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# CASE REPORTS

## Acute Echinococcosis: a Case Report

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**We report the case of a 69-year-old man with acute pulmonary echinococcosis. A computed tomographic scan of the thorax revealed the presence of multiple nodules in both lungs, and laboratory tests showed eosinophilia and the presence of antibodies against *Echinococcus granulosus*. Therapy with albendazole led to resolution of the pulmonary nodules and a normalization of the white cell count. To our knowledge this is the first described case of acute echinococcosis, as the diagnosis of this disease is usually delayed to chronic phases. Therefore, finding unexplained eosinophilia, especially in association with pulmonary nodules, should lead one to suspect acute hydatid disease.**

### CASE REPORT

We report the case of a 69-year-old man who came to our attention with a 10-day history of mild diarrhea, anorexia, fatigue, and fever up to 39.5°C. He suffered from hypertension and prostatic hyperplasia and had undergone surgery for an aortic aneurysm 2 years before this hospitalization. The physical examination was normal; laboratory tests were normal except for leukocytosis with eosinophilia (leukocytes, 15,100/mm$^3$; eosinophils, 30%), the C-reactive protein level (171 mg/liter), the erythrocyte sedimentation rate (35 mm/h), and the fibrinogen level (681 mg/dl). A radiograph of the chest revealed a lesion in the upper lobe of the left lung and a small nodule in the right lung. Microbiologic tests were performed, with the following results: stool cultures and blood cultures were negative, stool examination for parasites was positive for *Giardia intestinalis*, *Entamoeba coli*, and *Blastocystis hominis*, and a test for antibodies against *Entamoeba hystolytica* was negative. Therapy with metronidazole was begun. A computed tomographic scan of the thorax revealed the presence of multiple nodules in both lungs, the largest being in the lower lobes, with a maximum diameter of 1.5 cm. Two hilar lymph nodes, of 2.5 and 1.5 cm, were present. While fever and diarrhea improved after the onset of therapy, the eosinophilia increased (white blood cells, 14,000/mm$^3$; eosinophils, 48%). A hemagglutination serologic test showed antibodies against *Echinococcus granulosus* at a titer higher than 1:1,600. On the basis of the radiologic and laboratory findings, a diagnosis of acute echinococcosis of the lung was made. The patient started therapy with albendazole, with prompt improvement of the eosinophilia.

To our knowledge this is the first reported case of acute echinococcosis, which is usually asymptomatic. *Echinococcus* spp. are small cestodes (5 mm in length), usually carried by intermediate hosts such as livestock or final hosts such as canines (dogs, foxes, and wolves, etc.), which are capable of inducing disease in humans when food contaminated by host animals is ingested. Our patient informed us that he had been on holiday 3 months before on a little island of Dalmatia, Croatia, an area well-known for hydatidosis endemicity (4), where he had been exposed to the feces of sheepdogs.

The hydatid cyst of *E. granulosus* tends to develop in liver (50 to 70%), lung (20 to 30%), or less frequently, in other parts of the body, such as the brain, heart, and bones. Cysts usually enlarge but remain asymptomatic for years until they lead to functional alterations due to their mass effect (biliary obstruction with jaundice or airway obstruction with cough or dyspnea). Rupture of a cyst may cause an allergic reaction to parasite antigens or the seeding of "daughter cysts" into the body.

The diagnosis of echinococcosis is usually delayed, with the cyst being occasionally detected on imaging studies and confirmed by serologic studies. Serology is 80 to 100% sensitive for hepatic disease, 50 to 56% sensitive for lung disease, and less sensitive (25 to 50%) for other organ involvement.

Our diagnosis was confirmed by a second computed tomographic scan, performed 4 months after discharge, which revealed an almost complete resolution of the pulmonary nodules and a decrease in the dimensions of the two hilar lymph nodes and by laboratory tests which showed a normal eosinophil count.

A review of the medical literature through Medline disclosed no reports on acute or early-stage human echinococcosis; to our knowledge this is the first reported case.

M. Q. Xu (9), J. Eckert et al. (3), and Schaefer and Khan (6) reported their experiences with hydatid disease, describing 1,022, 302, and 59 patients, respectively, but among the reports we found no description of acute echinococcosis.

Dirofilariasis (especially from *Dirofilaria immitis*), toxocariasis (visceral larva migrans), paragonimiasis, cysticercosis, and anisakiasis can cause eosinophilia and pulmonary nodules, while ascaridiasis, ankylostomiasis, strongyloidiasis, schistosomiasis, and human filariasis can cause eosinophilia with pulmonary infiltrates (Loeffler's syndrome, or tropical pulmonary eosinophilia) (2, 5).

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Tropical helminthic infections associated with pulmonary nodules could be excluded in our patient, who had never travelled in a tropical area.

Serologic tests for toxocariasis and cysticercosis were negative. Pulmonary localization of larval forms of *Cysticercus cellulosae* is very uncommon (8), although *C. cellulosae* is endemic on the Dalmatian coast and islands (1).

The strong positivity of serologic tests for *E. granulosus* in the presence of multiple lung lesions and in the documented absence of liver, brain, heart, bone, and eye lesions is highly suggestive of pulmonary hydatidosis and strongly reduces the probability of dirofilariasis, which can be diagnosed only histologically.

A comparison with acute experimental echinococcosis in animals shows a similar response to therapy (7).

The case we report suggests that the finding of unexplained eosinophilia, particularly in a clinical setting with patients with a possible history of exposure or in cases of lesions of typical organs, should lead clinicians to perform a serologic test for echinococcosis, in order to promptly treat the patient and to prevent cyst formation or evolution.

## REFERENCES

1. **Bauer, T. M., J. Bruhwiler, M. Aschwanden, S. Wagner, and J. Schwander.** 1994. Neurocysticercosis. Dtsch. Med. Wochenschr. **119:**175–179.
2. **Chitkara, R. K., and P. S. Sarinas.** 1997. Dirofilaria, visceral larva migrans and tropical pulmonary eosinophilia. Semin. Respir. Infect. **12:**138–148.
3. **Eckert, J., P. Jacquier, D. Baumann, and P. A. Raeber.** 1995. Human echinococcosis in Switzerland, 1984–1992. Schweiz. Med. Wochenschr. **125:**1989–1998.
4. **Morovic, M.** 1997. Human hydatidosis in Dalmatia, Croatia. Epidemiol. Infect. **119:**271–276.
5. **Roberts, P. P.** 1988. Parasitic infections of the pleural space. Semin. Respir. Infect. **3:**362–382.
6. **Schaefer, J. W., and M. Y. Khan.** 1991. Echinococcosis (hydatid disease): lessons from experience with 59 patients. Rev. Infect. Dis. **13:**243–247.
7. **Taylor, D. H., K. S. Richards, and D. L. Morris.** 1989. Rapid recovery of Echinococcus granulosus following "successful" albendazole therapy in a gerbil model. J. Helminthol. **63:**349–352.
8. **Walts, A. E., T. Nivatpumin, and A. Epstein.** 1995. Pulmonary cysticercus. Mod. Pathol. **8:**299–302.
9. **Xu, M. Q.** 1985. Hydatid disease of the lung. Am. J. Surg. **150:**568–573.