Acute Otitis Media Evidence Update

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Acute Otitis Media Evidence Update

- Diagnosis
- Prevention: control risk factors
- Prevention: immunization
- Antibiotics: when?
- Complications
Acute Otitis Media Evidence Update

Sources:
• Otitis media CME symposium, Budapest 2008
• AAFP/ACP evidence based guidelines for the diagnosis and management of acute otitis media 2004
• Diagnosis and antibiotic treatment of acute otitis media: report from International Primary Care Network Froom J et al BMJ 1990 300 (6724) 582-6
• Short course antibiotics for acute otitis media: Kozyriskij AL et al www.cochrane.org/reviews/en/ab001095.html
Acute Otitis Media

Definition: acute suppurative infection of the middle ear and mastoid

If only it was always this obvious!
Acute Otitis Media

- Studies of incidence and prevalence conflict
- Most children get at least 1 episode of AOM
- Peak 6-11 months
- Approximately half of children get six or more episodes
- Risk of acute mastoiditis: 4/100,000
AOM Bacteriology

• Microbiology has varied with time: host, pathogen, and treatment factors

• Early 20th century: Group A streptococcus (1% risk of mastoiditis)

• Late 20th: Strep pneumonia, H influenzae type B, Moraxella catarrhalis

• Now: nontypable H influenzae (NTHi)
AOM Bacteriology

- Microbiology has varied with time: host, pathogen, and treatment factors
- Widespread use of antibiotics leads to antibiotic resistance
- Pneumococcal vaccine? change in bacteriology
AOM and URTI

- Chonmaitree T Clin Inf Dis 2008 46:815-23
- Longitudinal study 294 children 6 mo- 3yo
- >1200 URTIs >400 AOM
- Risk of OM after URTI: 61%, 37% AOM and 24% OME
- Distinguishing OME from AOM vital
AOM Diagnosis

- Wide spectrum of clinical presentation
- Variable natural history
- Otoscopy standard part of examination of young child
- Adequate view of TM often difficult
- AAFP/ACP:
  - Recent onset of signs and symptoms
  - Middle ear fluid (otoscopy, pneumatic otoscopy, tymps)
  - Inflammation (either erythema or otalgia)
  - “Often made with a degree of uncertainty”
AOM Diagnosis

- Practice, practice, practice
- Proper equipment
- Use a tympanometer
- Froom J et al: GPs reported “diagnostic certainty” in approx. 60% cases where they diagnosed AOM
Prevention: avoidance of risk factors

• Many potential avoidable risk factors:
  • Passive smoking
  • Child care
  • Bottle feeding
  • Reflux
  • Allergy
• Unfortunately, no evidence significant reduction risk
Pneumococcal Vaccine

- Pneumococcus causes more severe AOM
- Higher risk invasive infection
- Prevalence 33-62% in AOM
- Some strains are a true “superbug”

photo: Chris Mansell
Pneumococcal Vaccine

• Benefits: reduction AOM (Europe ≤34%)
• Particularly reduces risk severe AOM
• Potentially reduces antibiotic prescription rates
• Published articles probably underestimate benefit
• May increase prevalence of AOM due to NTHi
• Combination vaccine being developed
Pneumococcal Vaccine

- New Zealand
- Introduced 1 June 2008!
- Placed on the schedule for neonates
- For older high-risk children
- 19A not covered
- Dr F Dumble, MOH, Waikato Hospital
Serotype 19A:
2006: 1 patient
2007: 7 patients

Serotype 19A penicillin susceptibility:
For pneumonia: 7/7 susceptible
For meningitis: 3/7 susceptible

Thanks to Dr C Mansell, microbiologist, Waikato Hospital
Antibiotics for AOM: When?

- NNT: Number needed to treat to benefit one patient
- Overall NNT for AOM ~ 15
- NNH ~10 (rashes, diarrhea, etc)
- "Medicilization" of AOM leads to increasing workload
Penicillin use vs resistance in Europe

Antibiotics for AOM: When?

Withholding antibiotics isn’t easy sometimes...
Antibiotics for AOM: When?

- Meta-analysis of 6 RCTs using individual patient data
- N = 1643 children
- Which children benefit the most?
- NNT:
  - Overall ~15
  - Children <2 yo bilateral AOM ~4
  - Acute otorrhea ~3
  - Children ≥2 unilateral AOM ~25
## Which antibiotic? How long?

<table>
<thead>
<tr>
<th>Clinical Situation</th>
<th>Drug</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial observation</td>
<td>Amoxycillin</td>
<td>80-90 mg/kg/day</td>
</tr>
<tr>
<td>Severe AOM</td>
<td>Augmentin</td>
<td>90 mg/kg/day</td>
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<tr>
<td>Non type I allergy penicillin</td>
<td>Cefuroxime</td>
<td></td>
</tr>
<tr>
<td>Type I allergy</td>
<td>IV Ceftriaxone</td>
<td>50 mg/kg/day</td>
</tr>
</tbody>
</table>

Likelihood of surgery
Deferring antibiotics

• Keep in touch
• Clinical improvement in 80% by 2-7 days
• Waiting 24-48 hours seems reasonable
• Critical role of support staff
• Adequate pain relief
Acute Mastoiditis

~ 4/100,000
May be increased in countries with low use antibiotics for AOM
Acute Mastoiditis

Fortunately, most cases respond to IV antibiotics + myringotomy/ VTs
Other complications

- Cerebral abscess
- Subdural abscess
- Meningitis
- Thrombosis of lateral venous sinus
- Cerebellar abscess
- Dura mater
- Extradural abscess
When to Refer

- Acute:
  - failure to resolve
  - severe toxicity
  - evidence complications
- Recurrent acute: when the parents have had enough!
- Hearing loss
- Co-morbidities
A virtuous circle

Vaccination

Milder AOM

Antibiotics more effective

Reduced resistance rate

Reduced need for antibiotics