Errors in the Diagnosis and Management of Necrotizing Otitis Externa

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ABSTRACT

Objectives: Necrotizing otitis externa (NOE) is a life-threatening condition that may be difficult to distinguish from other clinical entities. The purpose of this study was to assess the pitfalls associated with contemporary diagnosis and management of NOE.

Study Design: Retrospective chart review

Methods: Patients given the diagnosis of NOE or one of its typical presenting complaints over the past 14 years were identified by diagnostic and radiologic codes. Charts were reviewed for history, findings, treatment, and outcome.

Results: Fifty-one patients with NOE were identified. The annual number of cases rose throughout the study period. A risk factor was known in 46. The gallium SPECT study was accurate for the presence (44 of 46 patients) and resolution of disease. Prolonged systemic antimicrobial therapy (mean 15 weeks, range 4-59) was required. Microbial cultures responded to antibiotics in 25/25 patients. Evaluation of cases rose throughout the study period. A risk factor was known in 46. NOE may mimic more benign conditions. NOE must be considered in all patients with temporal bone inflammation, especially those with risk factors and those that fail to improve with more conservative measures.

Level of Evidence: 4

INTRODUCTION

Necrotizing otitis externa (NOE) has long been recognized as a life-threatening osteomyelitis of the skull base that generally occurs in compromised individuals, such as insulin-dependent diabetics. The typical clinical presentation of NOE has been consistently reported over the past half century. OTIOT may be difficult to distinguish from other clinical entities, such as chronic suppurative otitis media. Failure to accurately diagnose NOE may lead to morbidity (eg, aspiration secondary to cranial nerve palsy). NOE remains a life-threatening condition that requires prolonged systemic antimicrobial therapy. The clinical presentation of NOE may overlap or evolve out of benign otologic conditions or interventions. Clinicians must consider the diagnosis in all patients with temporal bone inflammation, particularly those that have risk factors, such as diabetes or immune suppression, and those that fail to improve with conservative measures.

TESTING

Radiographic: CT (86%), MR (31%), technetium bone scan (90%), and gallium SPECT (90%).

Microbiology: 15/25 positive cultures with antibiotics, 11/12 patients without (p = 0.064). Inflamed tissue in only 50% of cases (ie, not improving with pseudomonal therapy).

TREATMENT

Systemic antimicrobial therapy: 15 weeks mean (range 4-59).

Ciprofloxacin in 43 of the 51 patients (84%).

Topical antibiotics in all but 5 cases

Outcome: Resolution (72%), recurrence after resolution (4%), death (4%), lost to follow up (20%).

DISCUSSION

The impetus for this study was the observation that many cases of NOE referred to our practice by competent otolaryngologists did not have NOE considered—or at least documented—prior to their referral. Our findings echo those of many prior reports. The presentation of NOE can be insidious. It can occur in patients that have had longstanding chronic suppurative otitis media or chronic otitis externa. It can also occur after straightforward otologic surgery. The diagnosis of NOE needs to be considered in any “at-risk” individual (esp., diabetics or immunocompromised individuals) or those that fail to respond to short courses of antimicrobial therapy for temporal bone inflammation and otalgia.

The Institutional Review Board approved our identification and review of the medical records of patients with possible NOE. Financial and clinical database records from our tertiary care multispecialty medical group were searched for patients with diagnosis codes of NOE, disorders of the external ear, suppurative and unspecified otitis media, mastoiditis and related conditions, other disorders of tympanic membrane, other disorders of middle ear and mastoid, otosclerotic, malignant neoplasms of the external ear, otalgia, facial palsy, and laryngeal paralysis. These records were cross-referenced with codes for computed tomography (CT) of the temporal bone, magnetic resonance (MR) of the head, technetium-99 bone scan, and gallium-67 SPECT imaging to eliminate those patients whose disease was not severe enough to warrant radiologic evaluation. The date range was January 1, 1995 through December 31, 2008. The end date allowed for a minimum of 6 months follow-up at the time that the study was conducted.

The presence of NOE was defined by clinical signs (eg, external canal and/or skull base inflammation), a confirmatory radiographic study, and response to treatment (ie, improvement only with more than 2 weeks of systemic antimicrobial therapy). Patients were considered to have a delay in diagnosis if the patient ultimately was found to have NOE but did not receive a diagnosis of NOE within 2 months of onset of continuous symptoms prior presenting to an otolaryngologist. NOE resolution was defined by the absence of symptoms or clinical signs of active skull base infection.

RESULTS

HISTORY

Symptoms: severe otalgia (90%), otorrhea (70%), cephalgia (20%) Known risk factors: diabetes mellitus (35), oral medications, 19 insulin, 20,1 diabetes, radiation, leukemia, solid organ transplant, AIDS, lupus, and streptococcal or streptococcal therapy.

Otologic: otitis media (9), ear surgery (10, 2 <3 months postop), cotton swabs (6), recent water exposure (2), hearing aid trauma (2)

EXAMINATION

Ear canal: swelling (73%), granulation tissue (37%), polyp (16%) Tympanic membrane perforation (14%) Cranial neuropathies (11): facial (1), V, VI, or X (1 each)

PRIOR OTOLARYNGOLOGY EVALUATION

Otolaryngologist referrals (55%): non-NOE diagnosis (68%). Known risk (84%), risk & cranial nerve palsy (16%), and risk & granulation tissue (21%). Delay in diagnosis ≥ 2 months: 57% (mean 6.6, range 2 – 21 months, with risk 6.9 months) Delays chronic suppurative otitis media or chronic/recurrent otitis externa secondary to hearing aid aid.

CONCLUSIONS

NOE remains a life-threatening condition that requires prolonged systemic antimicrobial therapy. The clinical presentation of NOE may overlap or evolve out of benign otologic conditions or interventions. Clinicians must consider the diagnosis in all patients with temporal bone inflammation, particularly those that have risk factors, such as diabetes or immune suppression, and those that fail to improve with conservative measures, such as topical or short courses of systemic antimicrobial therapy.

REFERENCES


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