Cavitation in Acute Histoplasmosis

Michael Bennish, M.D.; Mary Ann Radkowski, M.D.; and John W. Ripon, M.D.

Cavitory lung lesions in histoplasmosis are usually associated with the chronic form of the disease. This report describes a ten-year-old boy with the clinical and serologic pattern of acute Histoplasma capsulatum infection who had multiple cavitory lesions.

Cavitation with Histoplasma infection usually occurs in patients with preexisting chronic obstructive pulmonary disease. Although there is an animal model for cavitation being produced by acute Histoplasma infection, and there has been speculation that this might occur with acute infections in humans, we could find no well-documented report of this in the literature. In this report, we describe a patient who had multiple pulmonary cavities in association with acute Histoplasma infection and who is doing well without therapy 18 months following diagnosis.

CASE REPORT

A ten-year-old boy was admitted to Wyler Children's Hospital in October, 1980 for evaluation of pulmonary lesions found on radiographs of the chest. Three months previously he had a flu-like syndrome, and since then had occasional episodes of pleuritic left-sided chest pain. He was otherwise asymptomatic. He lived in a rural region of Illinois which is endemic for Histoplasma capsulatum.

On physical examination, he was noted to be an obese child in no distress. His T was 36°. The chest was clear to auscultation. The liver and spleen were not palpable. There were scattered lesions of psoriasis on his palms and legs. Results of examination were otherwise normal.

His hemoglobin and hematocrit levels were normal. White blood cell count and differential were unremarkable. Urinalysis, liver enzymes, electrolytes, calcium, total serum protein and albumin, IgG, IgM and IgA levels, rheumatoid factor, ANA, angiotensin I converting enzyme and sinus films showed normal findings. Westergren erythrocyte sedimentation rate was 47 mm/hr. A chest radiograph showed numerous bilateral pulmonary infiltrates and nodules, a number of which were cavitated (Fig 1). Bilateral hilar and right paratracheal adenopathy were present. Five TU and 250 TU Mantoux tests were nonreactive. Simultaneous mumps and streptokinase-streptodornase skin tests gave positive results. Eight cultures of sputum were negative on both stain and culture for fungi and mycobacteria. A bone marrow aspirate had normal cellularity and morphology and did not yield growth on culture. Fungal immuno-diffusion showed an M line to histoplasmin antigen. A complement fixation test to the yeast phase of Histoplasma capsulatum performed at the Centers for Disease Control showed a 1:128 titer. Complement fixation titer to histoplasmin, coccidioidin and to the yeast form of Blastomyces dermatitidis were negative.

Over the ensuing 18 months, the patient continued to be asymptomatic except for occasional pleuritic pain. His fungal immuno-

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DISCUSSION

This minimally symptomatic ten-year-old boy had an extensive diagnostic evaluation to determine the etiology of his clinically unsuspected cavitory pulmonary lesions and nodules.

Figure 1a. This initial chest film shows bilateral, small, nodular pulmonary infiltrates. Several cavitated lesions are seen in both lungs. Marked hilar and right paratracheal adenopathy are present.

Figure 1b. A coned-down view of the same film demonstrates multiple cavities.

Cavitation in Acute Histoplasmosis (Bennish, Radkowski, Ripon)
Table 1—Sequential Histoplasma Serologic Tests

<table>
<thead>
<tr>
<th>Date</th>
<th>Fungal Immunodiffusion</th>
<th>CF Yeast*</th>
<th>CF Histoplasmin*</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/22/80</td>
<td>1 M line</td>
<td>1:128</td>
<td>Negative</td>
</tr>
<tr>
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<tr>
<td>4/1/81</td>
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<tr>
<td>4/29/81</td>
<td>Negative</td>
<td>1:32</td>
<td>Negative</td>
</tr>
<tr>
<td>8/26/81</td>
<td>1 M Line</td>
<td>1:16</td>
<td>Negative</td>
</tr>
</tbody>
</table>

*Complement fixation to Histoplasma yeast phase and histoplasmin antigens as performed at CDC

adenopathy. The laboratory evaluation was unrevealing except for Histoplasma on serologic testing which was highly suggestive of a recent Histoplasma infection. The subsequent significant decrease in Histoplasma titers along with his continued good health strongly suggest an acute Histoplasma infection as the cause of this patient’s roentgenographic abnormalities.

Among the disease processes known to cause cavitary lung lesions in this age group are malignancy, vasculitis, histiocytosis X, sarcoidosis, Wegener’s granulomatosis and lymphoid granulomatosis, tuberculosis, blastomycosis and coccidioidomycosis. Cavitation in Histoplasma infection is most commonly associated with the chronic pulmonary form of the disease. These patients are most often middle-aged men who have constitutional symptoms and whose cavities often progress unless treated. There are, however, reports of cavitation occurring with Histoplasma infection in patients who did not have the chronic form of the disease. Palayew and Frank reported five patients with what they termed benign progressive multinodular pulmonary histoplasmosis. Two of their patients had no evidence of underlying lung disease and had cavitation of their pulmonary nodules. One patient had longstanding histoplasmosis; the time of onset of infection in the other patient is unclear. In a review of the radiographic manifestations of pulmonary histoplasmosis, Connell and Muhm presented five patients with cavitary lesions. Three of the patients had constitutional symptoms. None had the adenopathy typical of acute primary infection.

On the basis of their experimental work with acute Histoplasma infection in the dog, Chick and Bauman suggested that cavitation might occur in response to acute infections in humans. Our patient confirms their speculation and expands the spectrum of Histoplasma infection in which cavitation can occur.

Surgical Management of Absent Right Pulmonary Artery with Associated Pulmonary Hypertension*

Warren H. Toews, M.D., and George Pappas, M.D., F.C.C.P.

A critically ill 21-month-old girl with congenital absence of the right pulmonary artery and severe pulmonary hypertension and congestive heart failure underwent conduit restoration of flow to the right lung. This patient had marked clinical improvement and reduction in pulmonary hypertension and represents the second reported surgically-treated case for absent right pulmonary artery. Re-establishment of pulmonary artery continuity is therefore recommended when cardiac failure and pulmonary hypertension occurs.

Unilateral absence of a pulmonary artery is a rare anomaly which may be seen as an isolated condition or in association with other congenital heart defects. Pulmonary arterial hypertension and congestive heart failure may occur with the isolated defect and attempts to palliate this condition surgically have been disappointing. A case of congenital absence of the right pulmonary artery with severe pulmonary arterial hypertension and congestive heart failure has been successfully managed with surgery.

**CASE REPORT**

A four-year-old girl had presented at nine months of age with a two-month history of congestive heart failure. Physical examination, ECG, and M-mode echocardiography were compatible with pulmonary arterial hypertension. Chest roentgenography demonstrated

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**FIGURE 1.** Note cardiomegaly and diminished vascular markings on the right (patient nine months old).

REFERENCES