EM CASE OF THE WEEK.
BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

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Acute Otitis Externa

A 9-year-old female with a past medical history of eczema and mild intermittent asthma presents to the ED with right sided earache for the past five days. She has never experienced these symptoms prior to this episode. The patient recently swam in a pool last week and regularly cleans her ears with Q-tips. Immunizations are up to date. She denies headache, fever, vision or hearing changes. The patient reports a drug allergy to amoxicillin in the form of a rash. Patient is afebrile and vitals are within normal limits. On physical exam, there is right auricle protrusion. The patient has a mildly tender, edematous, erythematous right mastoid process with tenderness upon movement of the pinna. There is scant exudate, mild erythema, and mild edema in the right external auditory canal. The tympanic membrane was not adequately visualized due to swelling of the external auditory canal. The left ear is unremarkable. There is no lymphadenopathy, sinuses are nontender, oropharynx is clear, and mucous membranes are moist. Cranial nerves II through XII are intact and the patient is alert and oriented to person, place, and time. Which of the following is the next best step in management of this patient?

A. Acetaminophen 325 mg orally every 4 hours as needed for pain and fever
B. CT Mastoid with and without contrast
C. Ciprofloxacin/dexamethasone otic drops 0.3%/0.1% suspension 4 drops in the right ear bi-daily for 7 days
D. Clindamycin 300 mg orally every 8 hours for 14 days
E. Ceftazidime 50 mg/kg IV every 8 hours not to exceed 6 g per day
F. Surgical decompression

Acute otitis externa (swimmer's ear) is due to inflammation of the external auditory canal. It is more common in the summer months of warm, humid climates in patients aged 7-12 years old who swim regularly and have a loss of cerumen. It is also more common in immunocompromised patients, diabetics, and patients with dermatologic conditions such as eczema.

The figure shows erythema, edema, and protrusion of the posterior auricle.

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

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The correct answer is B. CT Mastoid with and without contrast. The goal is to secure the diagnosis and rule out acute mastoiditis and necrotizing acute otitis externa. This patient was also started on Clindamycin 375 mg intravenously every 8 hours at this time and transitioned to Clindamycin 300 mg orally every 8 hours for 14 days. The patient was started on Acetaminophen 423 mg every 4 hours as needed for pain and fever, but this step is not a critical next step. Once the diagnosis was secured, the patient was started on Ciprofloxacin/dexamethasone otic drops 0.3%/0.1% suspension 4 drops in the right ear bi-daily for 7 days. Ceftazidime 50 mg/kg IV every 8 hours not to exceed 6 g per day is a potential treatment option for fluoroquinolone-resistant pseudomonal malignant otitis externa. Surgery may be indicated for intracranial complications of acute mastoiditis.

The CT Head with and without contrast showed narrowing of the right external and middle auditory canal. The mastoid air cells are aerated bilaterally. These findings are consistent with right sided otitis externa and media without evidence of mastoiditis.

Discussion

Acute otitis externa is a clinical diagnosis defined as onset within 48 hours in the past three weeks, ear canal inflammation symptoms (otalgia, itching, fullness, jaw pain, and/or hearing loss), and ear canal inflammation signs (tenderness of the pinna or tragus, diffuse ear canal edema or erythema, and/or otorrhea, lymphadenitis, erythema of the tympanic membrane, or cellulitis of the pinna and surrounding skin.

Pseudomonas aeruginosa (38%), Staphylococcus epidermidis (9%), and Staphylococcus aureus (8%) are the most common pathogenic causes of acute otitis externa, but other gram positive, gram negative, and anaerobic organisms are other potential causes. Therefore treatment should include antibiotics with pseudomonal coverage such as ciprofloxacin.

Figure shows protrusion of the right auricle relative to the left auricle.

Treatment

Acute otitis externa is treated by managing the infection, managing the pain, and preventing recurrence. Cleaning the ear with aural toilet while avoiding swimming and hair washing until resolution and refraining from inserting foreign bodies into the ear canal can facilitate these goals. Additionally, patients are treated with a topical antibiotic, a topical steroid, and nonsteroidal pain medications. Typically, oral antibiotics are not prescribed and all classes of antibiotics have a similar efficacy.

Patients must be educated on the proper administration of otic drops: lying on the side, filling the canal, removing air pockets by moving the pinna, and remaining in a dependent position for 3 to 5 minutes. Ear wicks may be used for optimal treatment delivery in patients with extensive edema.

For a list of educational lectures, grand rounds, workshops, and didactics please visit ***BrowardER.com*** and **click** on the ***"Conference"*** **link**.

All are welcome to attend!

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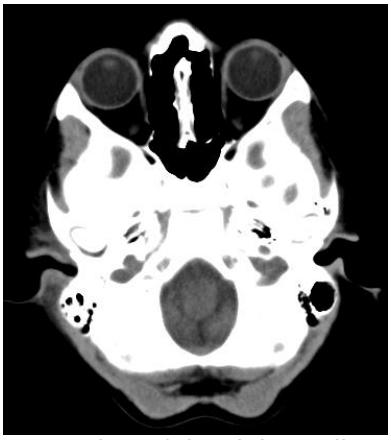
Table 1: Acute Otitis Externa Severity and Treatment*

Severity	Description	Treatment	Tympanic Membrane
Mild	Pruritis, minor discomfort, and minimal canal edema	Acidifying agent and glucocorticoid (acetic acid with hydrocortisone)	
Moderate	Pruritis, intermediate pain, partially-occluded canal	Acidifying agent, antibiotic, antiseptic, and glucocorticoid (Ciprofloxacin and hydrocortisone)	
Severe	Complete canal obstruction, intense pain, periauricular erythema, adenopathy, and fever	Topical therapy, wick placement, and oral antibiotics if deep tissue infection is present.	 Not visualized.

*Adapted from Uptodate

Take Home Points

- Acute otitis externa is diagnosed clinically based on a rapid onset, and signs and symptoms of external auditory canal inflammation.
- Treatment is typically topical antibiotics and steroids along with pain management. A sample regimen is Ciprofloxacin/dexamethasone otic drops 0.3%/0.1% suspension 4 drops in the right ear bi-daily for 7 days.
- Complications include mastoiditis and malignant (necrotizing) otitis externa, which can be life threatening Suspect malignant otitis externa in the setting of fever, failure to improve with topical antibiotics, and headaches. Other complications can occur such as meningitis, dural sinus thrombosis, cranial abscess, and cranial nerve palsies (facial nerve).



Narrowing of the right auditory canal

ABOUT THE AUTHOR

This month's case was written by Jared Maas. Jared is a 4th year medical student from Herbert Wertheim College of Medicine at FIU. He did his emergency medicine rotation at BHMC in October 2017. Jared plans on pursuing a career in Radiation Oncology after graduation.

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