



# My Ear Hurts: Otitis Media in the Oncology Setting

Wendy H. Vogel, MSN, FNP, AOCN®

As an advanced practice nurse, you care for patients who have a variety of chronic conditions, and you are expected to handle them all. How do you keep up with all of the advances in cardiology, endocrinology, gastroenterology, and infectious disease? You read this column, dedicated to managing a variety of primary care disorders in conjunction with cancer treatment. If you have developed expertise in management of one or more chronic diseases, consider writing for this column. Contact Associate Editor Joyce Marrs, MS, APRN-BC, OCN®, AOCNP, via e-mail at joycemrn@sbcglobal.net.

## Case Study

J.T., a 57-year-old man, presented to the clinic for follow-up of squamous cell carcinoma of the right pyriform sinus. He completed radiation therapy and chemotherapy with 5-fluorouracil and cisplatin three months ago. Today, he complains of an upper-respiratory infection and pain in his right ear during the past three days. He states that he was unable to sleep last night because of the pain and worries his cancer has recurred.

Physical examination findings include normal vital signs, tender maxillary sinuses bilaterally, a slightly erythematous pharynx, and a dull right tympanic membrane (TM) with diminished light reflex. The left tympanic membrane is scarred, erythematous, bulging, and without a light reflex. The assessment is acute otitis media (OM) with effusion.

## Case Discussion

OM is defined as an infection of the middle ear with or without effusion. It is important to differentiate between acute OM (AOM) and OM with effusion (OME). Patients with AOM present with a history of acute symptoms, middle ear effusion, and signs of middle ear inflammation (American

Academy of Pediatrics Subcommittee on Management of Acute Otitis Media [AAP], 2004). OME presents as an effusion without signs or symptoms of inflammation or infection (American Academy of Family Physicians [AAFP], American Academy of Otolaryngology–Head and Neck Surgery, and AAP, 2004).

AOM and OME can affect patients of all ages but occurs most often in the pediatric population, especially in children younger than three years (Eason, 2005). AOM is the most frequently occurring bacterial illness in children, accounting for 50% of all antibiotics prescribed for preschoolers (AAP, 2004). Ninety percent of children have OME at some time before age six (AAFP et al., 2004). Either AOM or OME can occur in adults, but the incidence declines as patients age.

In the pediatric oncology setting, AOM is one of the most common types of infection diagnosed (Auletta, O'Riordan, & Nieder, 1999). Common childhood infections in pediatric oncology settings occur in large numbers, regardless of diagnosis, disease state, and neutropenic status (Auletta et al.). AOM and OME can occur in any patient with cancer, adult or child alike, and care must be taken to determine the etiology and proper treatment.

## Pathophysiology

The middle ear contains the tympanic cavity, where three ossicles (hammer, anvil, and stirrup) transmit the vibration of the TM to the inner ear. The eustachian tube connects the middle ear with the thorax. It is usually flat and closed and opens briefly with swallowing and yawning, thereby equalizing the pressure in the middle ear with the atmospheric pressure. Equalized pressure permits the TM to vibrate freely (Ludwig-Beymer, Heuther, & Schoessler, 1994).

AOM occurs because of eustachian tube dysfunction, which prevents drainage of middle ear fluid. This usually is a result of a preceding event such as an upper-respiratory infection, causing inflammation and obstruction of the eustachian tube and the middle ear. Resultant negative pressure often will pull fluid further into the middle ear and provide a rich environment for pathogens to grow (Eason, 2005).

OME occurs when the eustachian tube loses its patency, causing negative pressure and effusion behind the TM. Persistent fluid in the middle ear will result in decreased mobility of the TM and interfere with sound conduction (AAFP et al., 2004). OME usually follows AOM, allergic rhinitis, or upper-respiratory infection (Mercy, 2000). OME is found in nearly 40% of patients with nasopharyngeal cancer before treatment, and an additional 16% of patients will develop it within two years after cancer treatment (Kew et al., 2000). As many as 40% of patients undergoing radiation therapy for head and neck malignancies will have acute

Wendy H. Vogel, MSN, FNP, AOCN®, is an oncology nurse practitioner at Blue Ridge Medical Specialists in Bristol, TN.

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