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# Fascioliasis

## Response to Bithionol

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FASCIOLA HEPATICA is an increasingly important parasite of man in Latin American and Mediterranean countries. Although the organism is enzootic in extensive areas of the southern, southwestern, and western United States,[1] only six cases of human fascioliasis have been reported in this country.[1-5] The course of this disease is characterized by clinical manifestations for up to three months before the diagnostic appearance of ova in the stools. Our report illustrates the clinical features which should arouse suspicion of fascioliasis and describes the clinical course and changes in serial liver scans during therapy with bithionol.*

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## Report of a Case

A 55-year-old Mexican-American man was admitted to another hospital in April 1971. He had had constant right upper quadrant pain, occasional diarrhea, malaise, and fever of one week's duration. He and his family had returned from a one-month vacation in Mexico in February. Physical examination revealed tender hepatomegaly. There was no splenic enlargement, friction rub, or rebound abdominal tenderness. Leukocytes numbered 24,000 per cu mm with 64 percent eosinophils. Progressive weight loss and daily spiking fevers to 39.8°C (103.5°F) persisted for four weeks despite extensive diagnostic tests that included ten negative examinations for ova and parasites in the stool and a trial of metronidazole.

The patient was transferred to the University of California Hospital in San Francisco. Hemoglobin was 8.7 grams per 100 ml, the hematocrit 26 percent, and leukocyte count 15,900 per cu mm with 68 percent eosinophils. The erythrocyte sedimentation rate was 108 mm in one hour. Total iron-binding capacity was 146 mg per 100 ml with 50 percent saturation. The vitamin $B_{12}$ level was 520 picograms per 100 ml. Coombs tests were negative. Bone marrow showed mature eosinophilic hyperplasia with normal iron stores and no granulomas or evidence of metastatic malignant disease or leukemia. Liver function tests yielded the following abnormal values: alkaline phosphatase, 252 international units (IU) per liter (normal, 25 to 80 per liter); and leucine aminopeptidase, 105 IU per liter (normal, up to 45 per liter). Bilirubin, glutamic oxaloacetic transaminase, and lactate dehydrogenase were normal. Skin tests for fungal diseases and tuberculosis were negative, as were serological tests for infection due to Entamoeba and Echinococcus. An upper gastrointestinal series and barium enema studies were negative. A cholecystogram and a cholangiogram showed no calculi and no dilatation of the biliary system.

Multiple focal defects were seen on liver scan

*Experimental drug provided by the Parasitic Disease Drug Service, Parasitic Diseases Branch, Epidemiology Program, Center for Disease Control, U.S. Public Health Service, Atlanta, Ga. 30333.

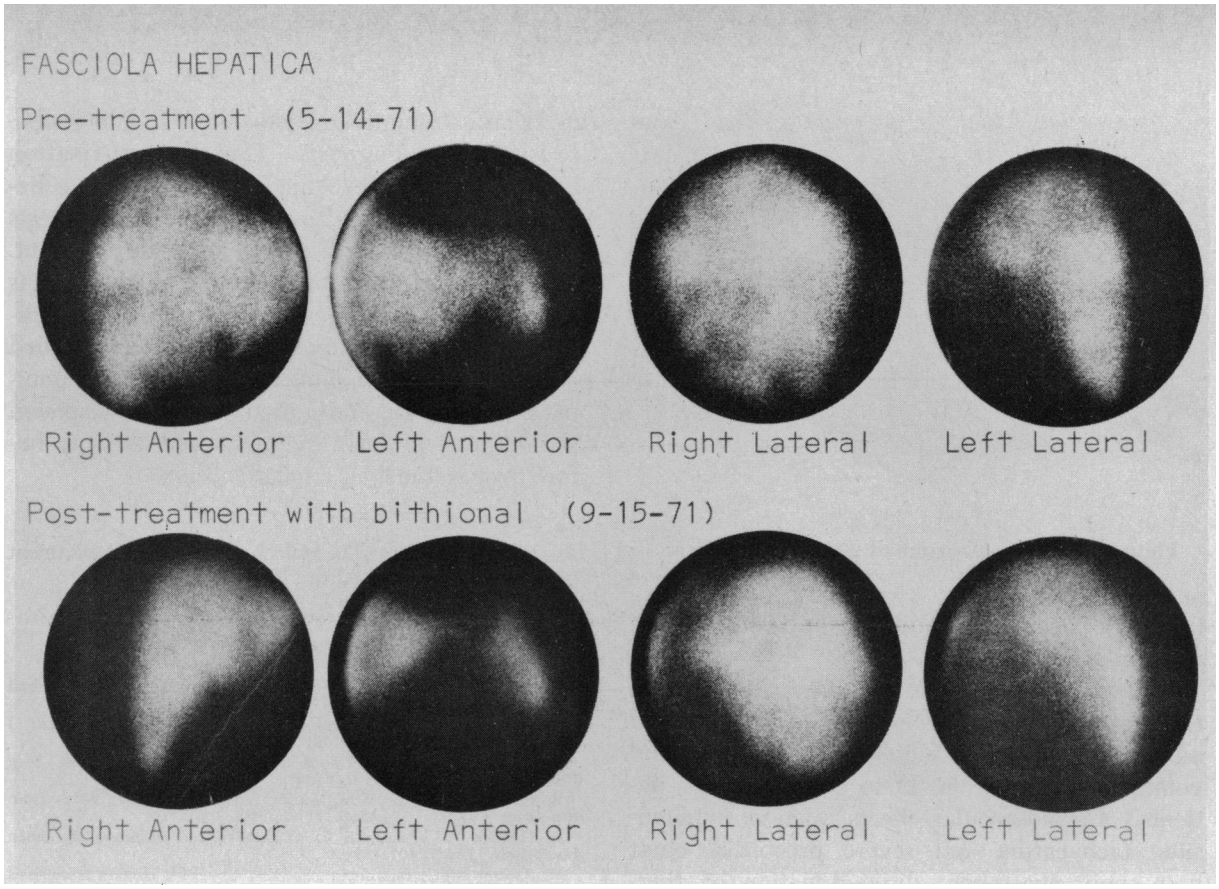


**Figure 1.—Selected views of liver scans obtained before and eight weeks after treatment with bithionol.**

(Figure 1). One week after admission and three and a half months after the patient's return from Mexico, examinations of stool became positive for ova of Fasciola hepatica (Figure 2). Immediately before treatment, quantitative egg counts were 37 eggs per gram of stool (formalin-ether concentration method of Richie performed on four 1-gram samples of stool). Bithionol, 50 mg per kg of body weight daily, divided into three oral doses, was given on alternate days to a total dose of 45 grams.[6] The patient experienced mild epigastric pain and one episode of vomiting, but no other side effects were noted. Two days after initiation of therapy he became afebrile, and after nine days of treatment ova were no longer seen in the stools. Multiple follow-up examinations for ova have been negative. The patient has regained 14 of a 17-kilogram loss of weight during the illness, and has no gastrointestinal complaints. Hematocrit is 40 percent, leukocyte count 8,100 per cu mm with 14 percent eosinophils, and the erythrocyte sedimentation rate 33 mm in one hour. Results of liver function tests are normal. Liver scan shows mild hepatomegaly with pronounced improvement in the labeling defects noted initially (Figure 1).

## Discussion

Sheep are the major definitive host of Fasciola hepatica; man is an accidental host. Eggs passed in feces of sheep and other herbivores hatch miracidia which invade and develop within snails of the genus Lymnaea. Mature cercariae are released and encyst on waterside plants. (The patient and his family ate the same foods while in Mexico, except that he alone used watercress in his iced tea.) Once ingested, metacercariae excyst and migrate through the intestinal wall, penetrate Glisson's capsule, and migrate through hepatic parenchyma to the biliary passages, where they mature. Adult worms provoke inflammation and adenomatous changes of the biliary epithelium with surrounding fibrosis.[7] If the process continues, pressure atrophy of the liver parenchyma and periportal fibrosis may occur. Cramping right upper quadrant pain, fever, and eosinophilic leukocytosis are a common presenting triad. Other symptoms include anorexia, weight loss, vomiting, diarrhea, cough, pruritis, and urticaria. Symptoms are often present for six weeks or more before the appearance of ova in the feces, and the minimum interval between

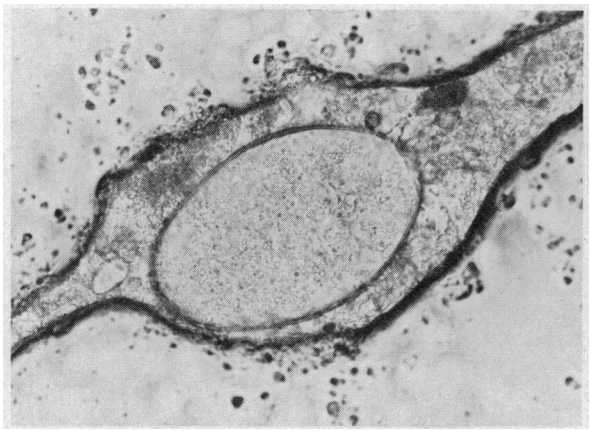

**Figure 2.—Typical ovum of Fasciola hepatica.**

ingestion of the larvae and the appearance of ova in feces is three months.[8]

Emetine has been the mainstay of therapy in the treatment of fascioliasis. The incidence of adverse side effects is high, diarrhea, nausea and vomiting occurring in 30 to 50 percent of patients.[9] Cardiovascular effects, such as hypotension, tachycardia and severe precordial chest pain, may necessitate discontinuation of therapy.[10] Bithionol has only recently been used in the treatment of fascioliasis.[6,11] Diarrhea, vomiting, abdominal pain and urticaria are its most frequent side effects.[12] Cardiovascular effects are rare,[13] and changes in renal, liver or hematologic function have not been reported.

Human fascioliasis may mimic acute hepatitis, cholecystitis or intrahepatic malignant disease. However, a carefully taken history, with special attention to ingestion of aquatic plants, and a clinical picture of right upper quadrant pain, fever and eosinophilic leukocytosis should enable presumptive diagnosis. Complement-fixation tests have been developed that are positive before ova appear in the stool,[6,14] but such tests were not available for use with this patient. Diagnostic ova will not be passed in feces for as long as six weeks after the onset of clinical illness; therefore, negative results of stool obtained before this interval should not prevent re-examination. Tenacity and a high degree of suspicion should lead to early diagnosis and therapy before irreparable liver damage occurs.

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## DIARRHEA IN THE MORNING? IT'S PROBABLY "FUNCTIONAL"

A functional gastrointestinal disturbance is the most likely diagnosis in the patient who comes in complaining of early morning diarrhea. He may not tell you that it is early morning diarrhea; but as you pin him down about the timing, you will find that he is out of bed early in the morning. Sometimes before the alarm goes off, he must get up and have a bowel evacuation. Then there will be a second before breakfast and a third right after breakfast. There will be a fourth before he goes to work; and then he is through for the day. Once you can identify that particular timing of a bowel habit, you can almost be certain that the patient has a functional gastrointestinal disturbance—an irritable, spastic bowel, an overactive bowel.

—H. MARVIN POLLARD, M.D., Ann Arbor

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