JOURNAL OF CLINICAL MICROBIOLOGY, Apr. 2001, p. 1672–1673 Vol. 39, No. 4
0095-1137/01/$04.00+0 DOI: 10.1128/JCM.39.4.1672–1673.2001

CASE REPORTS

Turicella Otitidis as an Unusual Agent Causing a Posterior Auricular Abscess

STEVEN J. REYNOLDS,[1]* MARCEL BEHR,[1] AND JANE MCDONALD[2]

Division of Infectious Disease, Department of Medical Microbiology, McGill University Health Centre, Montreal General Hospital, Montreal, Quebec H3G 1A4,[1] and Division of Infectious Disease, Department of Medical Microbiology, McGill University Health Centre, Montreal Children's Hospital, Montreal, Quebec H3H 1P3,[2] Canada

Received 12 October 2000/Returned for modification 5 December 2000/Accepted 26 January 2001

A posterior auricular abscess in a 3-year-old girl was confirmed to have been caused by an unusual organism, *Turicella otitidis*.

CASE REPORT

We describe a case of a 3-year-old girl who presented to the emergency room with a 4-day history of pain and swelling behind her right ear. She had previously been monitored by an ear, nose, and throat specialist for four episodes of acute otitis media beginning at the age of 1 year. She had recently been monitored as well for excessive sebum in both ears. The presenting complaint was first noticed by the child's mother when an area of swelling, approximately the size of a pea, that was tender to touch and erythematous appeared behind the right ear. The child had been taken to a walk-in clinic 3 days prior to presentation and had started taking oral amoxicillin. Despite the antibiotics, the area of swelling increased in size over the following days. There was no reported fever, no discharge, and no history of trauma. The child looked well when seen in the emergency room and was afebrile. Physical examination revealed a firm, tender, erythematous immobile mass that was 1.5 cm in diameter and a few small cervical lymph nodes. The right tympanic membrane was normal. Initial laboratory investigations were unremarkable. The child was admitted to the medical ward and started on intravenous cefuroxime for a presumed diagnosis of cellulitis and possibly mastoiditis.

During the hospital course, the mass became mobile and fluctuant. The child developed a fever of up to 40°C on the second day of hospitalization. Plain X ray was not suggestive of mastoiditis, but ultrasound of the neck revealed a 15-mm collection of fluid below the right mastoid, which was aspirated, yielding 0.25 ml of thick pus. On the seventh day of hospitalization, the child underwent incision and drainage of the abscess, revealing a large amount of thick pus with debris and necrotic tissue. The child was treated for 1 day with intravenous cefuroxime followed by 7 days of intravenous cloxacillin. She was discharged home and put on oral cephalexin and completed an additional 2 weeks of therapy. She was clinically well when seen in follow-up 1 month later.

A Gram stain of the material from the original needle aspiration performed on the third day of hospitalization revealed abundant leukocytes and abundant gram-positive bacilli. Direct inoculation of sheep blood and chocolate agar plates failed to grow any organism. However, gram-positive bacilli were isolated from cooked-meat broth cultures after 2 days of incubation. The bacilli were described as pleomorphic in morphology, were catalase positive, and on subculture grew on blood agar plates in both O_2 and CO_2 environments. The isolate was sent to the provincial laboratory for identification. Analysis revealed a nonfermentive, pleomorphic, gram-positive bacillus that exhibited a positive CAMP test. High-performance liquid chromatography analysis revealed a significant lack of mycolic acids, consistent with the identification of *Turicella otitidis*. The 16S gene of *Turicella* was amplified directly from cells by using PCR primers pA and pH˙ as described by Edwards et al. (2). PCR products were purified (Qiagen PCR purification kit) and sequenced with both pA and pH˙ primers by using the ABI Prism BigDye Terminator Cycle Sequencing Ready Reaction Kit. Sequencing reactions were run on an ABI377 automated sequencer. The completed sequence was compared to deposited sequences at the National Center for Biotechnology Information by using the BLASTN server (http://www.ncbi.nlm.nih.gov/BLAST/). For a sequence of 507 bp, there were 40 no-calls. The remaining 477 nucleotides resulted in 471 identities with *T. otitidis*, with six gaps. Mycobacterial cultures were also sent and were negative. MICs were determined for a variety of antimicrobial agents by using standard broth microdilution methodolology. NCCLS criteria are not available for determining the clinical significance of MICs for *Corynebacterium* species. The majority of agents tested exhibited low MICs for the organism. Values (in micrograms/milliliter) were as follows: vancomycin, <0.5; ampicillin, <0.12; cefazolin, <2; ciprofloxacin, 0.12; erythromycin, <0.12; and gentamicin, <0.25. Pathology of the excision of the abscess revealed abundant keratin material with focal purulent exudates suggestive of cyst content. No lymph node or residual epithelial lining was

* Corresponding author. Present address: Ross 1150, Johns Hopkins University, Department of Medicine, Division of Infectious Diseases, 720 Rutland Ave., Baltimore, MD 21205. Phone: (410) 614-0927. Fax: (410) 614-9775. E-mail: sreynoll@jhmi.edu.

seen, suggesting the possibility of an epidermoid or dermoid cyst.

The microbiology of otitis media has been extensively investigated by means of middle ear effusion cultures obtained by needle aspiration. Results have consistently revealed the major pathogens to be *Streptococcus pneumoniae* and *Haemophilus influenzae* in all age groups (1). More recently, nonfermenting coryneform bacteria have been isolated from a number of patients with ear infections. Funke et al. isolated eight samples of nonfermenting coryneform bacteria identified as *Corynebacterium afermentans* by biochemical characteristics (3). However, the isolates lacked mycolic acid and thus were not classified in the genus *Corynebacterium*. In 1994, Funke et al. clearly delineated *C. afermentans* and the ANF-1-like (absolute nonfermenter-1; Centers for Disease Control and Prevention classification) coryneform bacteria by using 16S rRNA sequencing and proposed a new genus, *Turicella*, containing one species, *T. otitidis* (5). Subsequent phylogenetic and phenotypic analyses have revealed the presence of a third species in the coryneform group of ANF-1-like bacteria, *Corynebacterium auris* (4). The most recent case report identified *T. otitidis* in a patient with otorrhea associated with maxillolabiopalatine cleft surgery (6). These early reports suggest an important role for the ANF-1-like coryneform bacteria in the pathogenesis of middle ear infections.

Previously reported nonfermenting coryneform bacteria isolated from ear fluids were often polymicrobial in etiology, raising doubts about their pathogenicity (3). In our case, isolation of *T. otitidis* in pure culture with a positive Gram stain in the clear setting of infection supports a pathogenic role for this organism. The fact that the organism was isolated only on subculture despite being seen on the original Gram stain can be explained by the antecedent course of antibiotics with which the child was treated, thus rendering the abscess partially sterile.

We thank the Laboratoire de santé publique du Québec, the Department of Microbiology, Montreal Children's Hospital, and Jacqui Brinkman, McGill University Health Centre, for their laboratory support.

REFERENCES

1. **Del Beccaro, M. A., P. M. Mendelman, A. F. Inglis, M. A. Richardson, N. Q. Duncan, C. R. Clausen, and T. L. Stull.** 1992. Bacteriology of acute otitis media: a new perspective. J. Pediatr. **120:**81–84.
2. **Edwards, U., T. Rogall, H. Blocker, M. Emde, and E. C. Bottger.** 1989. Isolation and direct complete nucleotide determination of entire genes. Characterization of a gene coding for 16S ribosomal RNA. Nucleic Acids Res. **17:**7843–7853.
3. **Funke, G., G. E. Pfyffer, and A. von Graevenitz.** 1993. A hitherto undescribed coryneform bacterium isolated from patients with otitis media. Med. Microbiol. Lett. **2:**183–190.
4. **Funke, G., P. A. Lawson, and M. D. Collins.** 1995. Heterogeneity within human-derived Centers for Disease Control and Prevention (CDC) coryneform group ANF-1-like bacteria and description of *Corynebacterium auris* sp. nov. Int. J. Syst. Bacteriol. **45:**735–739.
5. **Funke, G., S. Stubbs, M. Altwegg, A. Carlotti, and M. D. Collins.** 1994. *Turicella otitidis* gen. nov., sp. nov., a coryneform bacterium isolated from patients with otitis media. Int. J. Syst. Bacteriol. **44:**270–273.
6. **Renaud, F. N. R., A. Grégory, C. Barreau, D. Aubel, and J. Freney.** 1996. Identification of *Turicella otitidis* isolated from a patient with otorrhea associated with surgery: differentiation from *Corynebacterium afermentans* and *Corynebacterium auris*. J. Clin. Microbiol. **34:**2625–2627.