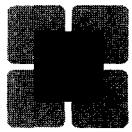

Disseminated aspergillosis presenting as a skin abscess

THOMAS N. HELM, MD AND DANIEL MAZANEC, MD

■ An immunocompromised patient presented with chronic low back pain as the initial symptom and a subcutaneous abscess as the initial sign of disseminated aspergillosis. With the rising incidence of immunocompromised patients, cutaneous manifestation of aspergillosis may become more common.

□INDEX TERMS: ASPERGILLOSIS; IMMUNOCOMPETENCE □CLEVE CLIN J MED 1990; 57:92–94

ASPERGILLUS infection of the skin is usually considered to be the result of hematogenous dissemination in an immunocompromised host.[1,2] Defects in cellular immunity allow the hyphal form of *Aspergillus* to invade the skin and produce various lesions, including nonspecific erythema, violaceous papules, erythematous nodules, subcutaneous granulomas, and necrotizing dermal plaques.[3] We describe an immunocompromised patient whose presenting sign of disseminated aspergillosis was a subcutaneous abscess. Her chief complaint was low back pain, a symptom preceding any objective findings by three and one half months. The abscess developed in the area of preceding pain. Incision and drainage of the abscess immediately resolved the discomfort, but she later died of respiratory failure.

We report this case because of the unusual presentation of disseminated aspergillosis. With the increasing population of immunocompromised patients, clinicians must be alert to atypical manifestations of infection.[4]

From the Departments of Dermatology (T.H.) and Rheumatic and Immunologic Disease, The Cleveland Clinic Foundation.

Address reprint requests to T.N.H., Department of Dermatology, One Clinic Center, 9500 Euclid Avenue, Cleveland, Ohio 44195-0338

CASE PRESENTATION

A 58-year-old black woman presented for evaluation of low back pain of two months' duration. She had a 15-year history of pulmonary sarcoidosis confirmed by bronchoscopy and a four-year history of cutaneous sarcoidosis. For the preceding four years she had been treated with 20 mg of prednisone daily. The pain that prompted her office visit was localized in the right lower paralumbar region. It was exacerbated by movement such as turning in bed or coughing. Examination of the skin at that time was unremarkable. Lower extremity reflexes were normal, as were the results of the straight leg raising test. Review of lumbar radiographs revealed only spondylolisthesis of L5 and S1. A bone scan revealed generalized increased lumbosacral uptake consistent with degenerative joint disease. The patient was referred to the Physical Therapy Department and her pain improved with conservative management.

Three and one-half months later, she reported recurrent back pain and new trace hemoptysis. A 6 x 4 cm firm movable mass in the right paralumbar area with normal overlying skin was found. Over the following two weeks, the pain intensified and the mass increased in size to 10 x 10 cm. The overlying skin became markedly erythematous. The patient was admitted to the hospital and the mass was incised and drained, yield-

ing 50 mL of purulent material. Following the procedure, her back pain improved immediately.

Culture of the material revealed *Aspergillus fumigatus*. Aspergillus antibody complement fixation tests were negative on admission and 1 month later; immunodiffusion studies, however, showed bands of identity to all types of Aspergillus studied (eg, *Aspergillus fumigatus*, *Aspergillus niger,* and *Aspergillus flavus*). Bronchoscopy was performed to evaluate her intermittent trace hemoptysis. Left upper lobe bleeding was detected and the bronchial aspirate obtained grew *Aspergillus fumigatus*. A chest radiograph revealed a mediastinal shift to the left, interstitial changes, and left upper lobe pleural thickening unchanged from a radiograph taken two years earlier. The patient developed severe parietooccipital headaches after admission to the hospital. Head CT revealed the presence of left maxillary and right sphenoidal sinus opacification. Irrigation and culture of left maxillary sinus contents revealed *Aspergillus fumigatus*. A left Caldwell-Luc operation was performed and an aspergilloma withdrawn. The patient was treated aggressively with amphotericin B, but her condition deteriorated and she later died. Her family refused an autopsy.

DISCUSSION

The presence of unrelenting lower back pain at rest should suggest an infectious or malignant etiology, particularly in older patients. In our patient, who was immunosuppressed because of both her primary disease (sarcoidosis) and its therapy (steroids), infection as the cause of her pain was a primary concern. As dermatologists encounter increasing numbers of immunocompromised patients, more atypical presentations of diverse infectious diseases can be expected. Early recognition of the infectious process offers the patient the best opportunity for recovery.

Our patient had complaints originating from cutaneous involvement of *Aspergillus fumigatus* that preceded any other evidence of fungal involvement by three and one half months. Although *Aspergillus fumigatus* may have colonized her diseased respiratory tract, her cutaneous disease led to the symptoms that prompted her to seek medical attention.

Aspergillus fumigatus is a ubiquitous saprophyte first reported in 1844 to cause disease in humans.[5] More recently, *Aspergillus fumigatus* has been increasingly recognized as an important pathogen, especially in the immunocompromised host.[2,4]

Exposure to *Aspergillus* conidia may cause allergic aspergillosis and pneumonitis. Colonization of damaged tissue such as lung cavities allows for development of aspergillomas. If the immune system is impaired by disease or immunosuppressive agents, *Aspergillus* hyphae may invade the respiratory tract and spread hematogenously to form necrotic cutaneous nodules, renal abscesses, brain abscesses, or osteomyelitis.[2] Culture-negative endocarditis, mycotic keratitis, and even endogenous oculomycosis can occur. The paranasal sinuses and the external auditory canal are frequently chronically infected with *Aspergillus* spp. Spread from the paranasal sinuses may be an important cause of orofacial aspergillosis.[2,4]

Normal neutrophil function is most important in controlling invasive disease.[2] Treatment with immunosuppressive medications, in the case described, may increase susceptibility to infection by impairing neutrophil function. Corticosteroid therapy impairs the inflammatory response needed to contain infection.[6]

Recent review of the English literature reveals only eight published cases of primary cutaneous *Aspergillus fumigatus* infection, to the best of our knowledge.[7–11] Although *Aspergillus fumigatus* is the species of *Aspergillus* most frequently isolated from the lung, the preponderance of cases of primary cutaneous aspergillosis are due to *Aspergillus flavus* infection.[8] Local injury from intravenous catheters or arm boards has been implicated as the source of cutaneous infection in many of these cases.[9,12] We have also included a case of *Aspergillus fumigatus* infection originating in the nasal cavity as an example of primary cutaneous infection.[8] Most reported cases are in immunocompromised patients, although primary aspergillus infection has been described in normal hosts. Although our patient presented with cutaneous involvement, she most likely did not have primary cutaneous aspergillosis. Her sinus and skin disease most likely resulted from spread from a pulmonary focus of infection. The absence of complement-fixing antibodies in the face of positive results of an immunodiffusion study may be further evidence of her immunosuppressed status.

The skin manifestations of aspergillosis infection are varied and depend on the mode of infection. Disseminated aspergillosis has been estimated to invade the dermis in less than 5% of cases.[3] Lesions often begin as erythematous papules and may become pustular.[2,13] Microabscesses with granuloma formation may be seen in biopsy specimens. Lesions may mimic ecthyma gangrenosum. When local spread from the paranasal sinuses or the nares occurs, violaceous ulcerated plaques may be seen.[8]

Primary infection may present as a fluctuant nodule near a site of injury, a necrotizing plaque, necrotic tissue at the site of a surgical wound, purpuric pustules, or hemorrhagic bullae. The appearance may be similar to leprosy, leishmaniasis, cryptococcosis, blastomycosis, and botryomycosis. Interestingly, transepithelial elimination has been shown to occur in all of these diseases and in aspergillosis.[14]

The treatment of *Aspergillus* infection depends on the form of the disease, whether invasive, allergic, or only the result of colonization. Invasive disease is best managed with intravenous amphotericin B.[2,15] Combination therapy with flucytosine has been reported to permit lower doses of amphotericin B,[16] although in vitro testing has not always indicated an additive effect.[13,17] Recent combination trials with amphotericin B and ketoconazole in vitro suggest an occasional detrimental effect on outcome.[17] Amphotericin B, together with rifampin appears very useful in inhibiting growth of *Aspergillus* spp in vitro,[17] but clinical experience is essential before this combination can be considered a treatment of choice.

REFERENCES

1. Vedder JS, Schorr WF. Primary disseminated pulmonary aspergillosis with metastatic skin nodules: successful treatment with inhalation nystatin therapy. JAMA 1969; **209:**1191–1195.
2. Rinaldi MG. Invasive aspergillosis. Rev Infect Dis 1983; **5:**1061–1077.
3. Findlay GH, Roux HF, Simson IW. Skin manifestations in disseminated aspergillosis. Br J Dermatol 1971; **85(suppl. 7):**94–97.
4. Wolfson JS, Sober AJ, Rubin RH. Dermatologic manifestations of infections in immunocompromised patients. Medicine 1985; **64:**115–133.
5. Bennett SH. On the parasitic vegetable structures found growing in living animals. Trans R Soc Edinburgh 1844; **15:**277.
6. Diamond RD. Inhibition of monocyte-mediated damage to fungal hyphae by steroid hormones. J Infect Dis 1983; **147:**160.
7. Bardana, EJ Jr. The clinical spectrum of aspergillosis—part 2: classification and description of saprophytic, allergic, and invasive variants of human disease. CRC Crit Rev Clin Lab Sci 1981; **13:**85–159.
8. Dreizen S, Bodey GP, McCredie KB, Keating MJ. Orofacial aspergillosis in acute leukemia. Oral Surg Oral Med Oral Pathol 1985 **59:**499–504.
9. Grossman ME, Fithian EC, Behrens C, Bissinger J, Fracaro M, Neu HC. Primary cutaneous aspergillosis in six leukemic children. J Am Acad Dermatol 1985; **12:**313–318.
10. Lederman IR. Primary aspergillosis (letter). JAMA 1983; **249:**1265.
11. Langlois RP, Flegel KM, Meakins JL, Morehouse DD, Robson HG, Guttman RD. Cutaneous aspergillosis with fatal dissemination in a renal transplant recipient. Can Med Assoc J 1980; **122:**673–676.
12. Allo MD, Miller J, Townsend T, Tan C. Primary cutaneous aspergillosis associated with Hickman intravenous catheters. N Engl J Med 1987; **317:**1105–1108.
13. Rippon JW. Medical Mycology: The Pathogenic Fungi and the Pathogenic Actinomycetes, 3rd ed. Philadelphia, WB Saunders, 1988, p 637.
14. Hartman PD, Kaplan RP. Transepithelial elimination in cutaneous aspergillosis. J Am Acad Dermatol 1986; **15:**1305–1307.
15. Pennington JE. Aspergillus lung disease. Med Clin North Am 1980; **64:**475–490.
16. Codish SD, Tobias JS, Hannigan M. Combined amphotericin B-flucytosine therapy in *Aspergillus* pneumonia. JAMA 1979; **241:**2418–2419.
17. Hughes CE, Harris C, Moody JA, Peterson LR, Gerding DN. In vitro activities of amphotericin B in combination with four antifungal agents and rifampin against *Aspergillus* spp. Antimicrob Agents Chemother 1984; **25:**560–562.