SHORT REPORT: AN IMPORTED CASE OF CYSTIC ECHINOCOCcosIS IN JAPAN
DIAGNOSED BY IMAGING AND SEROLOGY WITH CONFIRMATION OF 
ECHINOCoccus GRANULOSUS–SPECIFIC DNA SEQUENCES

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Abstract. We report one case of cystic echinoccosis (CE) in Japan in a native of Nepal. Ultrasonography and computed tomography scan of the liver revealed unique cystic lesions with or without daughter cysts of Echinococcus granulosus. Immunoblot analysis using crude antigens of E. multilocularis and cyst fluid of E. granulosus, without reference to these image analyses, strongly suggested this was a case of CE. We found protoscoleces in surgically removed hepatic lesions and analyzed the mitochondrial cytochrome c oxidase subunit I (COI) gene by the polymerase chain reaction. Based on the similarity in DNA sequences of the COI gene of this Echinococcus spp. with that of previously reported sheep-dog strain (GI), the parasite was considered to be the so-called common sheep strain of E. granulosus.

Cystic echinococcosis (CE), caused by the larval stage of the dog tapeworm, Echinococcus granulosus, has a cosmopolitan distribution but is not indigenous in Japan.1 Recently, many foreigners have been visiting and/or working in Japan and CE is expected to be one of the emerging parasitic diseases imported from endemic countries. Due to the biology of this cestode, it should be difficult for this parasite to complete its life cycle in Japan in hospitalized humans. However, Japan imports livestock such as cattle, horses, sheep, etc. from endemic countries, which are often found to be harboring the larval stage of this parasite. Therefore, if the materials containing parasites from such domestic animals are eaten by dogs, this parasite might complete its life cycle in Japan. Although approximately 80 sporadic cases of CE have been reported in Japan, some of them have been re-evaluated and found to be alveolar echinococcosis (AE), which is caused by the larval stage of the fox tapeworm E. multilocularis that is common on the northern Japanese island of Hokkaido, and which is misdiagnosed as CE due to inadequate pathologic examination, detection of protoscoleces, or a history of patient residence other than Hokkaido used to differentiate these two species (Ito A and others, unpublished data). Our serologic technique, using immunoblot analysis, has improved our ability to differentiate these two diseases.2±4 Here we report one case of CE in a native of Nepal confirmed by ultrasonography, computed tomography (CT), serologic test, parasitologic examination, and DNA analysis.

A 28-year-old man born in Nepal came to Nagoya, Japan in March 1996 and was admitted in May 1996 to Chubh Hospital with a complaint of abdominal discomfort but without any other symptoms. Laboratory data at admission were basically normal except for 18% eosinophilia, but physical examination revealed a mass approximately 12 cm in diameter in the left lobe of liver that was easily detectable by palpation. Based on the unique features of the CT scan and ultrasonography (Figure 1), a presumptive diagnosis of CE was made and the patient was referred to Gifu University for serologic confirmation.

Without any reference to the image findings (Figure 1), immunoblotting was performed at Gifu University to check his serum antibody responses against crude antigens of protoscoleces from E. multilocularis2±4 and cyst fluid of E. granulosus obtained from sheep in Urumqi, China.2 The standard serum samples used were from patients with confirmed parasitic diseases including CE, AE, cysticercosis (Figure 2, lanes b, d and f, respectively), paragonimiasis, schistosomiasis, clonorchiasis, hepatoma, and sarcoidosis, and from healthy people.4 As shown in Figure 2, lane c, this case showed good antibody responses against both cyst fluid an-
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Figure 2. Immunoblots of sera of a healthy individual (lane a), a patient with cystic echinococcosis (lane b), the Nepali case (lane c), a patient with alveolar echinococcosis (lane d), monoclonal antibody against Em16 (lane e), and a patient with cysticercosis (lane f). g and m are cyst fluid antigens of *Echinococcus granulosus* and crude antigens of protoscoleces of *E. multilocularis*, respectively. The small, medium, and large arrowheads show Em16 (d and e) antigen B (b, c, and d), and Em18 (d), respectively. kD = kilodaltons.

Figure 3. Nucleotide sequence of a 391-basepair fragment of the mitochondrial cytochrome c oxidase subunit I gene of *Echinococcus* *granulosus* from Nepal (EgNepal). Dots denote homology with the Egsheep sequence.
busho), and a grant-in-aid for the Control of Emerging and Re-emerging Diseases in Japan from the Ministry of Health and Welfare, Japan to Akira Ito.

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