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Echinococcus in a US Marine after Deployment to Afghanistan

Karl C. Kronmann, M.D., M.P.H.¹, William W. Shields, D.O.², Todd A. Sheer, M.D.², and Nancy F. Crum-Cianflone, M.D., M.P.H.¹

¹Division of Infectious Disease, Naval Medical Center San Diego, California

²Division of Gastroenterology, Naval Medical Center San Diego, California

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TO THE EDITOR: Echinococcus is a parasitic disease found in many parts of the developing world including Afghanistan. It is acquired by humans through the accidental ingestion of echinococcus eggs, usually when living in close association with dogs and sheep in endemic regions. The definitive host is usually dogs, which acquire the infection by ingestion of infected-organs of an intermediate host such as sheep. Humans accidentally ingest eggs passed in the feces of dogs which release oncospheres in the intestines and subsequently form cysts in various organs, especially liver and lungs. It has been a theoretical concern for troops deployed in highly endemic countries, such as Afghanistan, but has not been previously reported in returning U.S. military service personnel.¹

A 23-year-old male developed right upper quadrant pain seven months after returning from deployment to Afghanistan. During his deployment he had assisted in a parasite eradication program with local farmers in which he had direct animal contact and occasionally sampled local cuisine. A CT scan performed to evaluate the right upper quadrant pain showed hepatic cysts, including a left lobe cyst measuring 3.4 × 2.6 cm, a right lobe cyst measuring 3.2 × 1.6 cm, and another thick-walled cyst extending from the inferior aspect of the right lobe measuring 6.5 × 6.3 cm (Figure 1). He denied fevers or systemic symptoms. Complete metabolic panel was within normal limits. The white blood count was 8,500/mm³ with 16% eosinophils. In addition a chest radiograph showed a density in the right middle lobe and chest CT revealed a 3.4 cystic mass.

Echinococcus serology was negative, but the diagnosis was still suspected as serology has only moderate sensitivity. The patient was given six days of albendazole followed by puncture, aspiration, injection, and re-aspiration (PAIR) of the largest liver cyst for both diagnosis and treatment of echinococcus. Guidelines for this procedure are published by the World Health Organization (WHO).² *E. granulosus* was isolated from the aspirate confirming the diagnosis.

Lung cysts can be treated medically, but early surgical intervention may be preferable.³ Our patient underwent a right middle lobe segmentectomy of the lung cyst. Pathology from the

Correspondence: Dr. Karl C Kronmann, Division of Infectious Disease, Naval Medical Center San Diego, 34800 Bob Wilson Drive, Ste. 5, San Diego, CA 92134-1005. Phone: 619/532-7475; FAX: 619/532-7478; karl.kronmann@med.navy.mil.

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resected lung cyst showed brood capsules and a thick laminar layer typical of *E. granulosus* (Figure 2). In addition to the surgical procedures, he was medically treated with 30-day cycles of albendazole therapy, separated by two weeks. Due to enlargement of one of the hepatic cysts, PAIR was performed on a second cyst after the first cycle. He received four cycles of albendazole and has two remaining hepatic cysts which are being followed with serial ultrasounds.

Cystic echinococcosis, or hydatid disease, is uncommon in the United States, but is seen in immigrants from endemic areas. It can also occur in those returning from endemic countries as this case illustrates. Disease can remain asymptomatic for years before being discovered. Early in its course, cysts can appear similar to simple hepatic cysts, so a high index of suspicion is necessary if the history is suggestive. Eosinophilia can be a clue, but like serology, it is not sensitive. Liver ultrasonography is an excellent first-line diagnostic modality, but CT or MRI may be more accurate. Findings on these tests can include cysts with a detached or lamellated membrane, daughter cysts, and hydatid sand. PAIR has the advantage of being both diagnostic and therapeutic, but is invasive.

Hydatid disease has a good prognosis if detected early. Early detection often requires a high index of suspicion, which in turn relies on epidemiologic clues. Practitioners should be aware that Afghanistan is a highly endemic country and disease may be seen in returning service personnel, as in the case reported here.

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Figure 1.
CT scan showing an enlarging right lower lobe cyst.

Figure 2. Pathology of resected lung cyst showing brood capsule with protoscolices, germinal layer, and thick laminated layer.