Otitis Media Caused by Beta-Lactamase-Producing Branhamella (Neisseria) catarrhalis

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A beta-lactamase-producing Branhamella catarrhalis was isolated in pure culture from the right middle ear aspiration of an otitis media in a 3-month-old girl. The patient responded well to cefamandole treatment.

Otitis media caused by Branhamella catarrhalis has been reported infrequently (3, 7). The role of this organism in middle ear infections was often underassessed, because the patients responded well to ampicillin treatment and the organism was less invasive. However, the prevalence of otitis media caused by this organism was sometimes noticed by some reports (2, 4, 6). Recently, we have noticed three cases of recurrent otitis media due to Neisseria-like organisms (as determined by Gram stains of middle ear aspirations). They did not respond to ampicillin treatment. We had the opportunity to study one case further, and we found that beta-lactamase-producing B. catarrhalis was responsible for the difficulty in treatment. The purpose of this note is to report that infections caused by beta-lactamase-producing B. catarrhalis have recently been appearing with increasing frequency (9; M. A. Johnson, W. L. Drew, and K. Montgomery, Abstr. Annu. Meet. Am. Soc. Microbiol. 1979, C158, p. 336). In cases of otitis media or other infections due to this organism, the treatment may need to be reevaluated.

Case report. A 3-month old Caucasian girl was admitted to Children's Hospital of San Francisco for the second time with a diagnosis of bilateral draining otitis media, lobar pneumonia, and possible sepsis. The previous admission had been for sepsis of the newborn and aseptic meningitis. She had a history of ear infections that had been treated with ampicillin. Upon examination this girl presented a temperature of 100.2°F (ca. 37.8°C) and revealed a normocephalic head with fontanelles not bulging, but soft. The ears contained draining fluid from both tympanic membranes. The eyes were weepy, and the nose was congested. The chest presented tugging in the right chest with definite intercostal and subcostal retraction, and the left lung was clear. Blood cultures were negative. The spinal fluid did not reveal any bacteria, but contained 39 leukocytes per mm3, 8 polymorphonuclear cells, 31 lymphocytes, and 16 erythrocytes. However, the specimens from the throat, nasopharynx, and the right middle ear aspiration grew B. catarrhalis. Gram stain of the latter specimen showed many leukocytes with intracellular and extracellular gram-negative diplococci. The child responded very well to intravenous treatment with cefamandole at 100 mg every 6 h. At the end of the day 5 of treatment, she was found to be afebrile and was discharged on erythromycin after a definite improvement.

B. catarrhalis was isolated in pure culture from the right middle ear aspiration and nasopharyngeal swab; it also occurred as the predominant isolate in a mixed normal flora from the throat specimen. This gram-negative diplococcus appeared in slightly whitish colonies on blood agar plates and did not grow on MacConkey agar plates. It was a glucose nonoxidizer and positive for phenylalanine deaminase and nitrate reduction. Other biochemical tests were done and correlated well with the reactions cited in the revised King's chart (12). The minimum inhibitory concentrations of various antibiotics were determined in Mueller-Hinton broth by the tube dilution method with an inoculum of approximately 105 colony-forming units per ml. The organism was susceptible to erythromycin, kanamycin, tetracycline, and cefamandole with minimum inhibitory concentrations of 0.25, 0.5, 0.25, and 8 μg/ml, respectively. The minimum inhibitory concentrations for penicillin and ampicillin were 4 and 2 μg/ml, respectively. As determined by using a chromogenic cephalosporin substrate (10), this organism produced beta-lactamase and was confirmed as a beta-lactamase-producing B. catarrhalis by Guido Conroni, Children's Hospital, Washington, D.C. In retrospect, it is interesting to note that even though the minimum inhibitory concentration of cefamandole to this organism was as high as 8 μg/ml, the patient responded well to cefamandole treatment.
B. catarrhalis has been shown previously to be 100% sensitive to ampicillin (7). However, with increasing use of oral penicillins, the frequency of beta-lactamase-producing B. catarrhalis infections will be expected to rise, because this organism is known as one of the normal oral flora. In addition, the increase in penicillin-resistant strains among other commensal bacteria, such as Haemophilus sp., Streptococcus viridans, and Bacteroides melaninogenicus (1, 5, 8, 11), is the ultimate problem for current standard therapy and deserves further investigation.

LITERATURE CITED