Mesenteric lipoma: report of a case
with emphasis on US findings

Abstract
Mesenteric lipoma (ML) is a relatively rare disease that has been very infrequently reported. We present the clinical data and medical imaging results of an asymptomatic case with ML incidentally detected by sonography (US). On US the lesion was imaged as a well-demarcated hypoechoic mass with multiple linear echoes. The mass also changed location under probe compression. The lesion was imaged as a clearly demarcated non-enhanced homogeneous fat-density mass on CT. Color Doppler US and angiography confirmed the avascular nature of the mass. Knowledge of the US findings in this case is useful for the diagnosis of ML.

Keywords
Ultrasound · Doppler · Mesentery · Lipoma

Introduction
Lipoma is a very common benign tumor, occurring throughout the whole body [1]; however, its incidence differs largely according to the organ, and mesenteric lipoma (ML) is relatively rare [2, 3, 4, 5, 6], and it is almost exclusively described in case reports [3, 4, 5, 6].

Sonography is now the diagnostic technique of first choice for observing the abdomen, and there are many more opportunities to encounter a wide range of mesenteric diseases with US than with other imaging techniques [7, 8, 9, 10]. Nevertheless, very little has been reported on US evaluation of ML.

The aim of this paper is to present a case of ML, and to discuss the role of US in the diagnosis of this unusual disease.

Case report
A 20-year-old male with a past history of a fibrosarcoma of the left little finger successfully resected 6 months previously visited our hospital for a postoperative general screening. The patient was asymptomatic and laboratory data showed no abnormalities. Despite careful observation of the whole body, physical examination also showed no abnormalities. Abdominal US showed an approximately 6x5-cm well-demarcated hypoechoic oval mass containing multiple fine linear echoes just behind the pancreatic head (Fig. 1). These lines were evenly distributed throughout the mass, and were also concentric, converging toward the probe; thus, the curvature of these lines was smaller when using a sector probe than when using a curved linear probe (Fig. 1). The mass was not compressible but mobile and changed location by approximately 5 cm under probe compression. There were otherwise no abnormalities in the abdomen. Computed tomography revealed a 6x5-cm uniform fat-density mass in the corresponding location (Fig. 2). The mass was avascular on color Doppler sonogram and angiography (Fig. 3). A summarized analysis of medical imaging results suggested the mass to be a lipoma, probably arising from

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the small bowel mesentery or bowel serosa. There were no signs suggestive of a malignant nature, but a laparoscopic resection of the mass was performed at the insistence of the patient. A smooth well-encapsulated 6-cm mass was found to arise from the small bowel mesentery, without adhesion to the surrounding organs. Complete excision was successfully performed. Pathological examination of the resected mass confirmed the preoperative diagnosis of ML; the mass was composed of mature fat cells ranging in size from 50–150 µm, and fine fibrous septa throughout. The postoperative course was uneventful.

Discussion

Lipomas are composed of mature fat and are very common mesenchymal tumor, but very little is known about the pathogenesis of lipomas [1]. They occur in any part of the body, but mesenteric lipomas (MLs) are thought to be rare, although the precise incidence remains undetermined [1]. An asymptomatic slow-growing round mass with a soft consistency and good mobility has been reported to be characteristic of lipomas [6]. In our case, the mass showed marked mobility under probe compression; thus, observation of change in location of the tumor under probe compression increases confidence in the US diagnosis of ML. Computed tomography is most helpful in diagnosis, but considering that US is now the first investigative technique for the abdomen, the US findings of an ML must be well recognized. In our case the mass was imaged as a hypoechoic lesion compared with the surrounding mesenteric fat. Lipomas are composed of mature fat cells and thin fibrous septa, and have a histological appearance similar to the surrounding mesenteric fat, but the mesentery includes also blood vessels and lymphatics, and it is more heterogeneous [1]. Generally speaking, the echogenicity of adipose tumors is thought to depend on their histological heterogeneity [11]. Mesenteric lipomas have a histological structure slightly less heterogeneous than that of the surrounding mesentery, and are thought to provide fewer interfaces, and it may lead to produce a hypoechoic internal echo pattern of the ML. Of additional interest is the intratumoral US pattern. This pattern consists of multiple evenly distributed fine echogenic lines, concentric and converging toward the probe. The presence of numerous fine fibrous septa in the tumor is considered to be related to this pattern. The degree of US reflection (echogenicity) from the interface depends approximately on the difference in the acoustic impedance between the tissues forming the interface, and a higher reflection is expected to occur at the fat–soft tissue interface than at the soft tissue–soft tissue interface (acoustic impedance of fat being approximately 1.34 rayls, and that of soft tissue being approximately 1.65 rayls) [12]. Detection of

Fig. 1a, b Transverse US finding of the case. It shows a large well-demarcated hypoechoic mass (M) containing multiple fine linear echoes. These lines change direction according to the probe format used. On the whole, these lines show concentric courses toward the probe. a Curved linear scanning; b sector scanning

Fig. 2 Computed tomography at the same level. It shows a well-demarcated homogeneous mass of a lower CT value (–20 HU) than that of the surrounding mesenteric fat (+10 HU). L liver