Acute Otitis Media, Roots and Tulips

"I have an earache"

2000 BC: Here, eat this root.
1000 AD: That root is heathen, say this prayer.
1850 AD: That prayer is superstitious drink this potion.
1940 AD: That potion is snake oil, swallow this pill.
1955 AD: That pill is ineffective, take this antibiotic.
2003 AD: Here, eat this root.

By James W. Cross, MD

Presented at the University of Saskatchewan Practical Otolaryngology Conference 2003, March 22, 2003

Do we prescribe root or antibiotic for acute otitis media today?

The root is definitely out now that we are aware of the dangers of herbal remedies. Prescribing an antibiotic depends on whether you like tulips.

What do tulips have to do with otitis media?

If you like tulips, you like the Dutch. It is the Dutch who have pioneered the symptomatic treatment (*e.g.,* pain control) of acute otitis media (OM) without antibiotics. Only one in three children in the Netherlands receive an antibiotic for acute OM.

Antibiotics are prescribed for children under six months. This is also the case for children up to the age of two in the following cases:

- if there is no improvement after 48 hours,
- otorrhea has persisted for more than 14 days,
- the child has recurrent OM, or a craniofacial malformation; or
- immunodeficiency is present.

Children over two are only treated if they are in a high-risk group, as listed above, or if the child has sustained an earache or fever for more than 72 hours.

So are all Dutch children deaf or undergoing mastoidectomies?

Apparently not. The incidence of mastoiditis is higher by two extra cases for every 100,000 children each year.[1] The Dutch believe the increased incidence of mastoiditis is more than compensated by several factors (Table 1).

Can we go "Dutch" in Canada?

Yes we can. Clinical practice guidelines from Alberta in November 2001, the Canadian Paediatric Society in April 2002. and British Columbia in June 2002 support withholding antibiotics in uncomplicated acute OM.[2-4] Two recent guidelines in the U.S. (both published in

2002) also support this practice.[5,6] Clinical practice guidelines (CPGs) usually make several recommendations regarding witholding antibiotics (Table 2).

Many physicians, including myself, prescribe antibiotics on a routine basis to treat all aboriginal children with acute OM.

What is the antibiotic of choice?

Surprise! It is still amoxicillin. CPGs support it as the drug of choice as it is as effective as any other antibiotic, safe, and cheap. One change is in the dosage of amoxicillin, which has historically been 40 mg/kg a day in three doses. A "double" dose of 80 mg/kg to 90 mg/kg a day in two to three doses is now recommended for children who have been on antibiotics in the previous three months, or who are in daycare.

Table 1

Factors that outweigh the increased incidence of mastoiditis

- Their very low incidence (1%) of penicillin resistant streptococcus pneumoniae compared with the rate of over 20% in Saskatchewan.
- Fewer antibiotic related side-effects and complications.
- A cost savings to the health care system when an antibiotic is not prescribed.
- The fact that it has been estimated that 2,500 children with acute otitis media will have to be treated with antibiotics to prevent one case of mastoiditis.

Adapted from: Van Juijlen D, Schilder A, Van Balen F et al. National differences in incidence of acute mastoiditis: Relationship to prescribing patterns of antibiotics for acute otitis media. Pediatr Inf Dis J. 2001; 20: 140-4.

Dr. Cross is the chief of emergency medicine, Victoria Hospital, Prince Albert, Saskatchewan.

How long is amoxicillin taken for?

A five-day course of amoxicillin is sufficient in a child over two who has an uncomplicated episode of acute OM.[7] If in doubt, treat the child as usual for seven to 10 days.

What if the patient is allergic to penicillin?

TMX/SMP is often recommended as a drug of choice in a penicillin allergic patient. However, this is somewhat controversial because of the increasing incidence of TMX/SMP resistance in some areas. One aspect, which is agreed upon, is that TMX/SMP should not be used in cases that have not responded to amoxicillin (and neither should the macrolides).

What is a good second-line antibiotic?

There is a wide variety of antibiotics that can be used, although amoxicillin-clavulanate and cefuroxime axetil are mentioned most frequently. Interestingly, the guidelines on acute OM from the Institute for Clinical Systems Improvement (December 2002) does not recommend the newer macrolides, such as Zithromax® (azithromycin) and Biaxin,® (clarithromycin) as it believes there is insufficient literature to support their use.

If the patient's family wants something stronger than amoxicillin, despite being informed that amoxicillin is effective, cheap and safe, I would prescribe an acceptable second-line antibiotic.

What if the patient needs antibiotics, but has vomited repeatedly?

Firstly, and most importantly, make sure the vomiting is not being caused by something else. The presence of OM does not rule out a concomitant, nasty illness, such as meningitis. Secondly, a single IM dose of ceftriaxone 50 mg/kg is an effective treatment. If the child has been on antibiotics recently, the same dose should be given daily for three consecutive days.

What about follow-up?

Historically, children with OM were seen within days of completing a course of antibiotics, as a second antibiotic was prescribed if there were any residual signs of inflammation. It is currently advised this is no longer required, unless a child is still experiencing pain. It is also recognized that most children with OM will have an effusion in the involved ear(s), which can be ignored for at least three months, as 90% to 95% of cases will improve within this time period. Therefore, some physicians recommend not seeing the child for at least one month after instituting antibiotic therapy, while others recommend waiting as long as three months for reassessment. However, re-examination is needed if a child becomes symptomatic at any time.

The presence of OM does not rule out a concomitant, nasty illness, such as meningitis.

Table 2

Recommendations regarding withholding antibiotics

- The child is over two and does not appear "toxic."
- There must be no history of recurrent otitis media.
- The patient must have normal immune status.
- There can be no underlying chronic diseases or craniofacial deformities.
- The parents must be agreeable to withholding antibiotics.
- The patient must be available (and willing to return) for follow-up.

What are the indications for prophylactic antibiotics?

The usual indications for use of prophylactic antibiotics are three episodes of acute OM within six months, or four episodes in one year. This is controversial, as prophylactic antibiotics will only decrease the incidence of acute OM by approximately one episode a year. Many physicians feel this decrease is outweighed by the resultant increase in antibiotic resistance that occurs from prophylactic antibiotics. Amoxicillin 20 mg/kg once a day for two to six months is the prophylactic antibiotic of choice.

Can anything else be done to prevent OM?

Besides the usual advice, such as avoiding second-hand cigarette smoke and not allowing an infant to lie flat while sucking a bottle, the use of a pacifier should be discouraged if OM is recurrent or if a child is older than eight months.

What therapy should not be used?

Steroids, antihistamines and decongestants have all been shown to be ineffective.

Acute Otitis Media

What about pain control?

Giving oral acetaminophen to a child crying with an earache strikes me as cruel and unusual punishment. At least, give oral codeine 1.0 mg/kg every three to four hours with acetaminophen. Better yet, if you are in the emergency department try administering a single dose of morphine 0.1 mg/kg subcutaneously to a crying child. Subcutaneous morphine is just as effective as IM morphine, is easier to administer, and is less painful to the child. When adults cry due to ear pain, they will almost certainly get a parenteral narcotic, so why not provide the same relief to a child?

When adults cry due to ear pain, they will almost certainly get a parenteral narcotic, so why not provide the same relief to a child?

Acetylsalicylic acid should not be used for pain control in such young children, due to the risk of Reye's syndrome.

What about Auralgan drops?

Auralgan drops are helpful, especially when warmed.[8] Unfortunately, on one occasion I was not very specific on the method of warming, with rather unfortunate results when a bottle of Auralgen exploded inside a microwave. Auralgan should not be used if the tympanic membrane is not intact.

In closing...

The next time you see a child, with acute OM think of tulips and consider adequate analgesia and a tincture of time, and withholding antibiotics, unless a child does not improve in two to three days. CME

Thank you to Dr. Ben Tan, pediatric infectious diseases, Royal University Hospital, Saskatoon, for his invaluable advice during the preparation of this article.

Take-home message

Facts concerning otitis media in young children

- Not every child with acute OM requires an antibiotic.
- A five-day course of amoxicillin is sufficient in a child over two who has an uncomplicated episode of acute OM.
- Prophylactic antibiotics are of questionable value in preventing recurrent episodes of acute OM.
- There is a wide variety of antibiotics that can be used as second-line treatments, although amoxicillin-clavulanate and cefuroxime axetil are mentioned most frequently.
- In avoiding recurrence of otitis media, the use of a pacifier should be discouraged if a child is older than eight months.

References
1. Van Zuijlen DA, Schilder AG, Van Balen FA, et al: National differences in incidence of acute mastoiditis: Relationship to prescribing patterns of antibiotics for acute otitis media? Pediatr Inf Dis J 2001; 20(2):140-4.
2. Alberta Clinical Practice Guideline Group: The diagnosis and treatment of acute otitis media in children. www. cma.ca. November 2001.
3. Canadian Paediatric Society: Antibiotic management of acute otitis media. www.cma.ca. April 2002.
4. British Columbia Medical Association/British Columbia Ministry of Health Planning: Acute otitis media. www.cma.ca. June 2002.
5. University of Michigan Health System: Otitis media. www guideline.gov. May 2002.
6. Institute for Clinical Systems Improvement: Diagnosis and treatment of otitis media in children. www.guideline.gov. December 2002.
7. Kozyrskyj AL, Hildes-Ripstein GE, Longstaffe S, et al: Treatment of acute otitis media with a shortened course of antibiotics: A meta-analysis. JAMA 1998; 279(21):1736-42.
8. Hoberman A, Paradise J, Reynolds E, et al: Efficacy of Auralgan for treating ear pain in children with acute otitis media. Arch Pediatr Adolesc Med 1997; 151(7): 675-8.

Net Readings

1. Canadian Medical Association Infobase: www.cma.ca
2. National Clearinghouse (U.S.): www.guidelines.gov

www.stacommunications.com

For an electronic version of this article, visit: *The Canadian Journal of CME* online.