Hemophilus influenzae Pharyngitis and Cellulitis in Adults

Olaf C. Kroneman, MD, and Howard Brody, MD
Charlottesville, Virginia

Hemophilus influenzae infections in adults are becoming more common but are often unsuspected in this age group by the primary care physician. Two case reports illustrate pharyngitis, and pharyngitis associated with cellulitis of the neck, in which H influenzae was cultured from the blood. The throat and skin are only two of the many sites for H influenzae infections in adults. As no physical signs are pathognomonic for this organism, its possible role should influence the choice of antibiotics while awaiting culture results. Newer cephalosporins, especially cefamandole and cefoxitin, appear promising in the treatment of these infections.

Hemophilus influenzae is widely known as an important etiologic organism in childhood infections,[1] and recently family physicians have been reminded of its role in causing epiglottitis in adults.[2] However, in adult patients, this organism has been documented in a much wider assortment of infections, both local and systemic, than is generally recognized.[3,4] The following two case reports illustrate ways in which this organism may present to the primary care physician; in neither case was H influenzae initially suspected.

Case Reports

Case 1

A 40-year-old white man was in good health, except for a one pack-per-day cigarette habit, until he developed pharyngitis, rhinitis, and malaise. After one week of these symptoms he also developed fever, chills, and sweats, and consulted his family physician, who prescribed oral penicillin. Twelve hours later, after taking three 250 mg doses of this medication, he came to the emergency room of the university hospital complaining of stiff neck. Examination was remarkable for bilateral sternocleidomastoid tenderness and a meningismus. A lumbar puncture yielded an opening pressure of 150 cm of water, clear fluid with no white cells, five red blood cells, and normal glucose. Peripheral white cell count was 12,100. He was discharged with the diagnosis of "viral syndrome."

The patient returned to the emergency room 12 hours later with extreme neck pain and dysphagia with inability to swallow secretions. Examination revealed a temperature of 38.6 C, pulse 112 beats/min, blood pressure 120/70 mmHg without orthostatic change, respirations 24/min. Skin overlying the anterior belly of the sternocleidomastoid bilaterally showed marked tenderness, warmth, and erythema. Anterior cervical lymph nodes were enlarged bilaterally. The patient was unable to turn his head to either side because of pain. The throat was mildly injected and indirect laryngoscopy revealed no enlargement of the epiglottis. Lungs were clear and heart sounds were unremarkable except for tachycardia.

Laboratory data included a white blood cell count of 16,800 with 1 percent juvenile forms, 28

From the Departments of Internal Medicine and Family Practice, University of Virginia Medical Center, Charlottesville, Virginia. Requests for reprints should be addressed to Dr. Howard Brody, Department of Family Practice, Michigan State University, East Lansing, MI 48824.

0094-3509/80/120865-03$00.75
© 1980 Appleton-Century-Crofts

percent bands, 51 percent polymorphonuclear cells, 9 percent lymphocytes, and 11 percent mononuclear cells. Hematocrit value was 44 percent and platelets, 224,000. Erythrocyte sedimentation rate was 43. A Monospot test was negative, and electrolytes and creatine phosphokinase were normal. Soft tissue x-ray films of the neck revealed retropharyngeal edema; a chest x-ray film was normal.

The patient was admitted to the hospital and begun on intravenous penicillin, 12 million units daily, and over the next three days experienced marked defervescence and decrease in neck pain and dysphagia. Blood cultures from admission were then found to be growing H influenzae, type B, sensitive to both penicillin and ampicillin. The antibiotic was switched to intravenous ampicillin, 2 gm every 4 hours, and the patient continued to improve uneventfully. Otolaryngoscopic evaluation confirmed the absence of retropharyngeal abscess. After a total of five days of intravenous antibiotic therapy the patient was switched to oral ampicillin. He was discharged after ten days with instructions to complete a 14-day course of antibiotics, and made an uneventful recovery.

Case 2

This 49-year-old white woman requested a home visit for swelling of the neck accompanied by a painful sore throat and dysphagia. She had been well until the previous day when she noted a feeling of fullness about the right ear which then progressed to bilateral swelling of the neck. She also complained of mid- and right-sided pleuritic chest pain, but sputum was nonpurulent. Past medical history was remarkable for a 30-pack per year smoking habit. Examination at home revealed an oral temperature of 39.8 C, labored respirations of 26/min without stridor, a markedly swollen but nonerythematous posterior pharynx, and marked bilateral neck edema without significant erythema, warmth, or tenderness. There was a splotchy macular red rash over the anterior neck and both breasts, where the patient had been applying a liniment. The chest was clear.

The patient was transported to the community hospital where a soft-tissue lateral neck x-ray film was taken immediately, showing pharyngeal edema but a normal epiglottis. Chest x-ray film revealed a small area of patchy infiltrate at the left costophrenic angle felt by the radiologist to be consistent with pneumonia. The white blood cell count was 3,200 with 37 percent polymorphonuclear cells, 42 percent bands, 10 percent lymphocytes, 5 percent mononuclear cells, and 5 percent juvenile forms. The hematocrit value was 42.3 percent and mean corpuscular volume was significantly elevated at 115.7 μ^3. Platelets were 79,000. Abnormalities of blood chemistry included an LDH level of 262 ImU/ml, SGOT level of 157 ImU/ml, and bilirubin level of 1.9 mg/100 ml.

The patient was begun on intravenous ampicillin and because of respiratory compromise was given one dose of intravenous dexamethasone, 8 mg. By the next day edema and respiratory difficulty had lessened; the white blood cell count gradually rose to 5,300 and bands dropped to 6 percent; however, the hematocrit value also fell to 31 percent. Blood cultures grew H influenzae, type B, of intermediate sensitivity to ampicillin. Despite a good in vivo response to therapy, these sensitivities, and a concern that the falling hematocrit might represent a drug-induced hemolytic anemia, prompted a change to intravenous cefamandole. Further evaluation revealed a low serum folate of 2.8 ng/ml with a normal B_{12} level, and history obtained from the family suggested a significant alcohol intake; this was felt to be the likely etiology for the liver enzyme abnormalities, and folate replacement was begun for the anemia. The patient's cough produced only white sputum, which grew moderate quantities of Neisseria species and small quantities of H influenzae. The throat culture was negative for streptococci. On the sixth day, with the patient largely free of respiratory symptoms, the antibiotic was changed to oral cefaclor. Recovery was complicated by left shoulder pain without swelling or a return of fever; an x-ray film was negative, and symptoms responded to salicylates. She was discharged on the eighth day on oral antibiotic and folate. Prior to discharge, a consulting otolaryngologist found no underlying pharyngeal or laryngeal lesion. Four days after completing a total of 14 days of antibiotics, the patient was seen in the office with complete resolution of all symptoms and a hematocrit value of 37 percent. A follow-up chest x-ray film three months later showed disappearance of the left costophrenic infiltrate.

Discussion

H influenzae infections reported in adults include sinusitis, epiglottitis, chronic bronchitis, pneumonia, pericarditis, endocarditis, meningitis, urinary tract infections, pelvic inflammatory disease, amnionitis, appendicitis, biliary tract infections, septic arthritis, postsplenectomy bacteremia, and cellulitis.[3,4] Although one of the earlier reports of the syndrome now referred to as epiglottitis noted in passing the marked pharyngeal involvement that may accompany H influenzae upper respiratory tract infection,[5] this organism is seldom considered in patients presenting with pharyngitis in the absence of epiglottitis, as was the case with the two patients presented here. Both had pharyngeal edema and dysphagia disproportionate to the degree of pharyngeal erythema; in Case 2 the edema was sufficient to cause respiratory compromise and to prompt use of steroids. The quick response to antibiotics, however, rather than the steroids, may have been the deciding factor in this patient's improvement.

While the patient in Case 2 had neck edema with no erythema, warmth, or tenderness, the patient in Case 1 developed a true cellulitis. This patient had a bright red coloration rather than the violaceous hue sometimes said to be typical of H influenzae cellulitis in children. However, in a report of three cases of cellulitis caused by this organism in adults over 50 years of age—two associated with epiglottitis and one with pneumonia—the violaceous color was present in only one.[6] A survey of cellulitis in children showed that only 40 percent of H influenzae cellulitis had a violaceous color, and that this color was also seen in two cases of pneumococcal cellulitis.[1] This physical sign, then, is of limited value in diagnosing H influenzae infection.

Bilateral acute suppurative parotitis caused by H influenzae has also been reported in debilitated adults.[7] This diagnosis might also be considered when neck swelling or tenderness, with or without overlying cellulitis, is the presenting symptom.

Leucocytosis with a left shift is an almost invariant feature of adult H influenzae infection in the non-immunosuppressed host.[4] The patient in Case 2 presented with leucopenia and thrombocytopenia and later developed anemia; these probably reflected a bone marrow already compromised by folate deficiency and further stressed by acute infection.

As Case 1 illustrates, many strains of H influenzae are sensitive to penicillin—a factor which may account for the apparent underdiagnosis of this organism, since if an infection treated empirically with penicillin improves, the physician is unlikely to suspect that H influenzae was the cause. Nevertheless, the drug of choice is ampicillin in less severe infections; in life threatening infections the rising incidence of ampicillin-resistant strains mandates treatment with chloramphenicol until antibiotic sensitivities have been established.[4] These recommendations may change with the evidence that some of the newer cephalosporins show excellent in vivo activity against the organism[8] (older drugs of this class may show good in vitro sensitivity but fail to produce a clinical response). The experience of Case 2 tends to confirm reports of the usefulness of cefamandole in these infections[4]; and cefoxitin has been reported successful in treating an H influenzae cellulitis of the abdominal wall.[9] Cefaclor is an appropriate oral drug when parenteral therapy is no longer necessary.[8]

The authors suggest that H influenzae should be considered more often in the differential diagnosis of adult infections. This is especially true for respiratory tract infections, or systemic infections arising from a possible respiratory focus. As both these cases show, merely ruling out epiglottitis does not rule out an H influenzae infection. Once this organism is suspected, blood cultures will generally suffice to confirm or rule out the diagnosis.[4]

References

1. Dajani AS, Asmar BI, Thirumoorthi MC: Systemic Haemophilus influenzae disease: An overview. J Pediatr 94:355, 1979
2. Goldman SM, Salik JO: Acute epiglottitis in adults. Am Fam Physician 18(1):99, 1978
3. Norden CW: Hemophilus influenzae infections in adults. Med Clin North Am 62:1037, 1978
4. Hirschmann JV, Everett ED: Haemophilus influenzae infections in adults: Report of nine cases and a review of the literature. Medicine 58:80, 1979
5. Brewer DW, Rambo JHT: Influenzal laryngitis. Ann Otol Rhinol Laryngol 56:96, 1948
6. Drapkin MS, Wilson ME, Shrager SM, et al: Bacteremic Hemophilus influenzae type B cellulitis in the adult. Am J Med 63:449, 1977
7. Fainstein V, Musher DM, Young EJ: Acute bilateral suppurative parotitis due to Haemophilus influenzae: Report of two cases. Arch Intern Med 139:712, 1979
8. Nelson SC, Schwartz AR: Cephalosporin update—1979. Am Fam Physician 20(3):158, 1979
9. Shaw RA, Plouffe JF: Haemophilus influenzae in an adult. Arch Intern Med 139:368, 1979