Recurrent and Persistent AOM

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definition

- OTITIS MEDIA = inflammation of the middle ear, is defined by the presence of fluid in the middle ear accompanied by signs or symptoms of acute illness

Severe AOM

- presence of moderate to severe otalgia
- or fever equal to or higher than 39°C

Nonsevere AOM

- AOM with the:
  - presence of mild otalgia
  - Temperature below 39°C

Treatment Severe AOM

- In children 6 months and older
- AOM (bilateral or unilateral)
- severe signs or symptoms (ie, moderate or severe otalgia or otalgia for at least 48 hours, or temperature 39°C or higher).
  - prescribe antibiotic

Nonsevere Bilateral AOM

- children younger than 24 months
- bilateral AOM
- without severe signs or symptoms (ie, mild otalgia for less than 48 hours, temperature less than 39°C

  - prescribe antibiotic therapy

Nonsevere Unilateral AOM

- children 6 months to 23 months of age
- unilateral AOM
- without severe signs or symptoms (ie, mild otalgia for less than 48 hours, temperature less than 39°C

  - prescribe antibiotic therapy
  - observation with close follow-up

Nonsevere AOM in Older Children

- Children 24 months or older
- AOM (bilateral or unilateral)
- without severe signs or symptoms (ie, mild otalgia for less than 48 hours, temperature less than 39°C
  - Prescribe antibiotic therapy
  - observation with close follow-up

	Otorrhea with AOM	Sever AOM Unilateral or bilateral
6 mo to 2 y	Antibiotic	Antibiotic
$\geq 2\ y$	Antibiotic	Antibiotic

	Bilateral AOM Without otorrhea	unilateral AOM Without otorrhea
6 mo to 2 y	Antibiotic	Antibiotic observation
≥ 2 y	Antibiotic observation	Antibiotic observation

Initial Observation for AOM

- Observation in properly selected children does not increase suppurativ complications
- provided that follow-up is ensured and a rescue antibiotic is given for persistent or worsening symptoms.

- Initial observation of AOM includes analgesics, parent information, and provisions for a rescue antibiotic.
- A critical component of initial observation for AOM is the ability to provide a rescue antibiotic if needed

- withholding of antibiotics in all children with AOM, regardless of clinical course, would risk a return to the suppurative complications observed in the preantibiotic era

Initial Antibiotic Therapy

- Greater benefit of immediate antibiotic therapy was observed for bilateral AOM or AOM associated with otorrhea

- Antibiotic therapy also decreased :
  - duration of pain
  - analgesic use
  - school absence and parent days missed from work

- Children younger than 2 years with AOM may take longer to improve clinically than older children, and although they are more likely to benefit from antibiotics

- Clinicians should prescribe amoxicillin for AOM when a decision to treat with antibiotics has been made
  - child has not received amoxicillin in the past 30 days
  - child does not have concurrent purulent conjunctivitis
  - child is not allergic to penicillin.

- Antibiotic with additional β-lactamase coverage for AOM when :
  - child has received amoxicillin in the past 30 days
  - has concurrent purulent conjunctivitis
  - has history of recurrent AOM unresponsive to amoxicillin.

- Clinicians should reassess the patient if child's symptoms have worsened or failed to respond to the initial antibiotic treatment within 48 to 72 hours and determine whether a change in therapy is needed

- When antibiotics are prescribed for AOM, clinical improvement should be noted within 48 to 72 hours.

- During the 24 hours after the diagnosis of AOM the child's symptoms may worsen slightly.

- In the next 24 hours, the patient's symptoms should begin to improve.
- If initially febrile, the temperature should decline within 48 to 72 hours.

- Irritability and fussiness should lessen or disappear
- sleeping and drinking patterns should normalize.

- If the patient is not improved by 48 to 72 hours, another disease or concomitant viral infection may be present, or the causative bacteria may be resistant to the chosen therapy

- Some children with AOM and persistent symptoms after 48 to 72 hours of initial antibacterial treatment may have combined bacterial and viral infection, which would explain the persistence of ongoing symptoms despite appropriate antibiotic therapy

- In children with persistent, severe symptoms of AOM and unimproved otologic findings after initial treatment, the clinician may consider changing the antibiotic

- If the child was initially treated with amoxicillin and failed to improve

  - amoxicillinclavulanate should be used

- high-dose amoxicillin-clavulanate

  90 mg/kg/day of amoxicillin

  6.4 mg/kg/day of clavulanate

  a ratio of amoxicillin to clavulanate of 14:1

  given in 2 divided doses, which is less likely to cause diarrhea than other amoxicillinclavulanate preparations

- Patients who were given amoxicillin-clavulanate or oral third-generation cephalosporins : intramuscular ceftriaxone(50 mg/kg).

- In AOM unresponsive to initial antibiotics, a 3-day course of ceftriaxone has been shown to be better than a 1-day regimen

- Macrolides, such as erythromycin and azithromycin, have limited efficacy against both H influenzae and S pneumoniae

- when a series of antibiotic drugs have failed to improve :
  - Tympanocentesis should be considered
  - culture of middle ear fluid should be performed for bacteriologic diagnosis and susceptibility testing

- If tympanocentesis is not available, a course of clindamycin may be used, with or without an antibiotic that covers nontypeable H influenzae and M catarrhalis, such as cefdinir, cefixime, or cefuroxime.

- Clindamycin:
  - 30–40 mg/kg per day in 3 divided doses

- In children with repeated treatment failures, every effort should be made for bacteriologic diagnosis by tympanocentesis with Gram stain, culture, and antibiotic susceptibility testing of the organism (s) present.

- When tympanocentesis is not available, 1 possible way to obtain information on the middle ear pathogens and their antimicrobial susceptibility is to obtain a nasopharyngeal specimen for bacterial culture

- if nasopharyngeal culture is negative for specific bacteria, that organism is likely not the AOM pathogen.
- A negative culture for S pneumoniae, will help eliminate concern for multidrug resistant bacteria and the need for unconventional therapies, such as levofloxacin or linezolid

Duration of Therapy

- for children younger than 2 years and children with severe symptoms, a standard 10-day course is recommended.
- A 7-day course of oral antibiotic appears to be equally effective in children 2 to 5 years of age with mild or moderate AOM.

- For children 6 years and older with mild to moderate symptoms, a 5- to 7-day course is adequate treatment

Follow-up

- There is little evidence for a routine 10- to 14-day reevaluation visit for all children with AOM.
- The physician may choose to reassess some children:

1. young children with severe symptoms
2. recurrent AOM
3. when specifically requested by the child's parent

- Persistent MEE is common after resolution of acute symptoms.
- Two weeks after successful antibiotic treatment of AOM, 60% to 70% of children have MEE
- decreasing to 40% at 1 month
- decreasing 10% to 25% at 3 months after successful antibiotic treatment

- OME must be differentiated clinically from AOM and requires infrequent additional monitoring but not antibiotic therapy

Recurrent AOM

1. occurrence of 3 or more episodes of AOM in a 6-month period

   OR

2. occurrence of 4 or more episodes of AOM in a 12-month period that includes at least 1 episode in the preceding 6 months.

likelihood of recurrence

- Winter season
- male gender
- passive exposure to smoking

- Half of children younger than 2 years treated for AOM will experience a recurrence within 6 months.

- Symptoms that last more than 10 days may also predict recurrence

prophylactic antibiotics

- Clinicians should NOT prescribe prophylactic antibiotics to reduce the frequency of episodes of AOM in children with recurrent AOM

Recommendation

Antibiotic Prophylaxis

- Long-term, low-dose antibiotic use, referred to as antibiotic prophylaxis or chemoprophylaxis, has been used to treat children with recurrent AOM to prevent subsequent episodes

- Decrease in episodes of AOM occurred only while the prophylactic antibiotic was being given.
- The modest benefit afforded by a 6-month course of antibiotic prophylaxis does not have longer-lasting benefit after cessation of therapy.

- The small reduction in frequency of AOM with long-term antibiotic prophylaxis must be weighed against the:

1. cost of such therapy
2. potential adverse effects of antibiotics
3. allergic reaction
4. gastrointestinal tract consequences (diarrhea)
5. Contribution to the emergence of bacterial resistance.

Breastfeeding

- Multiple studies provide evidence that breastfeeding for at least 4 to 6 months reduces episodes of AOM and recurrent AOM

- the AAP recommendation to encourage exclusive breastfeeding for the first 6 months of life and to continue for at least the first year and beyond for as long as mutually desired by mother and child.

Lifestyle Changes

- Eliminating exposure to passive tobacco smoke has been postulated to reduce the incidence of AOM in infancy.
- Bottles and pacifiers have been associated with AOM

- Reducing or eliminating pacifier use in the second months of life may reduce AOM incidence.

- During infancy and early childhood, reducing the incidence of URI infections by altering child care-center attendance patterns can reduce the incidence of recurrent AOM significantly

Strong Recommendation

- Clinicians should recommend pneumococcal conjugate vaccine to all children according to the schedule of the Advisory AAP.

Exclusions

- Severe allergic reaction (eg, anaphylaxis) to any component of pneumococcal vaccine or any diphtheria toxoid-containing vaccine

Benefits

- Reduced frequency of AOM attributable to vaccine serotypes.
- Reduced risk of serious pneumococcal systemic disease

Risks

- Potential vaccine side effects
- Cost of vaccine

- There is evidence that serotype replacement may reduce the long-term efficacy of pneumococcal conjugate vaccines against AOM but it is possible that new pneumococcal conjugate vaccines may demonstrate an increased effect on reduction in AOM

Influenza Vaccine

- Clinicians should recommend annual influenza vaccine to all children according to the schedule of the Advisory AAP
- recommendation

- Influenza vaccination is now recommended for all children 6 months of age and older in the United States

Influenza Vaccine

- Most cases of AOM follow upper respiratory tract infections caused by viruses, including influenza viruses.
- As many as two-thirds of young children with influenza may have AOM

Option

- Clinicians may offer tympanostomy tubes for recurrent AOM (3 episodes in 6 months or 4 episodes in 1 year, with 1 episode in the preceding 6 months).

Benefits

- Decreased frequency of AOM
- Ability to treat AOM with topical antibiotic therapy

Risks

1. Risks of anesthesia or surgery
2. Cost
3. Scarring of TM
4. chronic perforation
5. cholesteatoma
6. Otorrhea.

Adenoidectomy

- Adenoidectomy, without myringotomy and/or tympanostomy tubes, did not reduce the number of episodes of AOM
- Adenoidectomy alone should not be used for prevention of AOM
- but may have benefit when performed with placement of tympanostomy tubes