Diagnosis and Management of Acute Pharyngitis

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Objectives

- Translate the evidence-based guidelines for GAS testing into clinical practice
- Discuss the updated Jones criteria
- Review the risk adverse drug reactions, suppurrative sequelae, & ARF in patients with pharyngitis

Disclosures

- I have no relevant conflicts of interest to disclose, but I do have a passion for judicious test utilization.

S. Pyogenes (GABHS)

- Frequent reason for primary care visits
- Most common bacterial cause of acute pharyngitis
  - 15-30% of acute pharyngitis in children; 5-10% for adults
  - Only commonly occurring form of pharyngitis for which antibiotics are definitely indicated
- Economic burden $224-539 million/yr US
- Clinical decision making is key in making the correct diagnosis

Clinical & Epidemiologic Features

- Sudden onset: fever, sore throat, HA, N/V, & abdominal pain
- Severe pain with swallowing
- Inflamed tonsils &/or pharynx
- Patchy discrete exudates
- Tender, enlarged anterior cervical nodes
- Scarlet fever
- Age 5-15 yrs
- Presentation in winter or early spring
- Exposure history
- Features consistent w/ viral etiology
  - Conjunctivitis, Coryza
  - Cough
  - Diarrhea

Case 1

- A 3 y/o child presents with sore throat, coryza, and fever to 39.3°F for the last 2 days
- On exam you note: enlarged, erythematous tonsils, tender lymph nodes, mild congestion and injected sclera
Of the following, the MOST likely diagnosis for this patient is:

A. Rhinovirus  
B. Influenza  
C. Strep throat  
D. Adenovirus  
E. Mononucleosis

Viral Causes of Acute Pharyngitis

**Viral Pathogens**
- Rhinovirus  
- Coronavirus  
- Adenovirus  
- Influenza virus  
- Parainfluenza virus  
- Coxsackie virus  
- EBV

**Features/Syndrome**
- Common cold  
- Pharyngocconjunctival fever  
- Influenza  
- Common cold, croup  
- Herpangina, Hand-foot-mouth  
- Infectious Mononucleosis

Confirming a Diagnosis

- Viruses most common cause of acute pharyngitis  
- Largely a clinical diagnosis; especially as an outpatient  
- NP viral culture, RPP, shell vial culture  
- Difficult to distinguish between bacterial and viral pharyngitis  
- Use of stringent and validated clinical criteria are key when diagnosing pharyngitis caused by group A streptococcus

Laboratory Diagnosis

- Rapid antigen detection tests (RADTs)  
  - Became available in 1980's  
  - Detects presence of cell wall carbohydrate antigen  
  - Faster, but more expensive test  
  - Plagued by high specificity but low sensitivity  
    - Improved with newer antigen tests  
  - Back up culture should be performed  
  - Increases number of patients appropriately treated

Laboratory Diagnosis

- Neither RADT or culture differentiate between true infection and carrier state  
  - Clinical decision making prior to ordering the test is important  
- Test of cure is not generally recommended  
- Exceptions:  
  - Patient with history of ARF  
  - Outbreak of ARF  
  - In families with “ping-pong” infection
Treatment

- Amoxicillin is the first line therapy for children with a diagnosis of strep throat
- But what should we do for children who clearly have a virus?

Why do we need to treat?

- Prevent rheumatic fever
- Prevent suppurative sequelae
  - Otitis media, peritonsillar abscess, cervical adenitis, mastoiditis
- Improvement in clinical signs and symptoms
  - Rapid return to usual activities
- Decrease infectivity thereby; ↓ transmission

Worldwide Incidence of ARF


What's new with The Jones Criteria

- Low Endemicity
  - Sporadic cases
  - Rare periodic outbreaks
  - Affluent countries
  - Migratory polyarthritis of large joints
  - High spiking fever

- High Endemicity
  - Hyperendemicity
  - Cases occur year round
  - Absence of outbreaks
  - Developing nations
  - Monoarthritis
  - Polyarthritis
  - Low grade fevers
**1992 Jones Criteria for ARF**

- **Major**
  - Carditis (50-70%)*
  - Migratory poly-arthritis (35-66%)
  - Chorea (10-30%)
  - Subcutaneous nodules (0-10%)
  - Erythema marginatum (<6%)
- **Minor**
  - Polyarthralgia
  - Unless arthritis is a major feature
  - Fever ≥38.5
  - ESR ≥ 30 mm/hr or CRP ≥ 3 mg/dL
  - Prolonged PR interval
  - Unless carditis is a major feature

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**Acute Rheumatic Fever (ARF)**


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**What does this mean for the practicing clinician?**

- Echo can now be used as a major criterion for a patient in which ARF is suspected in any setting
- Use the new modified criteria for patients who come from an area with high endemicity
  - International adoption
  - Immigrants

**Protective effect of antibiotics for common respiratory treat infections and number needed to treat to prevent one peritonsillar abscess**

1,065,088 cases of sore throat

<table>
<thead>
<tr>
<th>Infection/adverse outcome</th>
<th>Adjusted odds ratio (95% CI)</th>
<th>Number needed to treat (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sore throat/ quinsy</td>
<td>0.84 (0.73 to 0.97)</td>
<td>4300 (2522 to 14,586)</td>
<td>0.021</td>
</tr>
</tbody>
</table>

100,000 children 0-15 years did not receive antibiotics

& No cases of ARF were found


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**Risk of Adverse Drug Reaction from Antibiotics**

- Cochrane review on the risk/benefits of AOM Rx
- 8 studies evaluating adverse events from antibiotic therapy vs placebo were included
  - Vomiting, diarrhea, or rash
    - RR (1.38 95% CI 1.19 to 1.59)
    - Number needed to harm 1 patient = 14
  - Severe complications were rare; no difference between groups

Venekamp RP. Cochrane Database Syst Rev. 2015.
4,300 patients are treated for strep pharyngitis

Adverse drug reaction occurred = 307

Of the following, the BEST choice of treatment for this patient is

A. Clindamycin for 10 days
B. Cephalexin for 10 days
C. Ciprofloxacin for 10 days
D. Doxycycline for 10 days
E. Trimethoprim-sulfamethoxazole for 10 days

Case 2

- An 8 y/o boy presents to your office with a 2 day history of sore throat, headache, and temperature up to 39.1°C
- A rapid test result for Group A streptococcus is positive
- The boy has a past history of an anaphylactic reaction to amoxicillin

Treatment of strep throat

- Effective antibiotics
  - Penicillin is the gold standard (No resistance)
    - Proven efficacy, safety, narrow spectrum, low cost
    - Amoxicillin has better taste, equal efficacy with PCN
    - Once daily for 10 days is adequate
  - Oral & parenteral options are equal
  - Cephalosporins are acceptable in mild PCN allergy (rash)
  - Clindamycin or macrolide w/ previous anaphylaxis
  - Risk of resistance

Treatment Timing

- Earlier therapy results in faster sign/symptom resolution
  - 16 hours faster
- GABHS is a self limited disease
  - Symptoms resolve spontaneously in 3-4 days
  - Objective judgment of clinical improvement difficult
- Therapy can be safely postponed for 9 days with no ↑ risk of ARF
  - The only therapy that has been evaluated & shown to prevent ARF is IM PCN

Close Contacts and Carriers

- ~25% of asymptomatic household contacts will harbor GABHS in their pharynx
  - Typically no need to test or treat if tested
  - Low rate of infection ~5%
- Would treat (+) family members in the setting of ARF
- Prophylaxis of family with TSS or fasciitis (?)
  - Attack rate 0.07% in a CDC study
  - No evidence to recommend this strategy
The Recurring Sore Throat

- Patients who present a few weeks after treatment for GABHS may have:
  - Intercurrent viral infection with GABHS carriage
  - Noncompliance with initial treatment
  - New infection with different strain or different bacterial pathogen
  - Rarely repeat infection with same strain
- Difficult to differentiate; therefore use clues
  - Age, season, risk factors, local epi (influenza, Fusobacterium sp., enterovirus, GC)
  - Precise presenting signs and symptoms

The Recurring Sore Throat

- Typically school aged child
- Challenging clinical circumstance; likely a carrier
- Obtain a throat culture when asymptomatic to test for presence of GABHS
  - Serotyping or genotyping of isolate is possible but not practical
- Obtain simultaneous specimens from family members & treat positives
  - If goal is to eliminate the carrier state
- No evidence that pets play a role
- Tonsillectomy may result in resolution for a short period of time

Take Home Message

- Pharyngitis is an important childhood illness
  - Group A streptococcus is common but viruses remain more frequent
- Clinical overlap with other viruses and bacteria
- Testing and subsequent treatment should be performed on patients with clear clinical and epidemiologic features
- Therapy should be focused on using the right antibiotic for the appropriate length of time