Antibiotic Resistance Grand Rounds 2007

Upper Respiratory Infections – Antibiotics or Not?

Stephen Rinderknecht DO

&

James Young MD

Members of the IDPH Antibiotic Resistance Task Force

Agenda

- Introduction and general principles
- Sinusitis
- Bronchitis
- Acute Otitis Media
- Pharyngitis
- Common Cold
- References

General Principles

- Why this is important?
- Separating bacterial complications from the viral process
- Patients should understand the disease
- Proper antibiotic use
- Evidence base practice guidelines

Acute Sinusitis

Caveats

- Children have 2-9 viral respiratory illnesses per year
- In uncomplicated viral illnesses, cough and nasal discharge may persist 14 days or more
- Controlled studies do not support the use of antibiotics in mucopurulent rhinitis
- Antibiotics do not help viral illnesses or prevent complications

Diagnosis

- Only a small percent of viral URI's are complicated by bacterial sinusitis
  - Changes in mucous to yellow, thick or green are natural consequences of URI, and not an indication for antibiotics

Diagnosis (cont.)

- Use strict criteria for diagnosis
  - Persistence of symptoms over 10-14 days without improvement
  - Severe symptoms
    - Fever over 39^0C (102^0F) with purulent nasal discharge for at least 3-4 days
    - Facial pain or tenderness
    - Periorbital swelling or redness

Diagnosis (cont.)

– Very important to differentiate between successive viral illnesses and, in the mind of parent or patient, persistence of symptoms

Treatment

- Target likely organism with 1st line drugs
  - *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis* most common
  - Amoxicillin 45mg/kg/day
  - If risk factors for resistance (attendance at daycare, recent antibiotic use—less than 90 days, and age less than 2yrs), then consider other choices

Treatment (cont.)

- If no improvement on Amoxicillin (45mg/kg/day) in 48-72 hrs, then:
  - Amox/clavulanate @ 80-90mg/kg/day of Amox plus 6.4mg/kg/day of clavulanate in 2 doses

- If allergic to Amox: (if reaction not type I)
  - Cefdinir 14mg/kg/day in 1-2 doses
  - Cefuroxime 30mg/kg/day in 2 doses
  - Cefpodoxime 10mg/kg/day in 1 dose

Treatment (cont.)

- If type I allergic reaction:
  - Clarithromycin 15mg/kg/day in 2 doses
  - Azithromycin 10mg/kg/ day 1, 5mg/kg/day for 4 days (FDA has not approved this for sinusitis)
- In vomiting child – single dose of ceftriaxone 50mg/kg/day IV or IM
- Nasal saline lavage – universal recommendation, but no good data

Imaging Studies

- Caveat – must interpret studies with caution since some sinus involvement is present with uncomplicated viral URI's
- Consider in recurrent or unclear cases
- Reserve for patients in whom surgery is being considered

Acute Bronchitis

Current best practice according to CDC, AAP and AAFP

Must Focus on R/O of Pneumonia

- Cough illness is principally viral
- Pneumonia is uncommon in non-elderly, healthy adults without vital sign changes or asymmetric lung sounds
- Chest x-ray needed if above signs present or cough over three weeks

R/O Pneumonia (cont.)

- Chest x-ray not needed in absence of these findings

- Airway inflammation and sputum production are nonspecific responses and do not imply bacterial source

Treatment

- Antibiotic treatment is not advised in acute, uncomplicated bronchitis, regardless of duration of cough. (meta analysis of six random trials)
  - Do not use antibiotics in healthy-appearing child with cough less than 10 to 14 days without signs of pneumonia

Treatment (cont.)

- For prolonged cough (over 10-14 days), consider other diagnoses such as sinusitis which warrant antibiotic

- Antibiotic use in URI's does not prevent pneumonia or other complications

Treatment (cont.)

- If pertussis is suspected (in children over five years), appropriate tests should be done and appropriate macrolide antibiotic started

- If antibiotics are necessary, use targeted, first-line drugs e.g. amoxicillin, amoxicillin/clavulanate, trimeth/sulfa or macrolide if penicillin allergic

Patients Satisfaction and Demands

- Satisfaction depends on doctor/patient communication rather than on antibiotic Rx
- Acknowledge patient's symptoms and discomfort and offer management with non-pharm. agents
- Give realistic time frame for resolution
- Explain how risk of antibiotic use outweighs benefits

Acute Otitis Media

Acute Otitis Media - Diagnosis

- Acute onset, middle ear effusion and signs and symptoms of inflammation of the middle ear
  - Otoscopic changes of effusion
    - Bulging TM, limited mobility, fluid levels, otorrhea
  - Signs/Symptoms of inflammation
    - Opacity (pus) behind TM, erythema of TM
    - Pain referable to the ears

AOM vs OME

- AOM – acute otitis media
  - Fluid and inflammation with symptoms
- OME – otitis media with effusion
  - Fluid without inflammation or symptoms
  - Poor term (uninfected middle ear fluid-better)
  - Normal course of successful AOM management
  - No antibiotics necessary

AOM Observation Option

- Deferring antibiotic treatment for 2-3 days and provide symptomatic relief. Treat only if symptoms persist. An option for:
  - Otherwise healthy children 2yr old and above
  - Not severely ill
  - Assurance of follow up

Antibiotic Management for AOM

- First line therapy
  - Amoxicillin (80-90 mg/kg/day in two divided doses)
- After failure of amoxicillin
  - Amoxicillin-clavulanate 14:1 (80-90 mg/kg/day in 2 divided doses) or
  - Cephalosporin (oral cefdinir, cefuroxime, cefpodoxime, or parental ceftriaxone, 50 mg/kg once daily for 3 days, IM)

Antibiotics Missing from this List

- First generation cephalosporins
  - Cephalexin, Cefadroxil
- Sulfa antibiotics
  - Trimethoprim- sulfamethoxazole
- Macrolides
  - Azithromycin, Clarithromycin
- Quinolones
  - Ciprofloxacin

Pharyngitis

Pharyngitis - Etiology

- Viral

- Group A streptococci (GABS)

- *Corynebacterium diphtheriae*, *Neisseria gonorrhoeae*, group C and G streptococci, etc……

Pharyngitis

- Symptoms of viral and GABS overlap greatly
- Rapid antigen detection test should be done if GABS is suspected
- Only GABS should be treated

Increase Suspicion of GABS When:

- Sudden onset
- Fever
- Pharyngeal inflammation
- Lymphadenopathy
- Abdominal pain, headache
- Patient age 5-15 years
- Winter-spring season
- Lack of cold symptoms

Rapid Testing and Throat Culture

- Children -Rapid testing
  (culture backup on negatives)
- Adults - Rapid testing only

Therapy for GABS

- Penicillins
- Cephalosporins
- Macrolides

- Special considerations
  - Treatment failures and recurrent strep
  - Carrier state

Common Cold (viral rhinosinusitis)

- Diagnosis
  - Classic history
  - Exam findings

- Patient education
  - Symptom relief
  - What's the expected course?
  - When to call back?

References

Sinusitis

CDC- Careful Antibiotic Use. National center of Immunization and Respiratory Diseases/Division of Bacterial Diseases. March 2006.

AAP- 2006 Report of the Committee on Infectious Diseases. *Red Book* 27th ed. 739.

Bronchitis and Common Cold

Gonzale R. et al. Principles of Appropriate Antibiotic Use for Treatment of Uncomplicated Acute Bronchitis: Background, *Annals of Int Med*. 2001. 134;521-529.

AAP- 2006 Report of the Committee on Infectious Diseases. *Red Book* 27th ed. 739.

References (Cont)

Acute Otitis Media

AAP/AFFP Guidelines- Diagnosis and Management of Acute Otitis Media. *Pediatrics*. 2004. 113:1451-1456.

AAP Guidelines – 2006 Report of the Committee on Infectious Diseases. *Red Book* 27th ed. 738.

Pharyngitis

IDSA Guidelines- Bisno AL, et al. Practice Guidelines for the Diagnosis and Management of Group A Streptococcal Pharyngitis. *Clin Infec Dis*. 2002; 35:113-125.

AAP Guidelines- 2006 Report on the Committee on Infectious Diseases. *Red Book*. 27th ed. 610-620.

AAFP Guidelines – Schroeder BM Diagnosis and Management of Group A Streptococcal Pharyngitis. *Amer Family Phys*. 2003; Feb 15th.

Great patient education material available at cdc.gov/getsmart