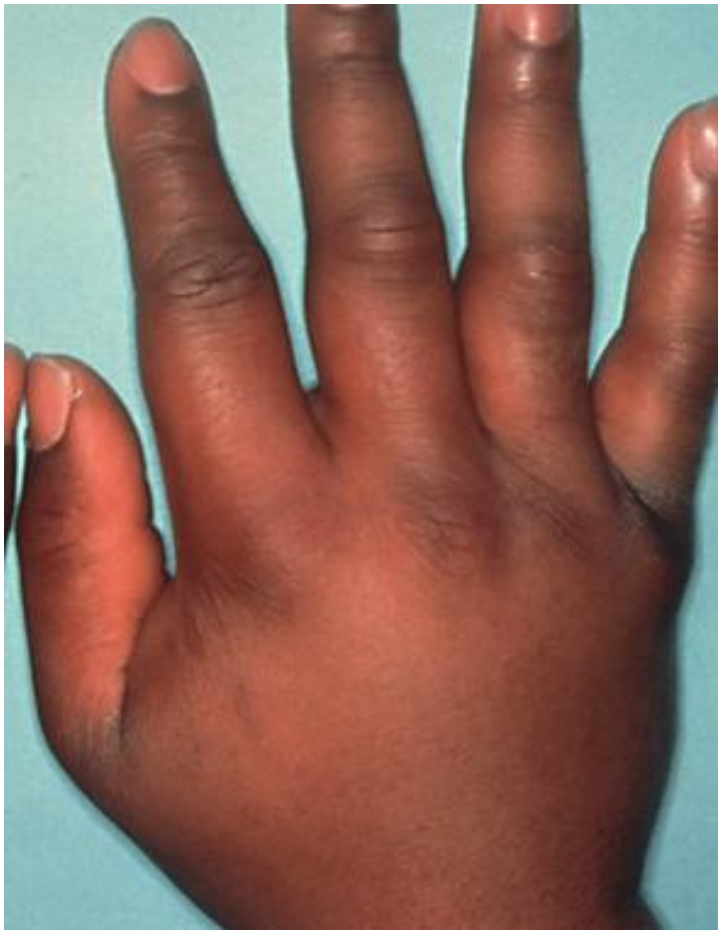
No exposure to wheat, barley and rye.

For the rash use dapsone.

Patient- Maria

- Maria is a 21 year old female
- Since 13 yo she has had 6 or so episodes a year of swelling of the limbs or face
- Episodes last 3 days and resolve.
- She also has recurrent abdominal pain.
- She has never had urticaria nor anaphylaxis
- Antihistamines and corticosteroids do not seem to make a difference

Peripheral swelling



What test would you perform to help in the diagnosis

- A. CH50
- B. C1-esterase inhibitor
- C. C3
- D. C4
- E. Bradykinin

- Ans:

What test would you perform to help in the diagnosis

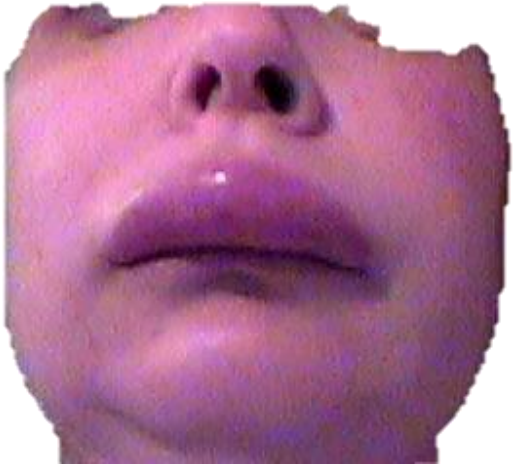
- A. CH50
- B. C1-esterase inhibitor
- C. C3
- D. C4
- E. Bradykinin

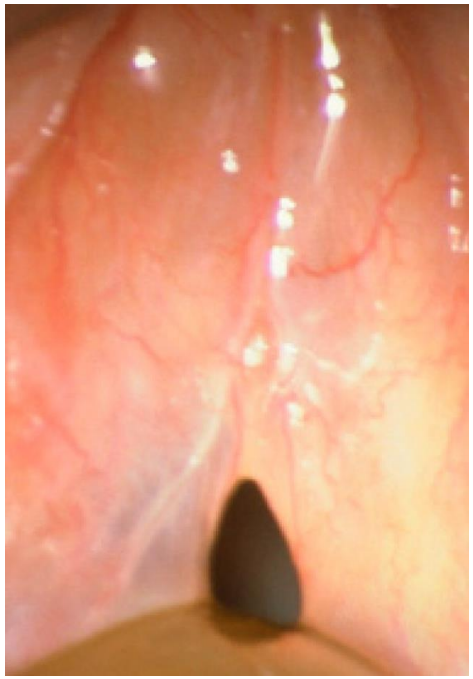
- Ans: D

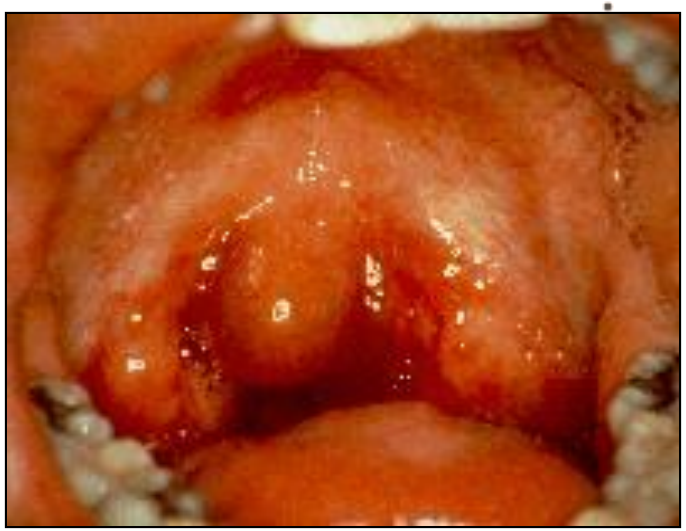
Three types of HAE, acquired angioedema and ACE-inhibitor are all bradykinin induced

	HAE Type		
Parameter:	I	II	III
Percentage of HAE	85	15	Less than 1
C4	low	low	normal
C1INH protein	Low	Normal	Normal
C1INH functional activity	Low	Low	Normal

Facial and airway swelling in HAE

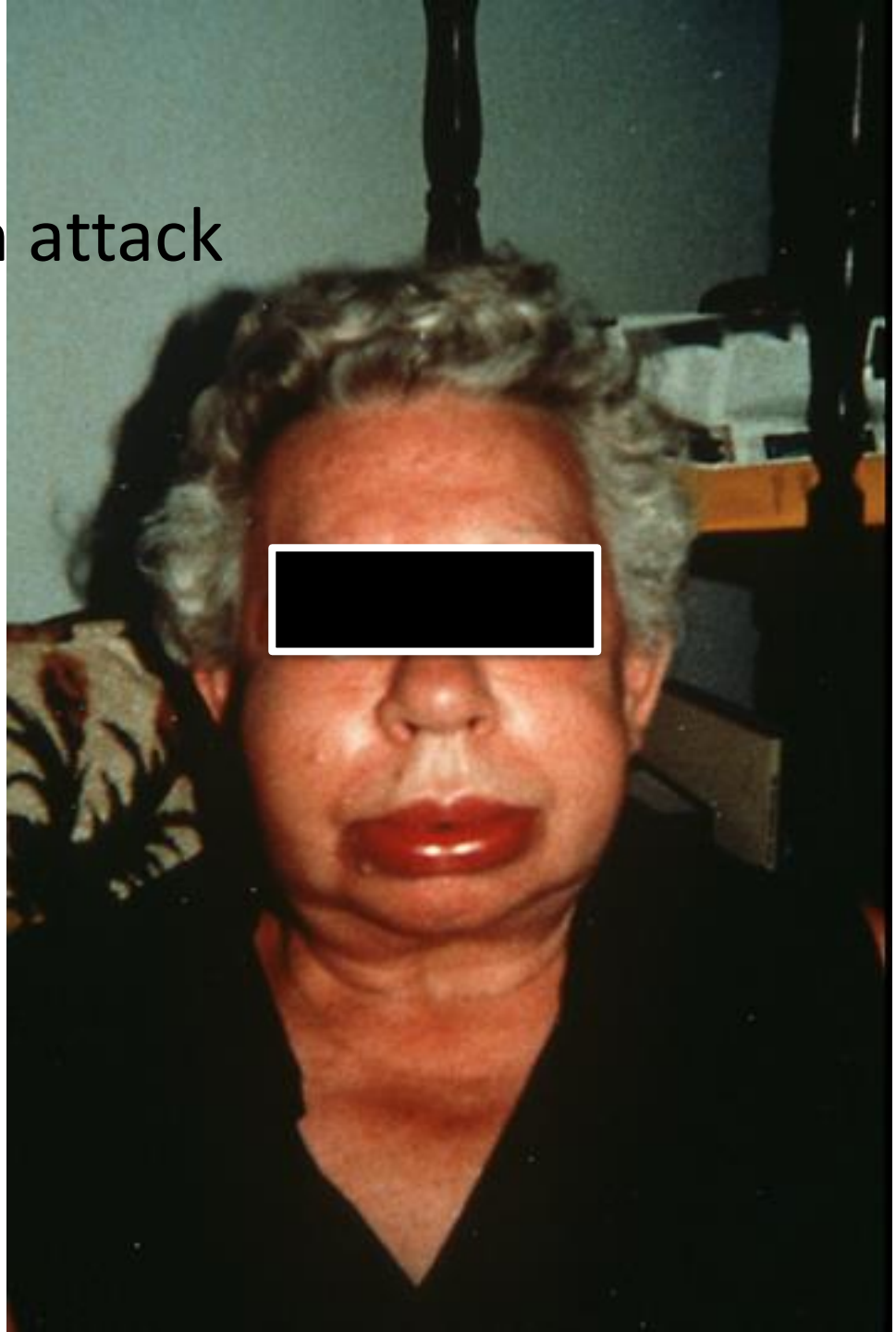




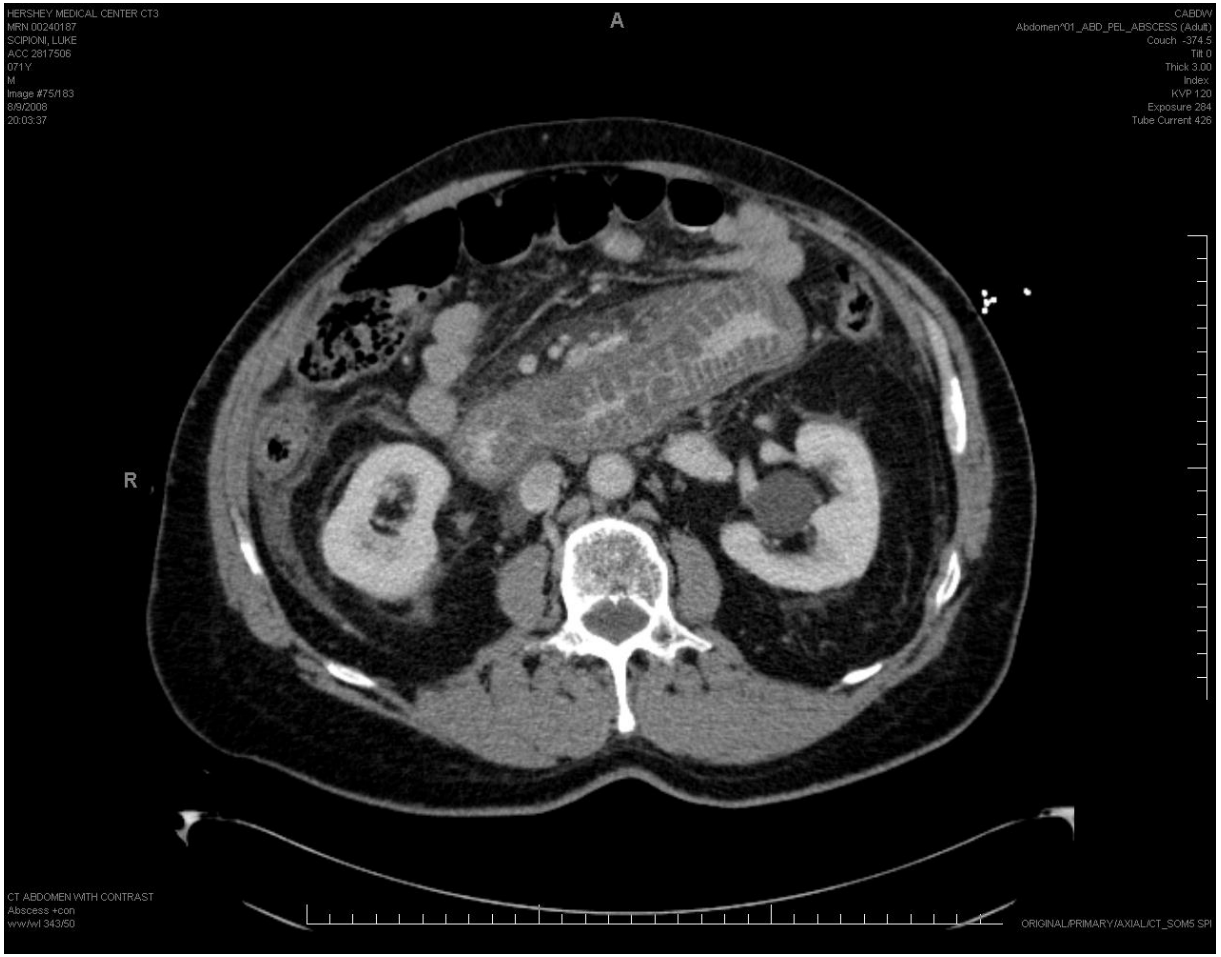


Vocal cords courtesy of Allan Kaplan and uvula of Marc Riedl

During an attack



Intestinal swelling on CT scan



Hot Points in the Complement System

- C4- hereditary angioedema
- C1-differentiates acquired from hereditary angioedema
- CH50- is for classical complement deficiency
- C3- for active SLE
- Terminal components (C5,6,7,8,9) for Neisseria.
- C2- most common complement deficiency
- PNH- DAF (CD55), HRF (C8 binding protein), MIRL (CD59) defects lead to lyse of cells by failure to inactivate C3b and C4b

Which drug should not be used in Hereditary Angioedema?

- A. Progesterone
- B. C1-esterase inhibitor
- C. ASA
- D. Lisinopril

- Answer:

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- C. ASA
- D. Lisinopril

- Answer: D (also never use estrogen)

Drugs to avoid in Allergic Diseases

- ☺Non-selective beta blockers - asthma, anaphylaxis, COPD, skin testing, immunotherapy
- ☺ACE inhibitors - cough (15-20%), angioedema (0.1-0.5%), Hereditary Angioedema
- ☺RCM – active asthma, urticaria, prior reactions, past anaphylaxis, mastocytosis
- ☺Estrogens and ACE-I in Hereditary Angioedema

The best way to diagnose contrast dye reactions is?

- A. Challenge
- B. Skin test
- C. In-vitro assay
- D. History
- E. History of sea food allergy

- Answer:

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- B. Skin test
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- D. History
- E. History of sea food allergy

- Answer: D

RCM

- Most cases are non IgE mast cell activation
- In most cases not able to skin test for RCM
- fatal 1:10,000 cases
- risk - prior reaction, B blockers, asthma, unstable CHF, mast cell disorders, ASA and NSAID
- On repeat challenge - 35% react
- premedicate - 10% react
- low osmo contrast - 1% react
- use both above – < than 0.5% react

RCM

Premedicate with:

- prednisone 50 mg 13, 7 and 1 hour before procedure
- antihistamine (benadryl) 1 hour before
- Optional- H-2 blocker 1 hour before

Use low osmo agent.

Avoid contrast if possible.

IV cath in place and SQ-Epi available.

Your patient has multiple drug allergies. Which test would you refer her for to exclude an allergic reaction?

- A. immunocap for penicillin
- B. skin testing for doxycycline
- C. skin testing for penicillin
- D. immunocap for cephalosporins
- E. skin testing for cephalosporins

- Ans-

Your patient has multiple drug allergies. Which test would you refer her for to exclude an allergic reaction?

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- E. skin testing for cephalosporins

- Ans- C

Drug Reactions - Allergic (IgE)

- most are to haptens that bind to macro-molecules
- fatal - IV > IM > oral
- sensitization - topical > IV > oral
- treatment of choice – avoid the drug or desensitize
- skin test for diagnosis of allergy is limited to penicillin

Penicillin Allergy

- only 18% with history of allergy are allergic
- 4% without history will be allergic
- If past history of penicillin allergy elective testing can be offered
- Elective testing with pen-G and pre-pen with penicillin or amoxicillin allergy
- Positive skin test - risk 60% - desensitize
- Negative skin test – less than 4% risk of an allergic reaction

- tolerate – aztreonam, meropenem, but **not** imipenem

Insulin drug allergy

- 10% of diabetes
- self resolves
- do not stop insulin - increases risk
- Consider reaction to protamine
- change in tertiary structure predisposes to IgE production to human insulin
- Rx - desensitization, steroids, antihistamines

If your patient has a sulfa antibiotic allergy they should avoid?

- A. lasix
- B. thiazides
- C. sulfonylureas
- D. dapsone
- E. Sulfasalazine

- Answer:

If your patient has a sulfonamide antibiotic allergy they should avoid?

- A. lasix
- B. thiazides
- C. sulfonylureas
- D. dapsone
- E. Sulfasalazine

- Answer: E

Sulfa drug reaction

- 5% hospitalized patients
- 10 times increased in HIV
- antigen - sulfonamidoyl - IgE
- can be desensitized
- no skin testing available
- little evidence to support cross-over of antibiotics to non-antibiotics including lasix, thiazides, sulfonylureas, dapsone
- exception is sulfasalazine

Drug reactions - Therapy

- stop all suspect drugs
- replace essential drugs with alternatives
- do not randomly challenge
- desensitize for anaphylaxis if the drug is essential
- never desensitize if exfoliative dermatitis, TENS, SJS, erythema multiforme or DRESS syndrome.

Your patient is on carbamazepine and has increasing eosinophils and a macular papular rash. What diagnosis would you consider?

- A. erythema multiform
- B. DRESS
- C. Hypereosinophilic syndrome
- D. Immediate hypersensitivity

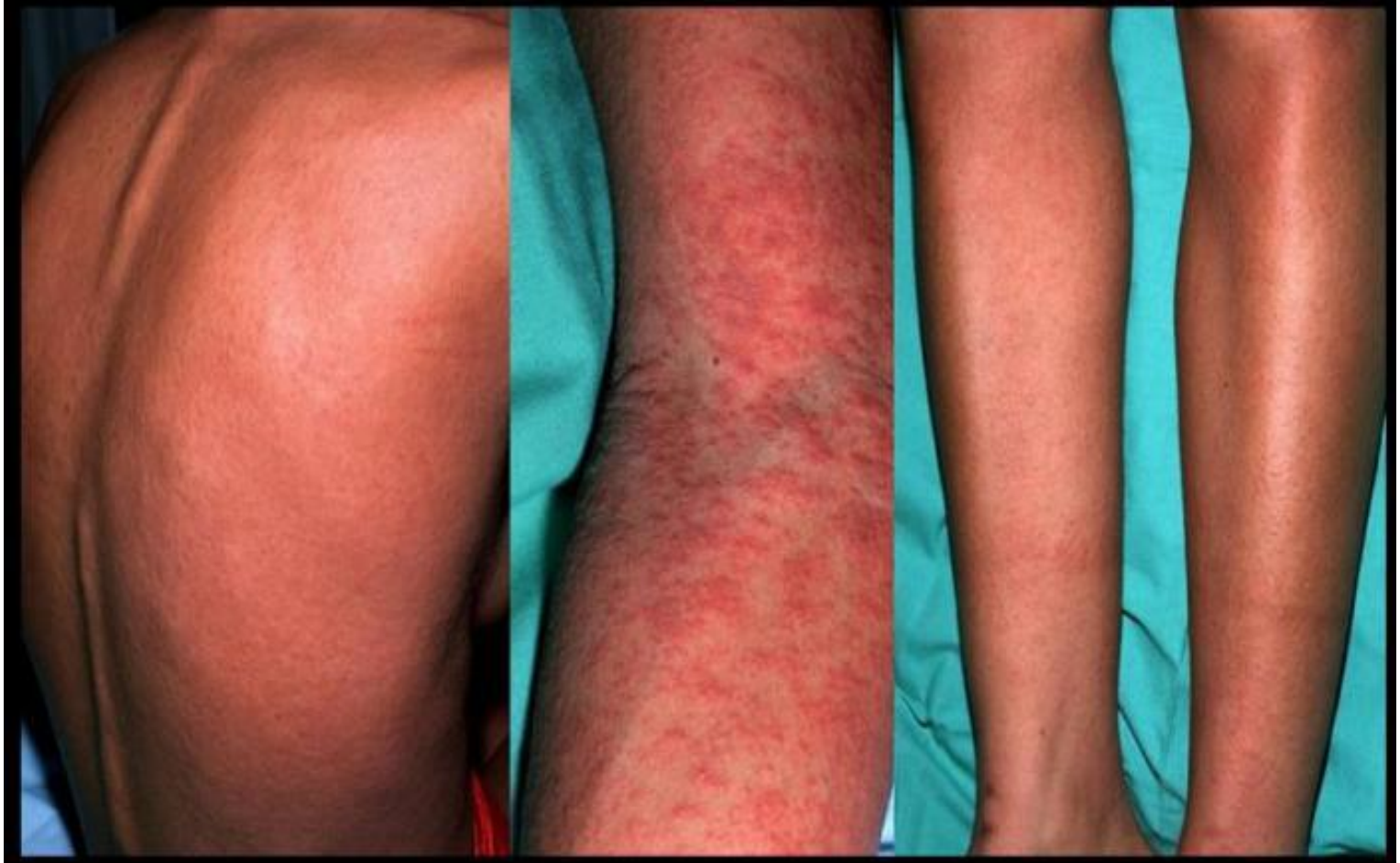
- Answer:

Your patient is on carbamazepine and has increasing eosinophils and a macular papular rash. What diagnosis would you consider?

- A. erythema multiform
- B. DRESS
- C. Hypereosinophilic syndrome
- D. Immediate hypersensitivity

- Answer: B

Drug Rash with eosinophilia and systemic syndrome DRESS, here due to abacavir



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DRESS Syndrome (Drug Rash with Eosinophilia and Systemic Symptoms)

- Rash, fever, hypereosinophilia, often with hepatitis, pneumonitis
- Drug induced- follows 2-6 weeks after starting medication
- Most common with anti-seizure medications
- Cross reaction between phenobarbital, carbamazepine, phenytoin
- May be fatal
- Stop responsible drug and avoid in the future
- ? benefit of corticosteroids

Drug induced IgA deficiency

- sulfasalazine, gold, penicillamine
- carbamazepine, phenytoin
- hydroxychloroquine
- reverses with stopping drug

A patient of yours, who is 26 years old with spina bifida needs another surgery. What allergy would you be concerned about?

- A. penicillin
- B. iodine
- C. latex
- D. egg antigen in anesthetic agent
- E. radiocontrast

- Ans:

A patient of yours, who is 26 years old with spina bifida needs another surgery. What allergy would you be concerned about?

- A. penicillin
- B. iodine
- C. latex
- D. egg antigen in anesthetic agent
- E. radiocontrast

- Ans: C

Latex Allergy

- risk - spina bifida, congenital urologic disease, health care workers, rubber workers
- rubber additives cause contact dermatitis
- latex protein - IgE reaction (rhinitis, hives, asthma and anaphylaxis)
- airborne on powder from gloves
- Rx - complete latex free surgery
- worker- latex free, comrades- powder free
- always carry an epipen

Serum Sickness

- 10 days to 2 weeks into therapy
- fever, adenopathy, rash, splenomegaly
- ICX reaction
- Beta lactams, sulfonamides
- Hydantoins, antilymphocyte serum
- may decrease risk with antihistamines since histamine increases ICX deposition
- treat with steroids and NSAID
- may be at risk for IgE reaction

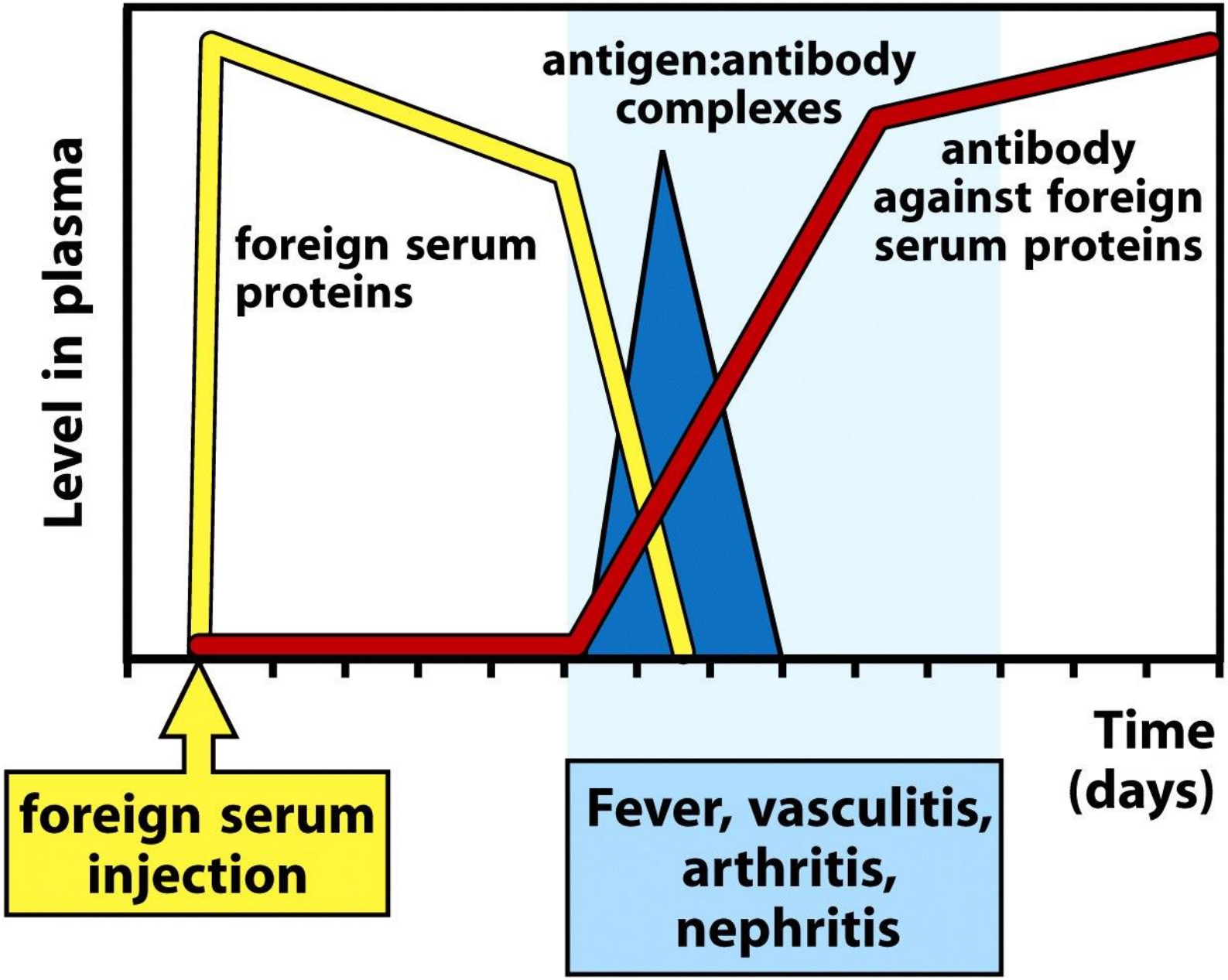

Figure 13-27 Immunobiology, 7ed. (© Garland Science 2008)

Skin testing is indicated for which reaction from a beesting?

- A. hives before age 17 years
- B. large local reactions crossing 2 joints
- C. Hives in an adult
- D. Nausea and vomiting following 50 stings

- Answer:

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- C. Hives in an adult
- D. Nausea and vomiting following 50 stings

- Answer: C

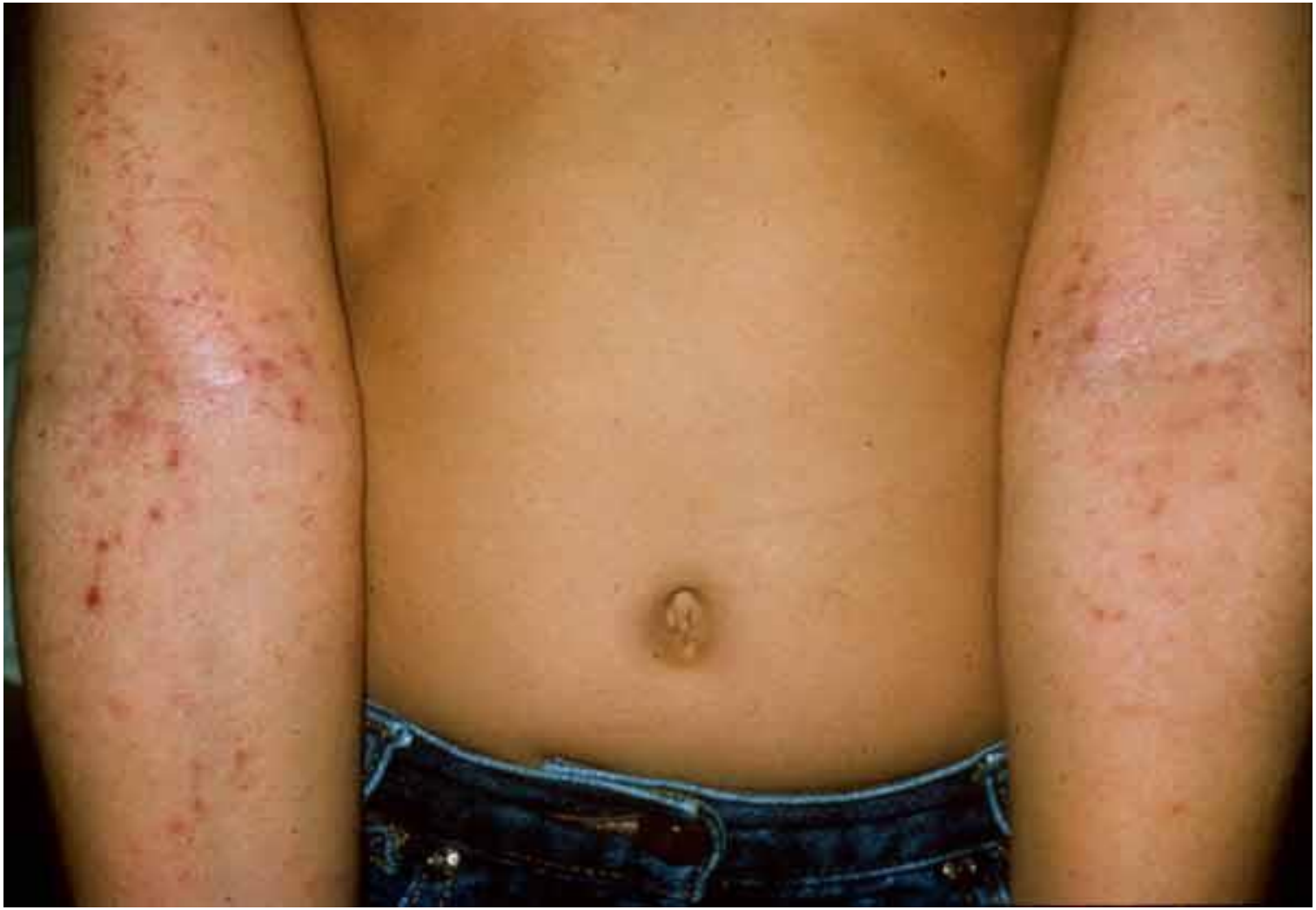
Insect Anaphylaxis

- 1% of adults have bee or fire ant allergy
- 60% have symptoms on re-sting
- skin test for any none local S/S in adults and more than skin S/S in children and adolescences
- To exclude need negative immuno-cap and skin test
- re-sting symptoms decreased to 4% with IT
- treat - avoidance, epipen
  desensitization (IT)

Your patient with the following rash should be treated most aggressively with?

- A. topical antibiotics
- B. topical corticosteroids
- C. oral steroids
- D. dapsone
- E. famciclovir

- Ans:



Your patient with the following rash should be treated most aggressively with?

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- C. oral steroids
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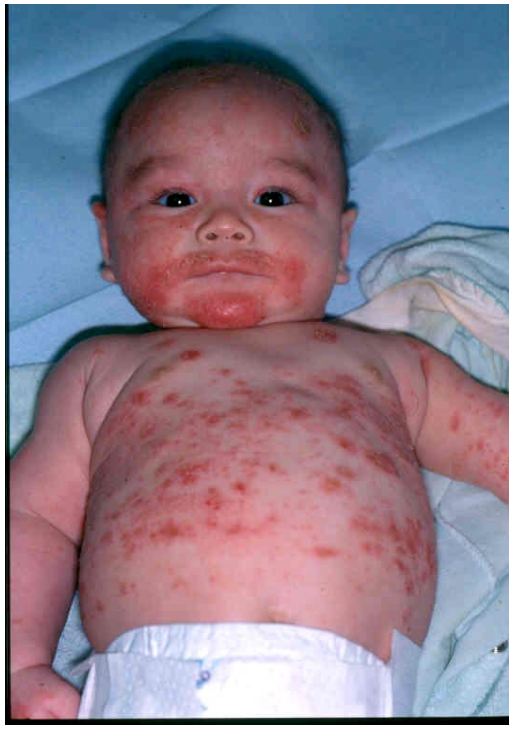
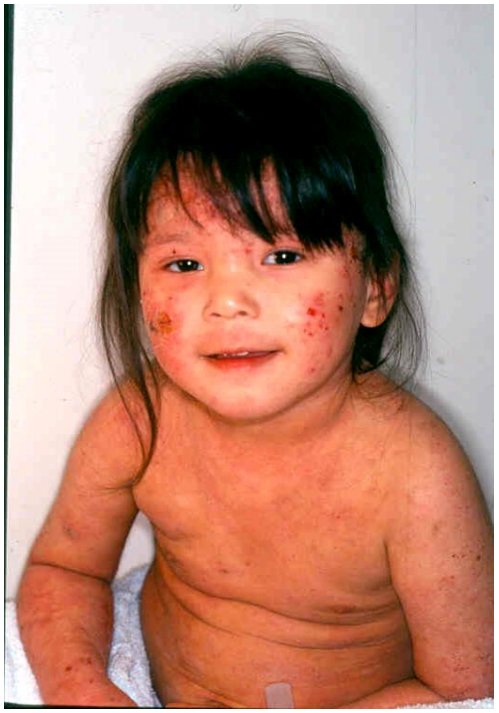
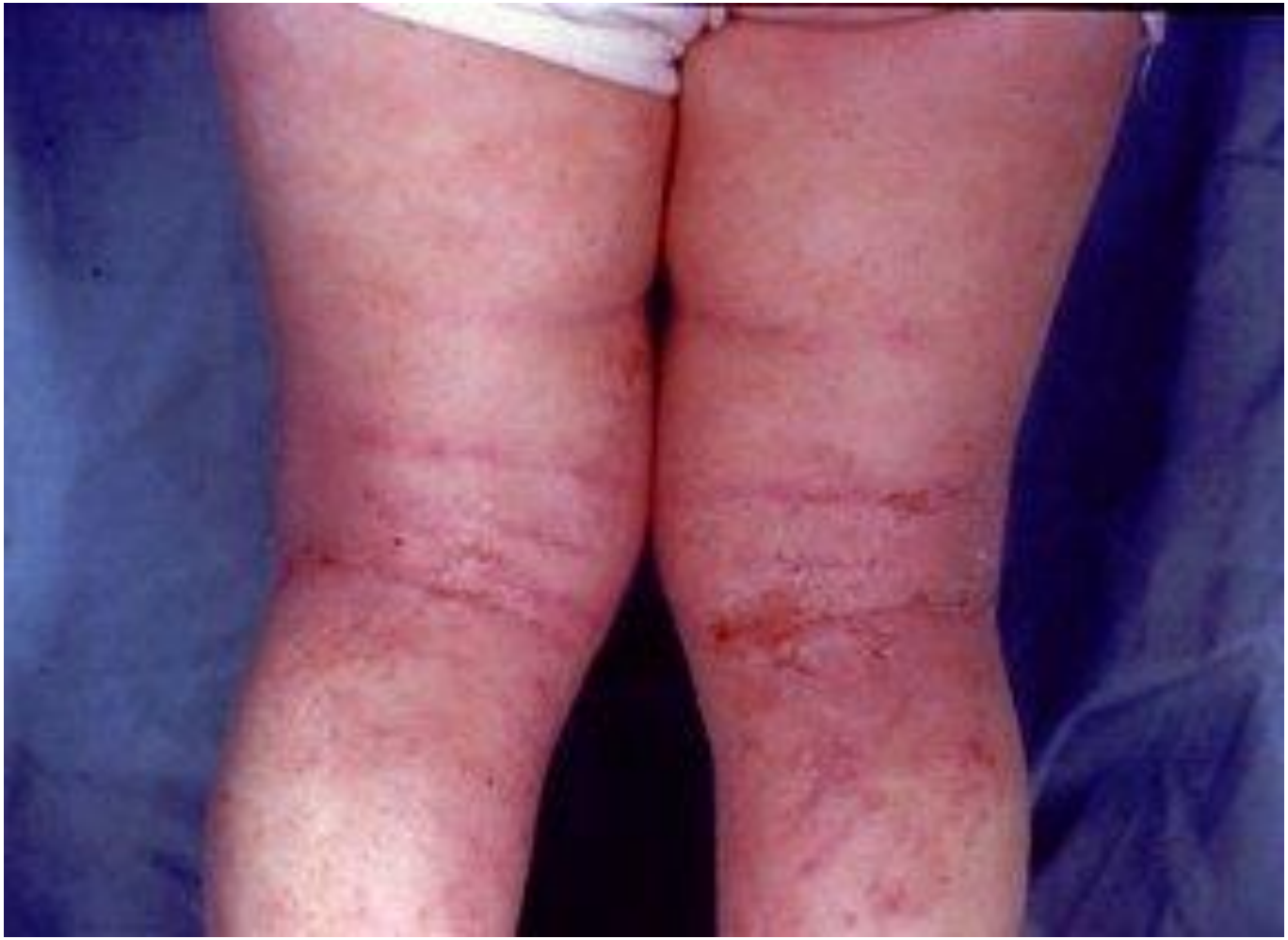
- E. famciclovir

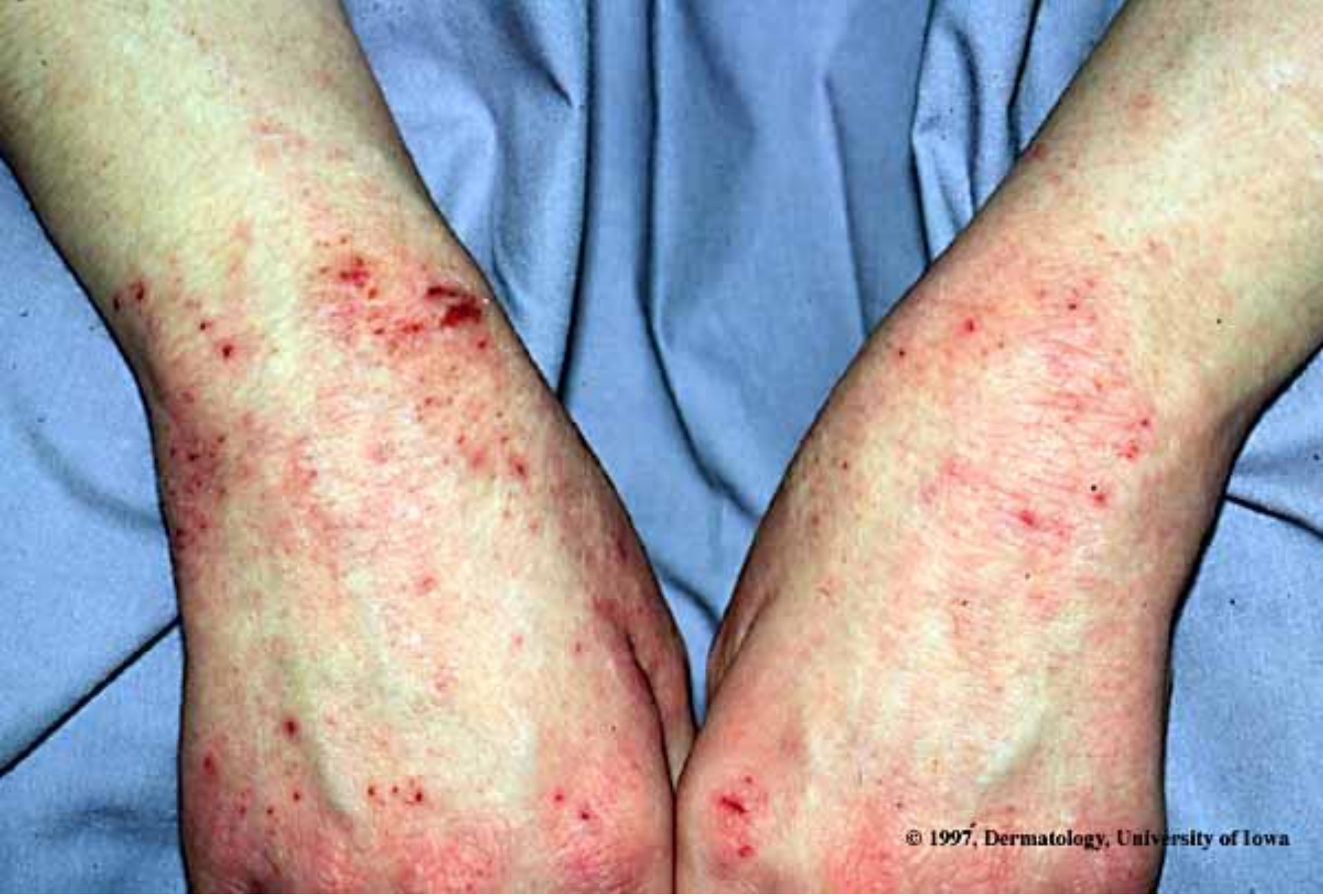
- Ans: B

Infantile AD





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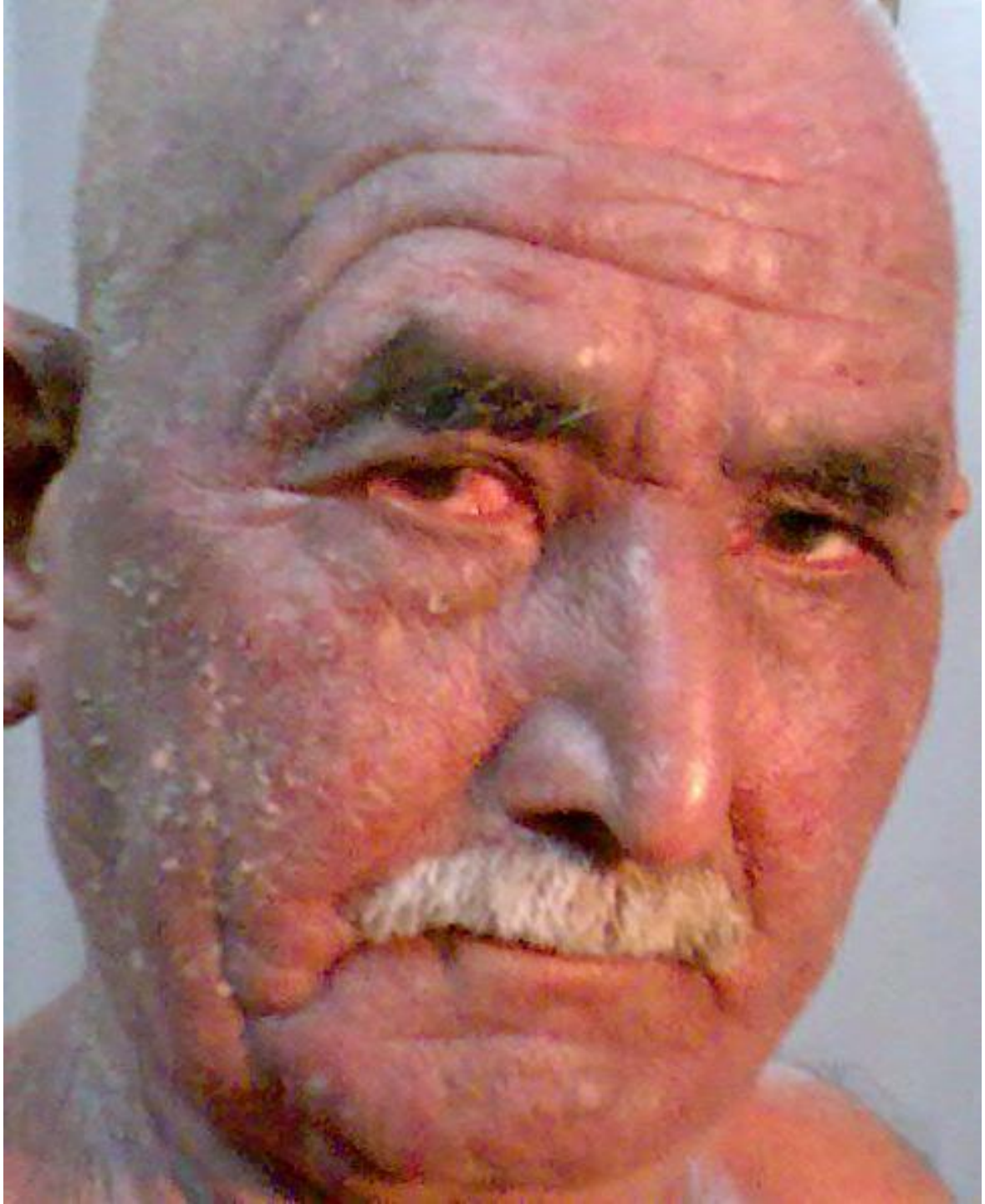
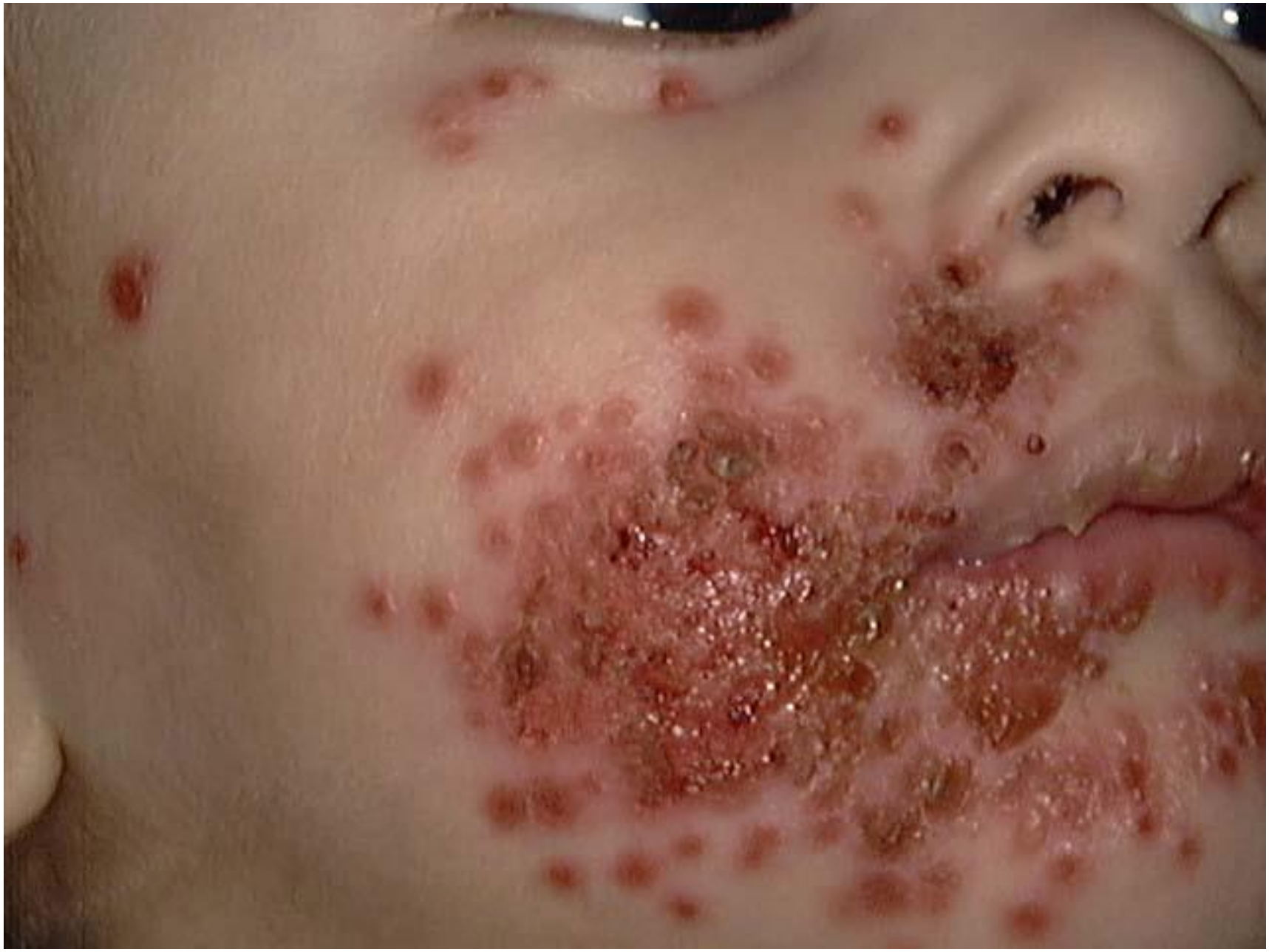


Atopic dermatitis

- adults - flexure areas, hands
- exacerbations – think Staph. infections or Herpes simplex
- 30% food allergy (frequent false positives)
- anergy, decreased TH-1 cell and decreased interferon predispose to skin infections
- increase IgE, IL_4 , IL_5, GM-CSF, IL_{13}, (lymphocytes T helper type 2)
- Filaggrin gene defect is very important
- Rx - lubricants, topical steroids, topical pimecrolimus and tacrolimus



IMPORTANT INFORMATION ABOUT TOPICAL CORTICOSTEROID THERAPY

- Potency- ointments> creams> lotions
- Limit use of high potency on face, breasts and genitals
- Skin side effects
  - Atrophy
  - Telangiectasia
  - Striae
  - Perioral dermatitis

TOPICAL IMMUNE MODULATORS

- Tacrolimus (Protopic) ointment
- Pimecrolimus (Elidel) cream

- Derived from fungal polypeptides and Inhibit T-lymphocyte activation
- Potent immunosuppressive if given systemically
- Slow acting anti-inflammatory
- Great substitute for potent steroids on face

TOPICAL IMMUNE MODULATORS (Tacrolimus (Protopic) ointment Pimecrolimus (Elidel) cream)

- Effective in childhood and adult AD
- No skin atrophy / steroid side effects
- Stinging and burning at initiation of therapy
- Slight increase in skin infections ?
- ? Risk of neoplasms?
- Long-term safety seems safe

20 year old male with isolated itchy rash below. WHAT IS THIS?

The preferred test to exclude the diagnosis is?

- A. Patch testing
- B. Delayed hypersensitivity intradermal skintesting
- C. IgE mediated skin tests
- D. No testing is effective

- Answer:

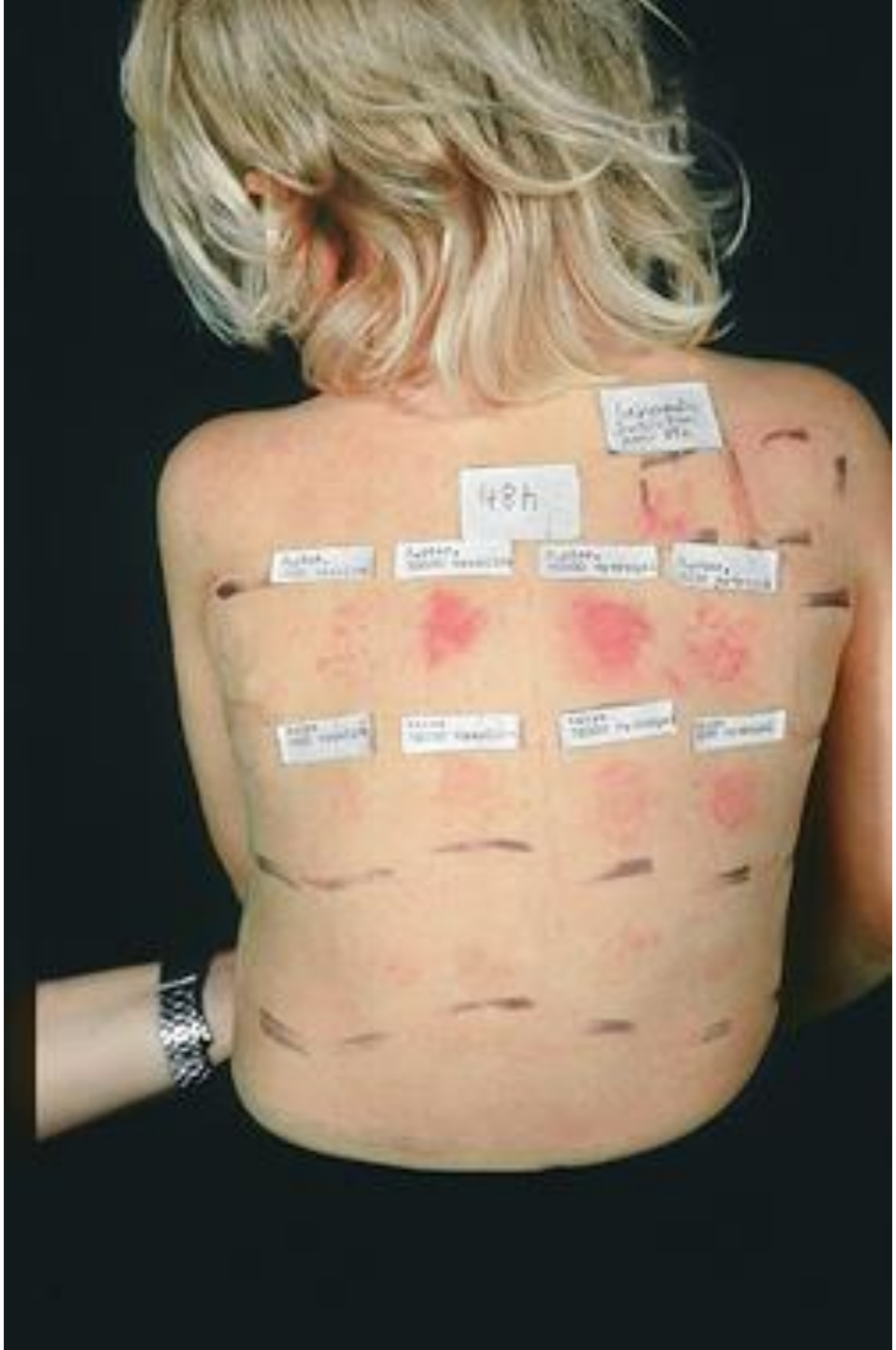
The preferred test to exclude the diagnosis is?

- A. Patch testing
- B. Delayed hypersensitivity intradermal skin testing
- C. IgE mediated skin tests
- D. No testing is effective

- Answer: A

Allergic Contact Dermatitis

- Type 4 cell mediated reaction with T-helper-type 1- lymphocytes
- delayed 48 hours
- Rhus is the best example
- patch test for diagnosis
- nickel, rubber additives (latex), thimerosal (eye gtt), benzocaine, neomycin, topical doxepin
- Rx - avoidance, topical steroids, or 2 weeks of oral steroids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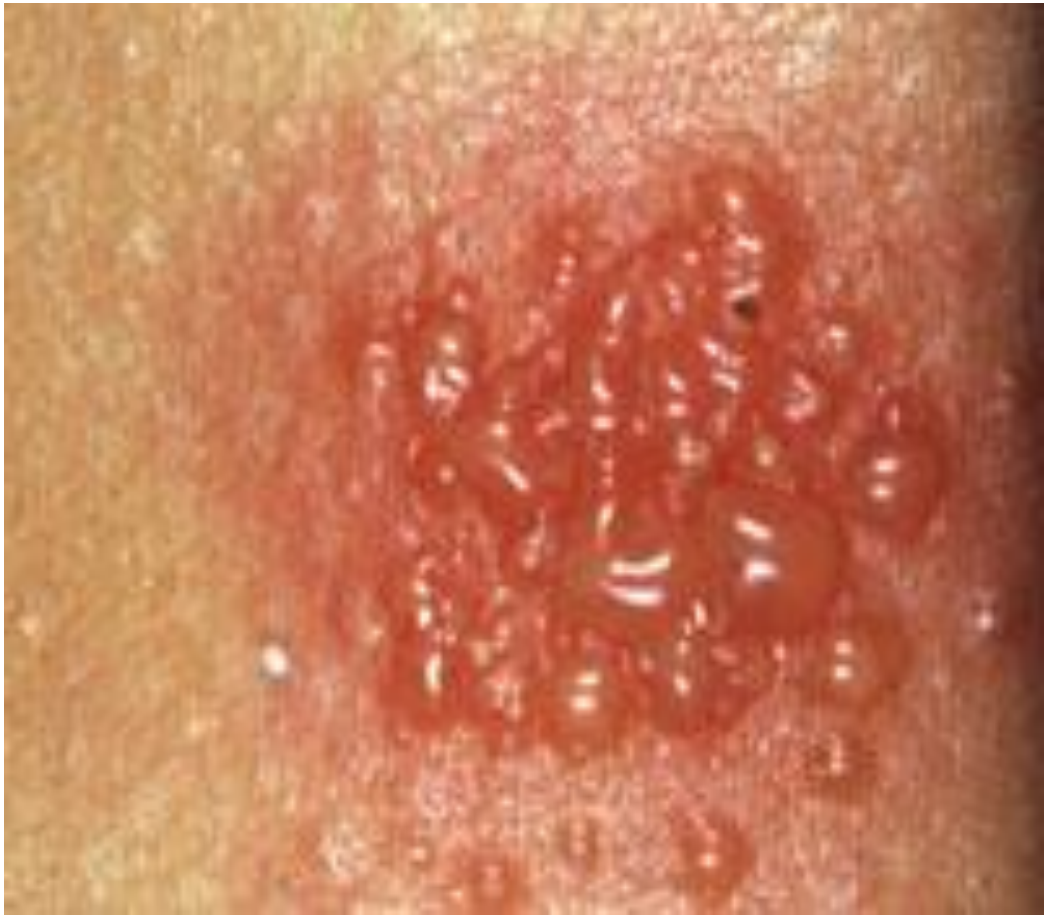

- For questions or concerns please contact me at 717-531-6525 or Email me at tcraig@psu.edu
- Good luck with your boards!