AMBER S. TULLY, MD
Assistant Professor, Department of Family and Community Medicine, Jefferson Medical College, Thomas Jefferson University, Philadelphia, PA

CAROL DAO, MD
Thomas Jefferson University, Philadelphia, PA

The Clinical Picture

Oral plaques and dysphagia in a young man

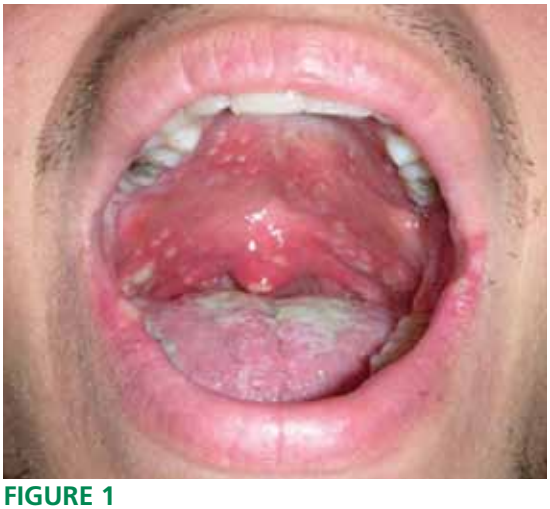

FIGURE 1

More than 90% of AIDS patients have an episode of thrush

A 23-year-old man presents with a sore throat, dysphagia, and general malaise that began 1 week ago. He also reports a 5-pound weight loss. He has not recently taken antibiotics or inhaled glucocorticoids, and he has no history of tobacco use or trauma to his mouth. He has no personal or family history of oral cancer. He uses cocaine on occasion. He reports feeling feverish and having a decreased appetite.

An examination of his mouth reveals white plaques of varying sizes (FIGURE 1). The plaques are easily removed using a tongue blade, with no bleeding. No regional lymphadenopathy is noted.

Q: Based on the history, the symptoms, and the physical examination, which of the following is the most likely diagnosis in this patient?

- ☐ Oral hairy leukoplakia
- ☐ Squamous cell carcinoma
- ☐ Oral candidiasis
- ☐ Herpetic gingivostomatitis
- ☐ Streptococcal pharyngitis

A: Oral candidiasis is correct.

Otherwise known as thrush, it is common in infants and in denture wearers, and it also can occur in diabetes mellitus, antibiotic therapy, chemotherapy, radiation therapy, and cellular immune deficiency states such as cancer or human immunodeficiency virus (HIV) infection.[1] Patients using inhaled glucocorticoids are also at risk and should always be advised to rinse their mouth out with water after inhaled steroid use.

Although *Candida albicans* is the species most often responsible for candidal infections, other candidal species are increasingly responsible for infections in immunocompromised patients. *Candida* is part of the normal flora in many adults.

Oral hairy leukoplakia is caused by the Epstein-Barr virus and is often seen in HIV infection. It is a white, painless, corrugated lesion, typically found on the lateral aspect of the tongue, and it cannot be scraped from the adherent surfaces. It can also be found on the dorsum of the tongue, the buccal surfaces, and the floor of the mouth. In an asymptomatic patient with oral hairy leukoplakia, HIV infection with moderate immunosuppression is most likely present.[2] Oral hairy leukoplakia is diagnosed by biopsy of suspected lesions. It is not a premalignant lesion, and how to best treat it is still being investigated.[3]

doi:10.3949/ccjm.78a.10150

Squamous cell carcinoma of the oral cavity can present as nonhealing ulcers or masses, dental changes, or exophytic lesions with or without pain.[1] They may be accompanied by cervical nodal disease. Malignancies of the oral cavity account for 14% of all head and neck cancers, with squamous cell carcinoma the predominant type.[4] Alcohol and tobacco use increase the risk. Alcohol and tobacco together have a synergistic effect on the incidence of oral carcinoma.[1,4] Predisposing lesions are leukoplakia, lichen planus of the erosive subtype, submucosal fibrosis, and erythroplakia. Oral infection with human papillomavirus has been shown to increase the risk of oral cancer by a factor of 14, and papillomavirus type 16 is detected in 72% of patients with oropharyngeal cancer.[5]

Herpetic gingivostomatitis is a manifestation of herpes simplex virus infection. The initial infection may be asymptomatic or may produce groups of vesicles that develop into shallow, painful, and superficial ulcerations on an erythematous base.[1,3] If the gingiva is involved, it is erythematous, boggy, and tender.[3] Infections are self-limited, lasting up to 2 weeks, but there is potential for recurrence because of the ability of herpes simplex virus to undergo latency. Recurrence is usually heralded by prodromal symptoms 24 hours before onset, with tingling, pain, or burning at the infected site. The diagnosis can be made clinically, but the Tzanck smear test, viral culture, direct fluorescent antibody test, or polymerase chain reaction test can be used to confirm the diagnosis. In patients who are immunocompromised, infections tend to be more severe and to last longer.

Streptococcal pharyngitis, most often caused by group A beta-hemolytic streptococci, is the most common type of bacterial pharyngitis in the clinical setting. The bacteria incubate for 2 to 5 days. The condition mainly affects younger children.[6] Patients with "strep throat" often present with a sore throat and high-grade fever. Other symptoms include chills, myalgia, headache, and nausea. Findings on examination may include petechiae of the palate, pharyngeal and tonsillar erythema and exudates, and anterior cervical adenopathy.[6] Children often present with coinciding abdominal complaints. A rapid antigen detection test for streptococcal infection can be performed in the office for quick diagnosis, but if clinical suspicion is high, a throat culture is necessary to confirm the diagnosis. Treatment is to prevent complications such as rheumatic fever.[6]

FEATURES AND DIAGNOSIS OF ORAL CANDIDIASIS

Lesions of oral candidiasis can vary in their appearance. The pseudomembranous form is the most characteristic, with white adherent "cottage-cheese-like" plaques that wipe away, causing minimal bleeding.[1,7] The erythematous or atrophic form is associated with denture use and causes a "beefy" appearance on the dorsum of the tongue or on the mucosa that supports a denture.[1,7] A third form affects the angles of the mouth, causing angular cheilitis (perlèche).[7,8] Chronic infection appears as localized, firmly adherent plaques with an irregular surface similar to hyperkeratosis caused by chronic frictional irritation.[7]

Oral candidiasis can occur in different forms at the same time. Patients often describe minimal symptoms such as dysgeusia or dry mouth.[1,7] Infections causing dysphagia or odynophagia warrant suspicion for involvement of the esophagus.

The diagnosis is made empirically if the lesions resolve with anticandidal therapy. A more definitive diagnosis can be made by microscopy with a potassium hydroxide preparation showing pseudohyphae. Formal culture can also determine the yeast's susceptibility to medication in recurrent or resistant cases.[2]

Oral candidiasis may be the manifesting symptom of HIV infection, and more than 90% of patients with adult immunodeficiency syndrome have an episode of thrush.[8] When candidiasis is diagnosed without obvious cause, HIV testing should be offered, regardless of a patient's lack of obvious risk factors. Other oral lesions in HIV patients are oral hairy leukoplakia, Kaposi sarcoma, periodontal and gingival infections, aphthous ulcers, herpes simplex stomatitis, and xerostomia.[2] With highly active antiretroviral therapy, the incidence of oral candidiasis has decreased by about 50%.[2]

With highly active antiretroviral therapy, the incidence of oral candidiasis has decreased by about 50%

Our patient was diagnosed with HIV when screened after this initial presentation. Lower CD4 counts and higher viral loads increase the patient's risk for oral candidiasis and other lesions.

This patient's initial CD4 count was 524 cells/μL, and his viral load was 11,232 copies/mL.

TREATMENT

In HIV-negative patients or in HIV-positive patients with a CD4 count greater than 200 cells/μL, the treatment of oral candidiasis involves topical antifungal agents, including a nystatin suspension (Nystat-Rx) or clotrimazole (Mycelex) troches.[3,7,9] Treatment should be continued for at least 7 days after resolution of the infection. If resolution does not occur, oral fluconazole (Diflucan) 200 mg daily should be given.

For HIV patients with CD4 counts below 200 cells/μL, oral fluconazole or itraconazole (Sporanox) is recommended, with posaconazole (Noxafil) as an alternative for refractory disease.[3,9] Giving fluconazole prophylactically to prevent oral candidiasis is not recommended because of the risk of adverse effects, lack of survival benefit, associated cost, and potential to develop antifungal resistance.[3,9]

REFERENCES

1. **Reichart PA**. Clinical management of selected oral fungal and viral infections during HIV-disease. Int Dent J 1999; 49:251–259.
2. **Kim TB, Pletcher SD, Goldberg AN**. Head and neck manifestations in the immunocompromised host. In: Flint PW, Haughey BH, Lund VJ, et al, editors. Cummings Otolaryngology: Head and Neck Surgery. 5th ed. Philadelphia, PA: Mosby/Elsevier; 2010:209–229 (225–226).
3. **Sciubba JJ**. Oral mucosal lesions. In: Flint PW, Haughey BH, Lund VJ, et al, editors. Cummings Otolaryngology: Head and Neck Surgery. 5th ed. Philadelphia, PA: Mosby/Elsevier; 2010:1222–1244 (1229–1231).
4. **Wein R**. Malignant Neoplasms of the Oral Cavity. In: Flint PW, Haughey BH, Lund VJ, et al, editors. Cummings Otolaryngology: Head and Neck Surgery. 5th ed. Philadelphia, PA: Mosby/ Elsevier; 2010:1222–1244 (1236).
5. **D'Souza G, Kreimer AR, Viscidi R, et al**. Case-control study of human papillomavirus and oropharyngeal cancer. N Engl J Med 2007; 356:1944–1956.
6. **Hayes CS, Williamson H Jr**. Management of group A beta-hemolytic streptococcal pharyngitis. Am Fam Physician 2001; 63:1557–1564.
7. **Coleman GC**. Diseases of the mouth. In: Bope ET, Rakel RE, Kellerman R, editors. Conn's Current Therapy. Philadelphia, PA: Saunders; 2010:861–867.
8. **Habif TP**. Candidiasis (moniliasis). In: Clinical Dermatology: A Color Guide to Diagnosis and Therapy. 5th ed. Edinburgh: Mosby; 2010:523–536.
9. **Pappas PG, Rex JH, Sobel JD, et al; Infectious Diseases Society of America**. Guidelines for treatment of candidiasis. Clin Infect Dis 2004; 38:161–189.

***ADDRESS**: Amber Tully, MD, Family and Community Medicine, Thomas Jefferson University Hospital, 1100 Walnut Street, Suite 603, Philadephia, PA 19107; e-mail amber.tully@jefferson.edu.*