Introduction

Fatty infiltration within the liver usually shows a diffuse pattern throughout the organ. However, focal areas of either normal liver tissue sparing or fatty infiltration can occur and can be confused with metastatic disease on sectional imaging, unless one is aware of the typical sites and imaging appearances of these variants.

Case report

A 40-year-old obese woman presented with intermittent right-sided abdominal pain. Ultrasound examination of the liver showed a solitary well-defined focal echolucent lesion in the region of the caudate lobe just anterior to the common hepatic duct and portal vein, measuring 2 cm in diameter. The rest of the hepatic parenchyma showed increased echogenicity throughout suggesting diffuse fatty infiltration (Fig. 1).

A computed tomography (CT) scan showed decreased attenuation throughout most of the parenchyma again suggesting fatty infiltration, but with areas of normal attenuation seen at the liver periphery. Furthermore, in the same area of the caudate lobe a discrete rounded area with the same diameter as that measured on the earlier ultrasound examination was noted. This area showed a higher attenuation than the surrounding parenchyma, similar to the areas around the periphery of the liver (Fig. 2). This area showed enhancement during the arterial, portal return and delayed phases of a triphasic contrast-enhanced liver scan compatible with that of normal liver tissue, whereas the rest of the fat-infiltrated parenchyma showed a lesser degree of enhancement during all three phases (Figs 3 and 4).

On the basis of the ultrasound and CT findings, together with previous ultrasound reports which indicated no change in the size or appearance of the focus over a period of several months, it was felt that the focal ‘lesion’ most probably represented an area of focal fatty sparing. The findings were felt to be pathognomonic enough in this particular case so that the added expense of MRI for confirmation was unwarranted. The spleen was also found to be enlarged (Fig. 4).

Discussion

The usual causes of fatty infiltration of the liver are alcohol abuse, obesity, malnutrition, chemotherapy, hyperalimentation, diabetes, steroid
Fig. 4. Post-contrast CT scan of the abdomen, delayed phase, showing a bulky spleen. This is typically seen in a non-alcoholic fatty liver.

Despite a more typical pattern of diffuse parenchymal infiltration, residual foci of normal unaffected liver parenchyma can be present, usually at the periphery of the liver or abutting the porta hepatitis and gallbladder fossa. These may be mistaken for neoplastic lesions unless one is aware of the patterns of fatty sparing.

Magnetic resonance imaging (MRI) can reliably differentiate nodular fatty infiltration of the liver from metastatic disease, in equivocal cases. Sequences include a combination of in-phase and opposed-phase gradient-echo imaging, fat saturation techniques and ferumoxide-enhanced MRI.

Splenic enlargement is commonly seen in patients with non-alcoholic fatty liver, and the recognition of this association may halt further attempts at evaluating the cause of the splenic enlargement.

References