Otitis Media: The Need for a New Paradigm in Medical Education

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*Pediatrics* 2006;118:1731-1733
DOI: 10.1542/peds.2005-2794

This information is current as of April 11, 2007

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http://www.pediatrics.org/cgi/content/full/118/4/1731
Otitis Media: The Need for a New Paradigm in Medical Education

Denia A. Varrasso, MD

Chair, New York State Otitis Project; Department of Otolaryngology, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, New York

The author has indicated she has no financial relationships relevant to this article to disclose.

Those of us who have been concerned about issues related to the diagnosis of otitis media and its appropriate management have come to an urgent conclusion: that our future doctors need to be better educated about otitis media. Although otitis media in children is one of the most prevalent problems that practitioners face in practice, our medical students and residents leave their training inadequately prepared to correctly diagnose and manage this important and ubiquitous health care issue.

Spurred by the alarming rates of bacterial resistance, the New York State Otitis Project (sponsored by the New York State Department of Health; www.health.state.ny.us/nysdoh/antibiotic/antibiotic.htm) has, for the past 8 years, been actively dealing with issues related to diagnostic accuracy, evidence-based judicious use of antibiotics, parental and professional perceptions and myths, and the “observation option.” The observation option for acute otitis media (AOM) is a strategy in which antibiotic treatment of selected children (based on diagnostic certainty, age, illness severity, and assurance of follow-up) is deferred for up to 3 days, during which time management is limited to analgesics and symptomatic relief and after which appropriate follow-up is performed.1-3 Our committee has identified many areas in which educational interventions are needed. There are multiple levels in clinical practice that lend themselves to varied venues for more instruction. However, if we look for ways to have the most widespread effect, the best outcome, and the “biggest bang for the buck,” our focus homes in on our trainees in medical school and residency.

AOM, as defined by the Agency for Healthcare Research and Quality, is the presence of middle-ear effusion plus the rapid onset of signs or symptoms of inflammation of the middle ear.2 Visualization of the tympanic membrane and assessment of its mobility are the standard of care for the diagnosis of middle-ear disease.6 On otoscopic examination, middle-ear effusion is determined by decreased tympanic mobility and change of color, exudates, or bullae. Clinical signs and symptoms include fever, ear pain, drainage of pus or blood, irritability, anorexia, and vomiting.7

In actual clinical practice, however, accurately diagnosing AOM is difficult. Confirming the presence of middle-ear effusion can be a challenge in a child who is uncooperative or may have narrow ear canals or obstructing cerumen. The “red ear” may reflect tympanic membrane erythema caused by viral myringitis or vascular dilatation from crying. A child who tugs on his or her ears, and perhaps has an upper respiratory infection or may be teething, may be suspected of having AOM. Diagnostic accuracy is the cornerstone for appropriate antibiotic use. Yet, despite this realization, physicians often prescribe antibiotics even when only they are 50% certain of an AOM diagnosis.8 One study discovered that 35% of the physicians surveyed did not consider the presence of a middle-ear effusion to be one of their
diagnostic criterion for AOM, as medically defined by the Agency for Healthcare Research and Quality. Given the high prevalence of AOM in early childhood, these unnecessary prescriptions, estimated at ~26% of prescriptions given, play a significant role in increasing the prevalence of multidrug-resistant bacteria. Failure to differentiate AOM from otitis media with effusion (OME) is the most common reason for misuse of antibiotics.

Diagnostic accuracy can only be accomplished when the examiner is trained in and uses pneumatic otoscopy or tympanometry. Many of us in practice recall how inadequate our training was. There may have been a brief mention of tympanic pathology in a didactic session on upper respiratory tract infections during noon conference. The hands-on training involved our senior resident handing us the otoscope, telling us to note this and that landmark and the redness in a usually uncooperative patient. Did we truly see what we were supposed to see? Perhaps it was not until we came across a fulminate case of otitis several patients later did we possibly realize what we were supposed to looking for.

Obvious cases were easy to diagnosis. Unfortunately, there were far too many cases in which the diagnosis was not so clear. Over the years, we each devised our own approach to dealing with the uncertainty, more often than not erring on the side of overdiagnosing and overtreating. We justified this to ourselves by thinking that it was what the family expected.

The curriculum has not changed since we graduated. Our academic committee members report that the time allotted to upper respiratory tract infections or head-and-neck hour conferences allow only a brief mention of AOM and OME 2 or 3 times a year. Some medical school curriculums available for perusal on the Internet are linked to slide sets. An informal survey of otolaryngology or infectious disease lectures revealed that otitis media is allotted only 5 to 8 of 50 to 60 slides.

Although medical students, at the end of third-year pediatric clerkships, reported significant improvement in the performance of otoscopy, only 5% of students felt they could consistently perform a reasonable assessment of young children’s ears in 75% of their examinations. There have been limited data regarding the adequacy of training within pediatric residency programs in the diagnosis and management of otitis media despite the fact that AOM is demonstrated repeatedly as the most common pediatric problem encountered in general practice. A survey conducted in 2001 demonstrated that only 59% of US programs and 55% of Canadian programs included any formalized training for the diagnosis of otitis media in place, with most consisting of lectures 3 or fewer times a year, despite repeated recommendations for such educational programs. This study suggested incorporating a more formalized and standardized measure of competency in the use of otoscopy, just like the requirement to demonstrate competency in intubation, lumbar puncture, and chest-tube placement. Why should otitis media be any different?

Many pediatric providers do not typically perform pneumatic otoscopy even though it has been demonstrated that pneumatic otoscopy improves their otoscopic accuracy.

The training of otoscopic skills requires familiarity with the equipment itself: light source, otoscope heads, and the speculum aperture and length. Tymanometry and acoustic reflectometry are adjunctive techniques for assisting in the diagnosis of middle-ear effusion for children in whom results of otoscopic examinations are ambiguous. Tymanometry provides information on tympanic membrane compliance, middle-ear pressure, and effusion peaks. Acoustic reflectometry provides information on spectral gradient angles as a reflection of effusion. Few family medicine residents believed that diagnostic tools had no value in the diagnosis of otitis media, but lack of training or equipment problems were reported as contributing to their not using these tools. Half of family practice residents may be inadequately diagnosing middle-ear problems, because they have not reported that pneumatic otoscopy was necessary for diagnosing otitis media.

Accurate diagnosis and appropriate treatment of AOM and OME have been brought to the forefront of educational needs with the recent release of the guidelines developed by the American Academy of Pediatrics, the American Academy of Family Physicians, and the American Academy of Otolaryngology–Head and Neck Surgery. Recommendations on a variety of issues based on the extensive review of the pertinent literature were made and included the observation option, the treatment of pain, antibiotic choices, hearing evaluations, etc.

Osmosis can no longer be the preferred method to train our medical students and residents for the diagnosis and management of otitis media. There exists today a large and accurate body of scientific and clinical information, including the proper use of equipment and interpretation of results, that must be transmitted to our trainees.

The New York State Otitis Project proposes that otitis media must be addressed in an expanded and detailed manner within the medical school curricula and in residency training programs that are concerned with primary care:

- Devote lecture time solely to otitis; discuss and explain the diagnostic criteria for OME and AOM.
- Develop training modules that deal with knowledge, skills, and techniques associated with the use of equipment: pneumatic otoscopy, tympanometry, acoustic reflectometry.
• Use teaching videos or PowerPoint presentations that realistically demonstrate the pertinent anatomy and clinical findings.
• Devise an assessment of pneumatic otoscopic competency.
• Develop training modules that include discussions of treatment options such as “watchful waiting” or observation.
• Develop training modules that discuss the judicious use of appropriate and recommended antibiotic choices.
• Impart communication skills for effective discussion of diagnosis and management options with patients and caregivers.
• Develop a knowledge base on how to identify and deal with sequelae.
• Expand clinical curriculums to keep current with evolving evidence-based medicine; the practice of tympanocentesis in the office setting is one such example that warrants close monitoring.
• Develop an evaluation program to be included in the process to assess the outcome of these interventions.

The enhancement of medical education on this issue is an absolute necessity and a wonderful opportunity. We no longer can afford to neglect our teaching responsibilities toward our future doctors on this widespread clinical problem that has such vast public health implications.

REFERENCES
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