Echinococcosis infection diagnosed based on the histological findings of a lymph node involvement obtained by EUS-FNA

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A 78-year-old male with ulcerative colitis underwent computed tomography (CT) to assess his liver condition due to chronic hepatitis C infection. He had received interferon therapy in 1999 and achieved a sustained serological response. Routine blood data, including measurements of tumor markers, were within the normal ranges. The hepatitis C virus RNA titer was negative, and an enhanced CT scan revealed a multinodular lesion in the right lobe of the hilar liver (segment fifth; S5), measuring 20 mm in size without calcification or enhancement in the arterial, portal, or equivalent phases. A heterogeneous low-density mass with an unclear margin in the hepatoduodenal ligament measuring 20 mm in size was also detected, suspected to be a necrotic lymph node [Figure 1a and b]. Ultrasonography (US) revealed a hyperechoic and multicystic lesion in the S5 of the liver [Figure 1c], and contrast-enhanced US in postphase revealed a mild defect [Figure 1d], with no findings of biliary or vascular involvement. Although biopsy specimens were obtained from the lesion of the S5 of the liver, no abnormal findings were histologically observed in these specimens. In general, biopsy is not necessary for the diagnosis of alveolar echinococcosis due to the risk of dissemination of the disease. It was very difficult to differentiate the lesions from malignancy. Thus, endoscopic US-guided fine needle aspiration (EUS-FNA) was performed after obtaining written informed consent. EUS scanning from 2nd portion of the duodenum visualized a lymph node measuring 20 mm in size as a hypoechoic lesion with a multiple hyperechoic punctiform pattern in the hepatoduodenal ligament [Figure 1e], and EUS-FNA was subsequently performed to determine the cause of the lymph node swelling using convex-type endoscopes (GF-UCT260; Olympus, Tokyo, Japan). Puncture and aspiration were performed using standard 22-gauge needles (EchoTip ProCore® HD Ultrasound Biopsy Needle, Cook Medical, Tokyo, Japan). The number of punctures with aspirations was 2; movements were performed for 20 times during each puncture. The biopsy specimen showed cuticular layers, a typical finding of echinococcosis [Figure 2]. EM18 antigens specific to alveolar echinococcosis[1] were positive on serologic tests with Western blotting and immunochromatography. Taken together, the lesions are diagnosed as alveolar echinococcosis extending to the lymph node, P1N1M0, Stage IIIb, based on the PNM classification of alveolar echinococcosis.[2]
Echinococcosis mimics slow-growing tumors that infiltrate surrounding structures\(^3\) and may be easily misdiagnosed as primary hepatic malignancy and/or metastasis. The primary lesion of echinococcosis generally develops in the liver and subsequently spreads to the other organs and structures, including the bone, skin, muscle, lung, spleen, and occasionally, the nervous system.\(^2,3\) While echinococcosis is thought to spread lymphogenously or hematogenously, it remains unclear whether echinococcosis parasites are washed away in the lymphatic stream and consequently drained into the lymph nodes before forming involved lesions. The present case suggests that echinococcosis can be involved to distant organs through the lymphatic system.

Although the presence of calcification and multilobular formation on CT and US is a crucial finding for diagnosing echinococcosis,\(^3\) the features of lymph node involvement of this disease on such examinations remain unclear. The present case, for the first time, shows the detection of lymph node involvement on imaging modalities such as CT, US, and EUS. The lymph node involvement was detected as a heterogeneous low-density mass with an unclear margin without calcification or multilobular formation. EUS visualized a hyperechoic punctiform pattern in the lesions of lymph node involvement, which may have reflected the cuticular layers noted in the histological findings. The further accumulation of echinococcosis cases involving lymph node involvement will help to establish the characteristic findings of these involved lesions on EUS.

**Declaration of patient consent**
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initial will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**
There are no conflicts of interest.

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