Rhinitis, sinusitis and food disorders [Part 2]

Timothy Craig, DO, FACOI
Professor of Medicine and Pediatrics
Distinguished Educator
Penn State University, Hershey

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. Rice
- B. Nuts
- C. Corn
- D. Barley

- Answer:

Gluten is in?

- A. Rice
- 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
- 1:500 are IgA deficit so remember to check IgA
- If negative tests and still suspicion HLA DQ2/DQ8 if negative excludes the diagnosis
- Gold standard is biopsy of bowel (Celiac) and so if positive serology and suspicion do biopsy

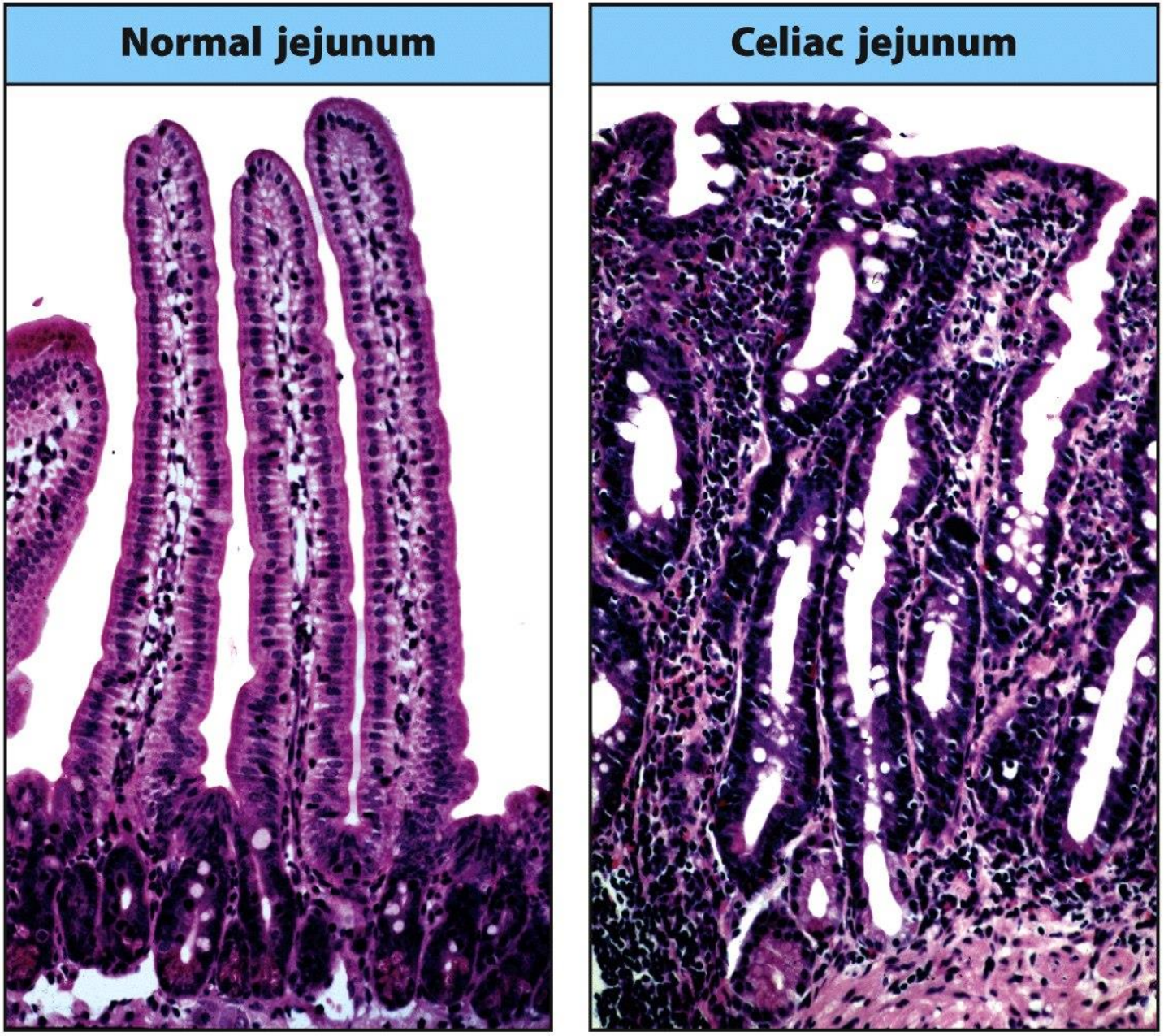
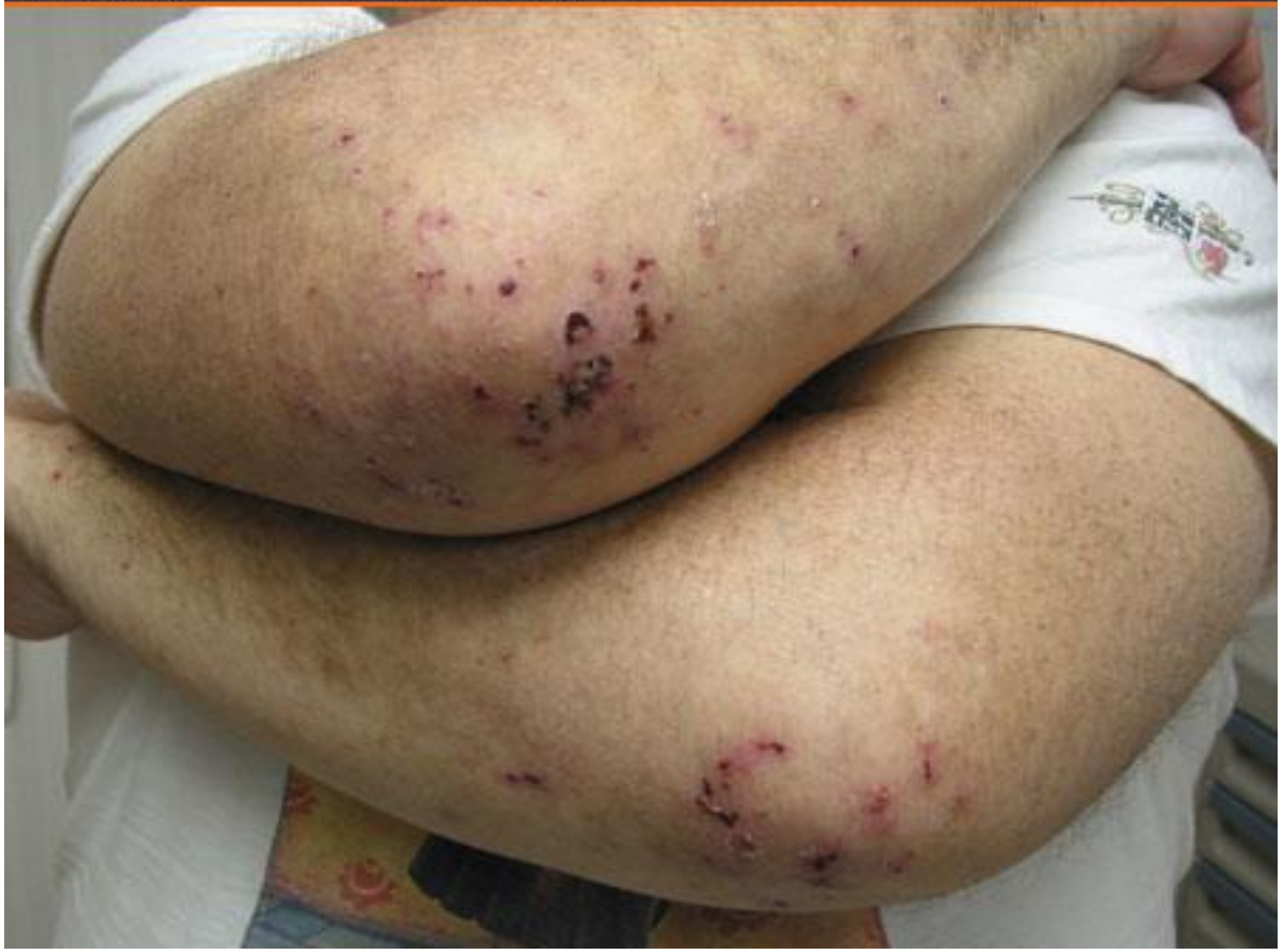


Figure 13-21 Immunobiology, 7ed. (© Garland Science 2008)

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- IgE and eosinophil count
- B- Allergy testing
- C- Skin biopsy
- D- Skin scraping

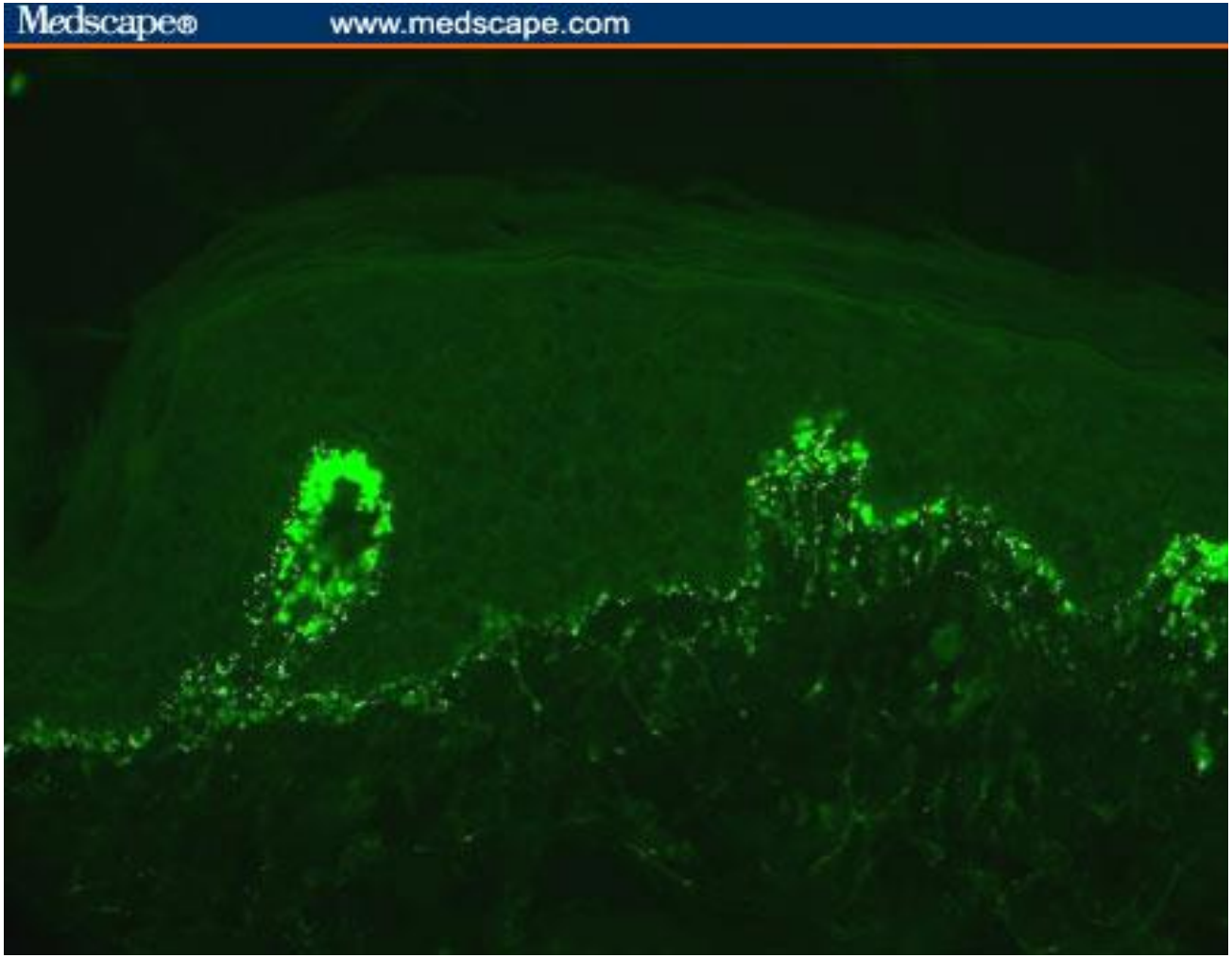
Ans

What test would you obtain to help in diagnosis?

- A- IgE and eosinophil count
- B- Allergy testing
- 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:

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

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

- Answer: D

Dermatitis Herpetiformis

- Gluten is a protein and the antigen
- Gluten is in wheat, barley and rye.
- 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
- 1:500 are IgA deficit so remember to check IgA
- If negative tests and still suspicion HLA DQ2/DQ8 if negative excludes the diagnosis
- Gold standard is biopsy of skin and immunofluorescences so if positive serology and suspicion do biopsy

Treat Gluten Enteropathy and Derm. Herp.

No exposure to wheat, barley and rye.

For the rash use dapsone and taper off once on gluten free diet and controlled.

Allergic Rhinitis

- One of the most common diseases in the US
- Affects over 30-60 million Americans (20-30% of adults)
- Fifth most common chronic illness
- Sleep, physical and mental health status adversely affected
- Direct costs approximately over $5 billion/year
- Over 16 million office visits

American Academy of Allergy, Asthma, and Immunology. JACI 2008. Rhinitis Practice Parameter 2008

The most common allergen that people are allergic to outside of desert and mountain areas is?

- A. cat
- B. dog
- C. cockroach
- D. molds
- E. house dust mite

- ans

The most common allergen that people are allergic to outside of desert and mountain areas is?

- A. cat
- B. dog
- C. cockroach
- D. molds
- E. house dust mite

- Ans- E

Allergic rhinitis

- **<u>Perennial allergens</u>**

House dust mites

Cat

Dog

Indoor molds (aspergillus, penicillium)

- **<u>Outdoor allergens</u>**

-Spring- tree

-Summer- grass

-Autumn- ragweed (east of the Rockies) and molds

-Winter- mountain cedar (southwest)

About 25% of rhinitis is not allergic

The best therapy for congestion associated with rhinitis is?

- A. topical cromolyn
- B. cetirizine
- C. montelukast
- D. topical fluticasone
- E. topical azelastine

- Answer:

The best therapy for congestion associated with rhinitis is?

- A. topical cromolyn
- B. cetirizine
- C. montelukast
- D. topical fluticasone
- E. topical azelastine

- Answer: D

Treatment Considerations in Allergic Rhinitis: ARIA Guidelines

	Congestion	Rhinorrhea	Itching/ Sneezing	Eye Symptoms
Intranasal steroids	+++	+++	++/+++	++
Oral antihistamines	+	++	+++/++	+++
Intranasal antihistamines	++	++	++/++	++
Oral decongestants	++	-	-/-	-
Intranasal decongestants	++++	-	-	-
Intranasal cromones	+	+	+/+	-
Anticholinergics	-	+++	-/-	-
Antileukotrienes	++	+	-/-	++

Drug-induced rhinitis may be caused by a number of medications

- angiotensin-converting enzyme
- phosphodiesterase-5–selective inhibitors
- phentolamine
- tamsulosin
- beta- blockers
- ASA and nonsteroidal anti-inflammatory drugs (NSAIDs).

Rhinitis medicamentosa is a syndrome of rebound nasal congestion
- adrenergic decongestants
- cocaine

Cerebral spinal fluid rhinorrhea

- Refractory clear rhinorrhea
- Usually unilateral
- History of recent trauma to the head or skull surgery

The presence of b-2-transferrin or glucose in the nasal secretions is a sensitive method of confirming cerebral spinal fluid rhinorrhea.

The true statement about sinusitis is?

- A. Clinicians continue to overprescribe antibiotics for acute sinusitis
- B. there is a lack of efficacy of intranasal corticosteroids in sinusitis
- C. Antibiotics are usually effective for chronic sinusitis
- D. Antibiotics are necessary for most cases of acute sinusitis

- ANS:

The true statement about sinusitis is?

- A. Clinicians continue to overprescribe antibiotics for acute sinusitis
- B. there is a lack of efficacy of intranasal corticosteroids in sinusitis
- C. Antibiotics are usually effective for chronic sinusitis
- D. Antibiotics are necessary for most cases of acute sinusitis

- ANS: A

The most common organism in acute sinusitis is?

- A. Staph
- B. Pneumococcal
- C. Rhinovirus
- D. Beta strep

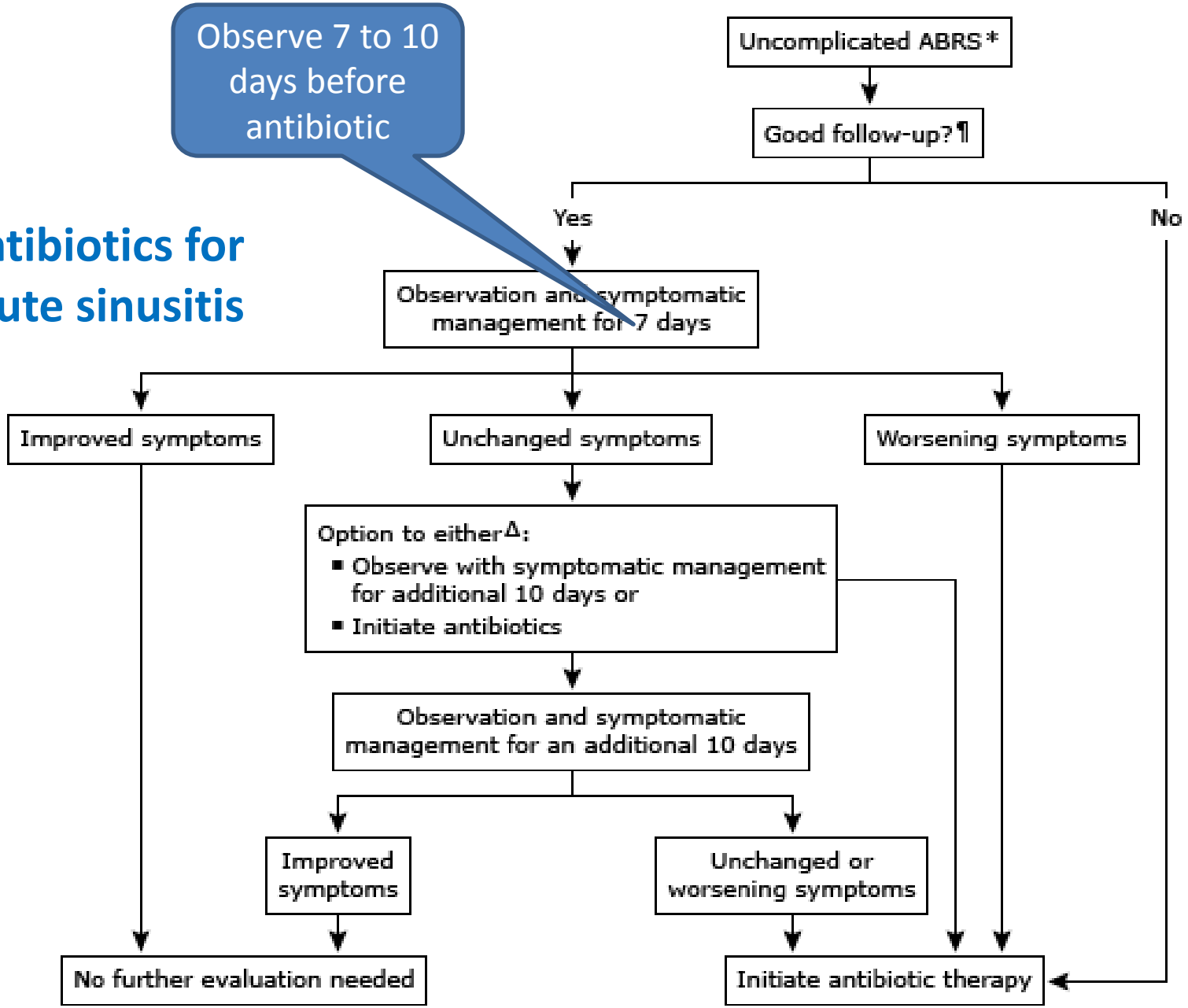
- Answer:

The most common organism in acute sinusitis is?

- A. Staph
- B. Pneumococcal
- C. Rhinovirus
- D. Beta strep

- Answer: C

Antibiotics for acute sinusitis



First line agent for acute bacterial sinusitis is?

- A. SMX-TMP
- B. amoxicillin
- C clarithromycin
- D. azithromycin
- E. amoxicillin with clav

- Ans:

First line agent for acute sinusitis is?

- A. SMX-TMP
- B. amoxicillin
- C clarithromycin
- D. Azithromycin
- E. amoxicillin with clav

- Ans: E (antibiotic resistance for Moraxella, Pneumococcus and H. flu)

- *Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis*
- 33-44% of *H influenzae* and almost all of *M catarrhalis* strains have beta-lactamase–mediated resistance
- 64% of *S pneumoniae* strains are penicillin resistant
- Empiric therapy is amoxicillin with clav

- Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, et al. IDSA Clinical Practice Guideline for Acute Bacterial Rhinosinusitis in Children and Adults. *Clin Infect Dis*. Apr 2012;54(8):e72-e112.

Acute Sinusitis

- Most cases resolve without therapy
- nasal steroids, decongestants and saline lavage are first line therapy
- Refractory disease- Augmentin or doxycycline if penicillin allergic

Chronic sinusitis

- Chronic - anaerobes
  - staph
  - mixed cultures
  - allergic fungal sinusitis
  - inflammatory

Question if antibiotics help in chronic sinusitis

Nasal polyps in an adult suggests?

- A. sensitivity to ASA
- B. cystic fibrosis
- C. maxillary sinusitis
- D. cilia dyskinesia

- Answer:

Nasal polyps in an adult suggests?

- A. sensitivity to ASA
- B. cystic fibrosis
- C. maxillary sinusitis
- D. cilia dyskinesia

- Answer: a

Nasal Polyps

- NARES (non-allergic rhinitis with eosin)
- eosinophils in nasal secretions
- 15% ASA sensitivity
- 25% develop asthma
- treat nasal steroids, montelukast, ASA desensitization
- youth with polyps- Cystic Fibrosis, cilia defect
- adult- ASA sensitivity, CF, cilia defect

ASA sensitivity

- ☺ Non-IgE,
- ☺ Inhibits cyclooxygenase with a decrease in PG-E2, increase leukotrienes
- ☺ Asthma (15%)
- ☺ avoid ASA in severe asthma and those with nasal polyps (40% if polyps + asthma)
- ☺ Samter's Triad- ASA sensitivity, nasal polyps, chronic sinusitis, rhinitis and asthma
- ☺ also can trigger angioedema, eye and nose symptoms

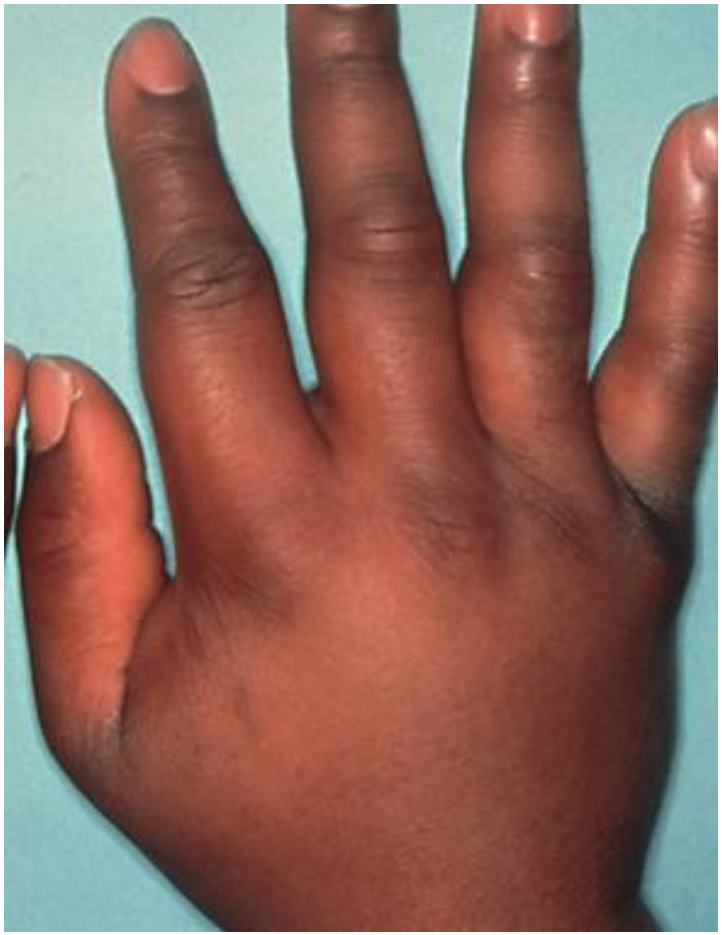
ASA sensitivity

- Rx: avoid ASA and NSAID
- may use acetaminophen below 1000 mg, and COX-2-inhibitors
- acetaminophen – at high doses cross reacts in extreme ASA sensitivity
- May desensitize, which may improve asthma, rhinitis, sinusitis and nasal polyps, but must remain on ASA or NSAID indefinitely.

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

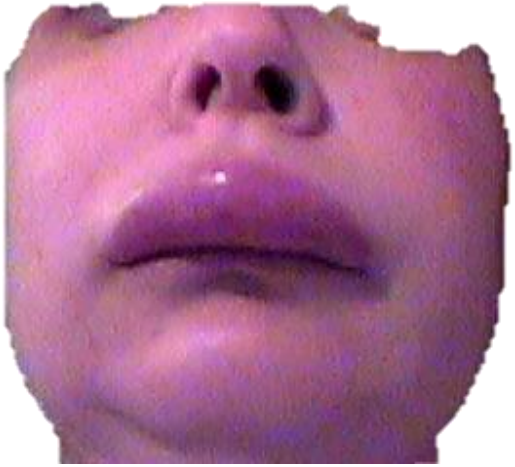
- A. CH50
- B. C1-esterase inhibitor (type 2 have normal levels of protein, but poor function)
- C. C3
- D. C4
- E. Bradykinin

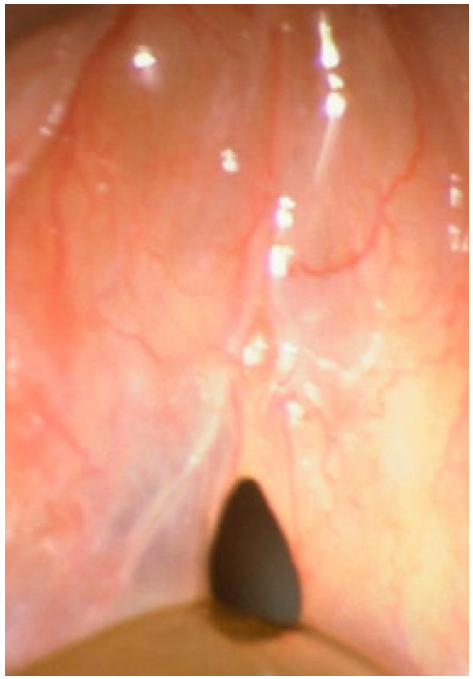
- Ans: D

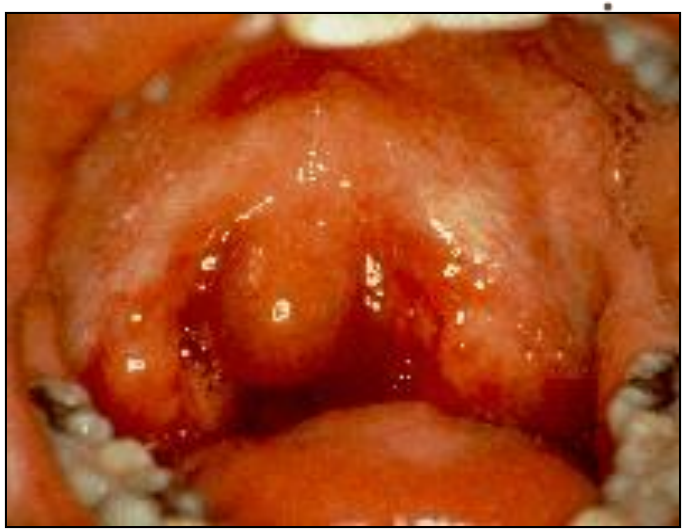
Three types of HAE, acquired angioedema and ACE-inhibitor are all bradykinin induced

	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

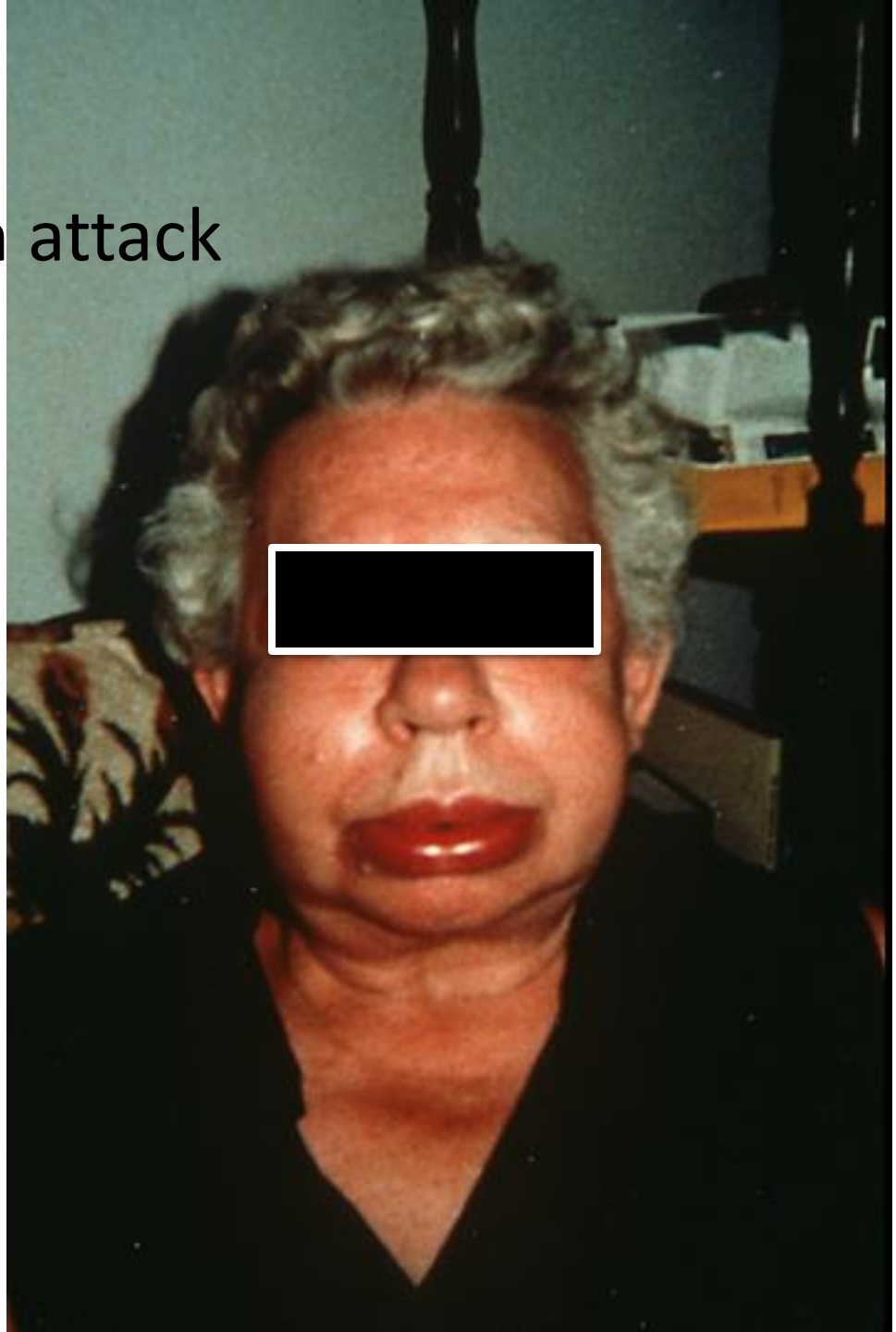




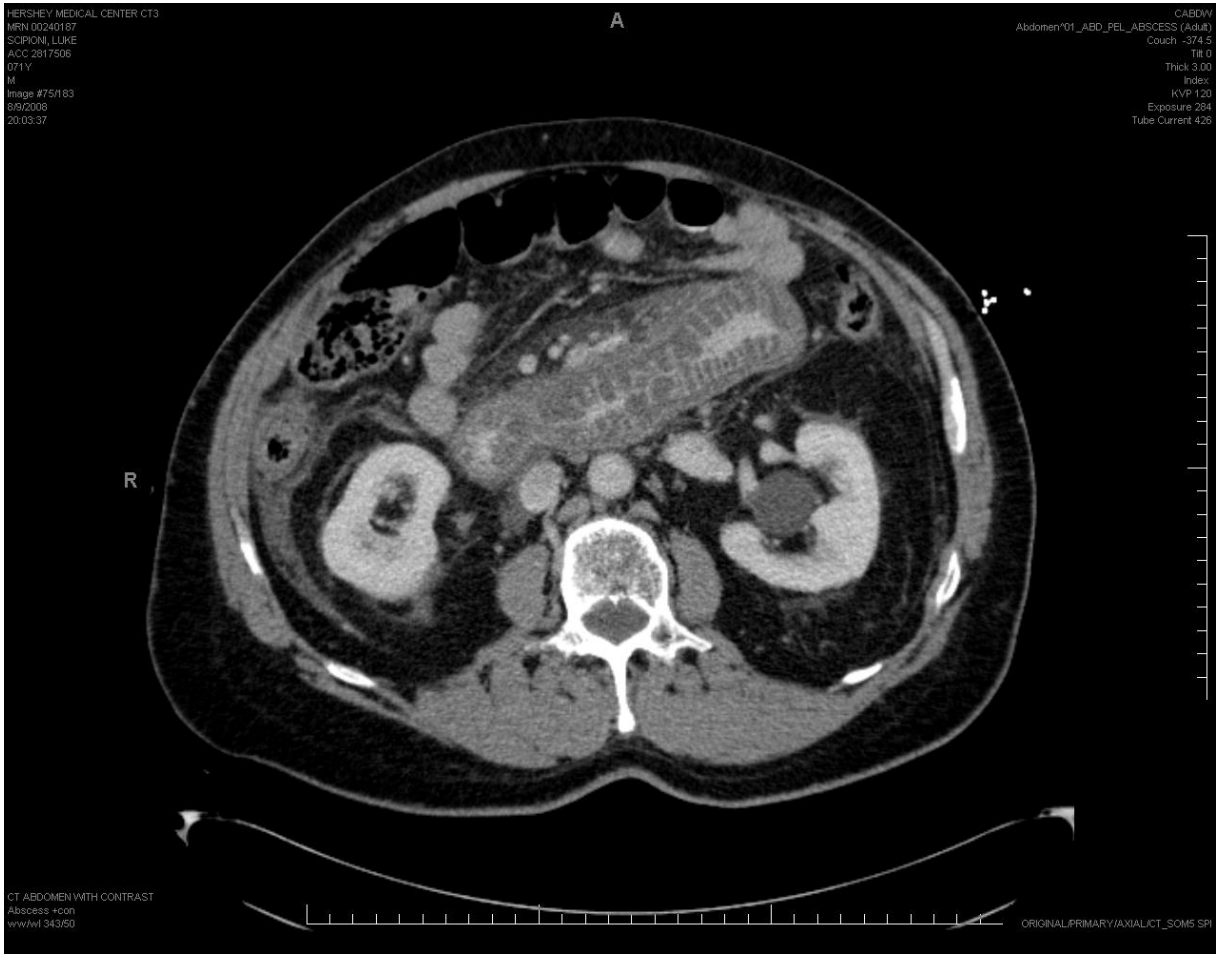


Vocal cords courtesy of Allan Kaplan and uvula of Marc Riedl

During an attack



Intestinal swelling on CT scan



Which drug should not be used in Hereditary Angioedema?

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

- Answer:

Which drug should not be used in Hereditary Angioedema?

- A. Progesterone
- B. C1-esterase inhibitor
- C. ASA
- D. Lisinopril (avoid estrogens and ACE-I in HAE)

- Answer: D

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. Treatment eculizumab.

Eculizumab increase the risk of?

- A. increases the risk of meningococcal sepsis by 1000 times
- B. increases the risk of SLE
- C. There is a serious risk of pneumococcal infections
- D. Increases the risk of hemolytic uremic syndrome

Eculizumab increase the risk of?

- A. increases the risk of meningococcal sepsis by 1000 times
- B. increases the risk of SLE
- C. There is a serious risk of pneumococcal infections
- D. Increases the risk of hemolytic uremic syndrome
- Answer: A (binds to C5)

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:

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: 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.

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 oral challenge
- Positive skin test - risk 60% - desensitize
- Negative skin test – less than 4% risk of an allergic reaction

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

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 Syndrome
- C. Idiopathic hypereosinophilic syndrome
- D. Immediate hypersensitivity

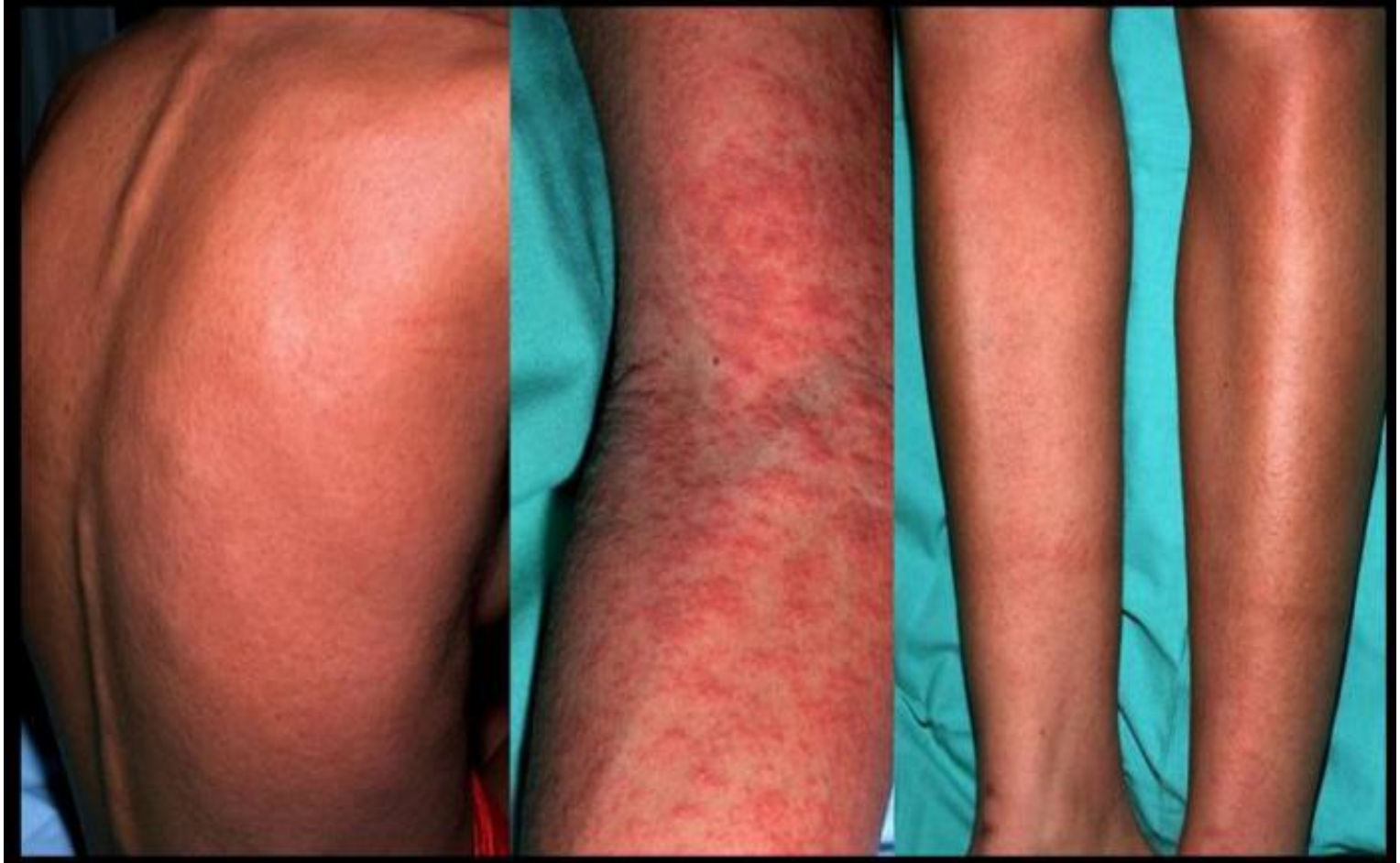
- Answer:

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

- A. erythema multiform
- B. DRESS Syndrome (Drug rash with eosinophilia and systemic symptoms)
- C. Idiopathic hypereosinophilic syndrome
- D. Immediate hypersensitivity

- Answer: B

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



www.aids-images.ch

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
- HLA predisposition in Chinese

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

Skin testing is indicated for which reaction from a bee sting?

- 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:

Skin testing is indicated for which reaction from a bee sting?

- 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: 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)

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