Fatty infiltration of the liver (hepatic steatosis) in its diffuse and focal form is a well-recognized radiologic and histologic entity that has been observed in a variety of disorders including alcoholism, diabetes mellitus, obesity, tumor cachexia, congestive heart failure, and acquired porphyria cutanea tarda, as well as in patients receiving steroid medication or chemotherapy [1, 2, 3, 4]. Previous reports of fatty infiltration of the liver have emphasized its appearance on CT [3, 5, 6, 7, 8, 9]. Focal involvement poses diagnostic problems because the hypodense appearance on CT makes it difficult to differentiate fatty infiltration from metastatic disease, particularly when multiple lesions are present [4, 6, 7, 8, 9]. Biopsy or radionuclide scan used to be recommended in these cases. Reviewing 137 patients examined by MR imaging for focal liver lesions we found various types of fatty infiltration ranging from a diffuse form and circumscribed areas near anatomical landmarks to a distinct type characterized by multiple nodular areas not confined to any anatomical border. Herein we describe the appearance of this latter type of fatty infiltration – which we termed “multifocal nodular fatty infiltration of the liver” (MNFIL) – on various pulse sequences and a method to reliably differentiate it from malignancy.

Materials and methods

In 1997 and 1998, 137 patients underwent MR imaging for further evaluation of highly suspected malignant liver lesions on CT. All patients were examined prospectively according to the standardized protocol described
herein. In five of these patients with multiple liver lesions present on CT and MR imaging, malignancy was finally ruled out by histology or follow-up. Underlying diseases in four of these five patients were ovarian neoplasm ($n=1$), breast cancer ($n=1$), gastric cancer combined with marked obesity ($n=1$), and acquired porphyria tarda ($n=1$) due to long-term exposure to hepatotoxic chemicals. In one patient no underlying disease process could be identified. Diagnoses were confirmed by histology and follow-up MR imaging ($n=3$) or follow-up MR imaging alone ($n=2$). Two patients had re-

Fig.1 a–f. Images of a 53-year-old patient with acquired porphyria tarda due to long-term exposure to hepatotoxic chemicals. On a unenhanced and b contrast material enhanced CT multiple hypodense non-enhancing lesions are present. Based on these findings, multiple metastases were suspected. e On T1-weighted gradient-recalled echo (GRE) opposed-phase and d T2-weighted half-Fourier acquired single-shot turbo spin echo (HASTE) images these lesions appear hypo- and hyperintense, respectively. However, on c T1-weighted GRE in-phase images lesions appear hyperintense, and on f fat-suppressed T2-weighted turbo spin-echo (FSTSE) images lesions are not visible, indicating the presence of multifocal nodular fatty infiltration of the liver (MNFIL)