regarding the mechanism of regression, but none has been born out of the research laboratory. Immune system stimulation may play a role. The list of possible catalysts for this stimulation must include any of the biologic response modifiers, viral or bacterial products, enzymes, hormones, or surgical trauma itself.4 The numerous reports of regression of genitourinary cancers suggest a hormonal or germ cell mechanism.

There is one report, without histologic documentation, of remission of metastases of carcinoma of the lung associated with intensive meditation.4 Also, there is one other case in the literature of psychotic depression and extended survival (15 years) in a patient with squamous cell carcinoma of the lung.6 Our patient had a major endogenous depression with a history of auditory hallucinations and was treated with amitriptyline and perphenazine. Both of these drugs have anti-adrenergic effects. One could speculate on an association between psychotic depression or the medications used for this disease and the regression of the cancer, particularly the adrenal metastasis.

In conclusion, spontaneous regression of cancer seems to be a real phenomenon whose mechanism remains unknown. This area should continue to attract research, as it certainly harbors clues which may someday aid in further elucidating the mysteries of cancer.

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REFERENCES


Aspergillus terreus as a Cause of Invasive Pulmonary Aspergillosis

Charles K. Moore, M.D.,* Mark A. Hellreigh, M.D.;† Craig L. Coble, M.D., FRCPC;‡ and Victor L. Rogge, M.D., F.C.C.P.¶

A 70-year-old woman with nodular, poorly differentiated lymphocytic lymphoma is the third reported patient with invasive pulmonary aspergillosis caused by Aspergillus terreus. This case differs from the two previously reported in that neither neutropenia nor broad spectrum antibiotics preceded the infection. A terreus should not be dismissed as a laboratory contaminant in pulmonary specimens, especially those from immunosuppressed patients. (Chest 1988; 94:889-91)

The lung is the most commonly involved organ in immunosuppressed patients with invasive aspergillosis. A fumigatus and A flavus account for the vast majority of cases. A terreus is a ubiquitous fungus found in soil, decaying vegetable matter and house dust. It was first described as a human pulmonary pathogen in 1972,4 and has subsequently been implicated as an etiologic agent in allergic bronchopulmonary aspergillosis,5 pulmonary mycetoma,6 and invasive pulmonary aspergillosis.7-10 Infection of other organ systems by A terreus has been reviewed by Tracy et al. In this report we report a case of A terreus causing invasive pulmonary aspergillosis in a patient with nodular, poorly differentiated lymphocytic lymphoma.

CASE REPORT

A 70-year-old woman was diagnosed in October 1984 as having nodular, poorly differentiated lymphocytic lymphoma on the basis of left inguinal lymph node and bone marrow biopsies. The patient received various treatments, including chlorambucil, cyclophosphamide/vincristine/prednisone, and doxorubicin/vincristine/prednisone. Chemotherapy was discontinued in June 1986 due to poor response. In August 1986 she presented with a spinal cord compression syndrome caused by a lymphomatous lumbar paraspinal mass. This required treatment with desamethasone and radiation therapy (3,000 cGy). Despite gradual tapering of therapy with desamethasone as an outpatient, a perineal Herpes simplex infection in September 1986 prompted readmission for intravenous therapy with acyclovir. A white blood cell count was 2600/µm³ with 97 percent neutrophils. Chest x-ray film revealed no parenchymal abnormality. She was discharged taking desamethasone 2 mg daily.

On October 19, 1986, the patient was hospitalized with low-grade fever and malaise. Chest auscultation revealed only fine bibasilar inspiratory crackles. The white blood cell count was 4100/µm³ with 70 percent neutrophils. Arterial blood gas levels on room air from the *Department of Medicine, †Department of Radiology, and ¶Department of Pathology, Duke University Medical Center, Durham.

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included pH, 7.45; \(\text{PCO}_2\), 30; and \(\text{PO}_2\), 82. A chest radiograph showed an ill-defined, 2 cm nodule with central cavitation in the right lower lobe (Fig 1). In retrospect, a less conspicuous right lower lobe opacity had been present on a chest radiograph two weeks earlier.

Fiberoptic bronchoscopy revealed no endobronchial lesion. Right lower lobe bronchial washings and brushings were sent for bacterial, fungal and mycobacterial stains and cultures. Washings grew Torulopsis sp, Candida sp, and mixed bacterial flora, while brushings grew only mixed bacterial flora. Under fluoroscopic guidance, multiple biopsies were obtained throughout the cavitary lesion. Histologic examination showed fibrosis and chronic inflammation with hyphal fungal elements present on methenamine silver staining (Fig 2). The hyphae were septate and tended to branch at 45° angles. Cultures of the biopsied tissue grew A terreus. Intravenous therapy with amphotericin B was initiated and the patient received a total of 970 mg over the subsequent 5½ weeks. During that time, the right lower lobe lesion partially resolved, while a new left upper lobe opacity appeared. The latter lesion also cavitated, then gradually decreased in size.

On December 11, 1986 the patient was readmitted with altered mental status. A white blood count was 5,400/cu mm with 84 percent neutrophils. Lumbar puncture yielded clear cerebrospinal fluid with 700 RBC/cu mm, 5 WBC/cu mm (45 percent neutrophils and 55 percent lymphocytes), glucose 98 mg/dl (serum glucose 138 mg/dl) and protein 148 mg/dl. A chest radiograph again showed the right lower lobe cavity. Cultures and smears were negative. Serial computed tomographic brain scans were unremarkable. Despite broad spectrum antibiotic therapy and reintroduction of amphotericin B infusions, the patient progressed to coma and eventually expired. Permission for autopsy was refused.

**DISCUSSION**

While only recently recognized as an invasive human pathogen, A terreus has already been shown to be capable

![Figure 2](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21584/)
Table 1—Aspergillus terreus Infections with Pulmonary Involvement

<table>
<thead>
<tr>
<th>Authors</th>
<th>Age/Sex</th>
<th>Underlying Disease</th>
<th>Risk Factors</th>
<th>Type of Lung Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennedy et al.</td>
<td>54/M</td>
<td>Ankylosing spondylitis</td>
<td>Fibrosis and cavitation</td>
<td>Pneumonitis</td>
</tr>
<tr>
<td>Laham et al</td>
<td>58/M</td>
<td>Tuberculosis</td>
<td>Corticosteroids</td>
<td>Mycetoma</td>
</tr>
<tr>
<td></td>
<td>18/M</td>
<td>None</td>
<td>None</td>
<td>Allergic bronchopulmonary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>aspergilosis</td>
</tr>
<tr>
<td>Vincken et al**</td>
<td>43/F</td>
<td>None</td>
<td>None</td>
<td>Allergic bronchopulmonary</td>
</tr>
<tr>
<td></td>
<td>57/F</td>
<td>None</td>
<td></td>
<td>aspergilosis</td>
</tr>
<tr>
<td>Tracy et al**</td>
<td>23/M</td>
<td>Acute non-lymphocytic leukemia</td>
<td>Chemotherapy-induced neutropenia</td>
<td>Invasive pulmonary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and broad-spectrum antibiotics</td>
<td>aspergilosis</td>
</tr>
<tr>
<td>Chang and King†</td>
<td>60/M</td>
<td>Acute myelomonocytic leukemia</td>
<td>Chemotherapy-induced neutropenia</td>
<td>Invasive pulmonary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and broad-spectrum antibiotics</td>
<td>aspergilosis</td>
</tr>
<tr>
<td>Moore et al</td>
<td>70/F</td>
<td>Nodular poorly differentiated lymphocytic lymphoma</td>
<td>Chemotherapy and corticosteroids</td>
<td>Invasive pulmonary aspergilosis</td>
</tr>
<tr>
<td>(present case)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

of involving the lungs. Its manifestations span the spectrum of pulmonary disease caused by *A. fumigatus* (Table 1). Three cases of allergic bronchopulmonary aspergillosis caused by *A. terreus* have been reported. There is a single report of a mycetoma occurring in the setting of prior tuberculosis, and another case of apparent saprophytic lung involvement in a patient with ankylosing spondylitis. The first case of invasive pulmonary aspergillosis secondary to *A. terreus* was reported by Tracy et al in 1983. Multiple pulmonary nodules developed in the setting of acute non-lymphocytic leukemia, chemotherapy-induced neutropenia and broad-spectrum antibiotics. Open lung biopsy revealed invasive *A. terreus* infection. Subsequent autopsy confirmed pulmonary nodules (some cavitating), vascular invasion with secondary infarction, and involvement of several other organs (including brain, thyroid and kidney). The second case, reported by Chang and King in 1986, involved a 60-year-old patient with acute myelomonocytic leukemia, neutropenia and recent broad-spectrum antibiotic therapy. This patient developed a left upper lobe opacity which cavitated with development of an "air-crescent sign." Bronchoscopy confirmed invasive infection with *A. terreus*.

Invasive pulmonary aspergillosis caused by *A. fumigatus* and *A. flavus* occurs predominantly in the setting of hematologic malignancy, neutropenia and broad-spectrum antibiotic therapy. That this same group of patients is at risk for invasive *A. terreus* pulmonary infection has been documented in the two patients previously reported. The case reported here is the first in a patient with lymphoma and in the absence of neutropenia and broad-spectrum antibiotic therapy. However, our patient was on corticosteroid therapy, another recognized risk factor for the development of invasive disease caused by other Aspergillus species.

Studies in various areas of the United States have yielded divergent findings regarding the prevalence of *A. terreus* in the air and in clinical specimens. In any case, *A. terreus* can no longer be immediately discounted as a laboratory contaminant in pulmonary specimens, especially in immunosuppressed patient populations. The spectrum of pulmonary disease associated with *A. fumigatus* and *A. flavus* can also be caused by *A. terreus*. Despite therapy with amphotericin B, all three reported patients with invasive *A. terreus* pulmonary infection have died with evidence of persistent fungal disease.

REFERENCES


Heyde's Syndrome*

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