

## Inhomogeneous Focal Fat Distribution as Pseudolesions in a Patient with Pancreatic Carcinoma

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### Report

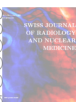
A 66-year-old patient underwent magnetic resonance imaging (MRI) of the liver as part of the initial diagnostic workup for pancreatic adenocarcinoma to assess for liver metastases. The MRI revealed a circumscribed and sharply bordered area in liver segment II that was strongly hypointense on T1-weighted imaging (white dotted circle in Figure 1A). Additionally, initial post-contrast images showed several areas of apparent enhancement near the liver capsule (white arrow in Figure 1B and C) and in close proximity to the gallbladder in the venous contrast phase (yellow arrow in Figure 1B and C).

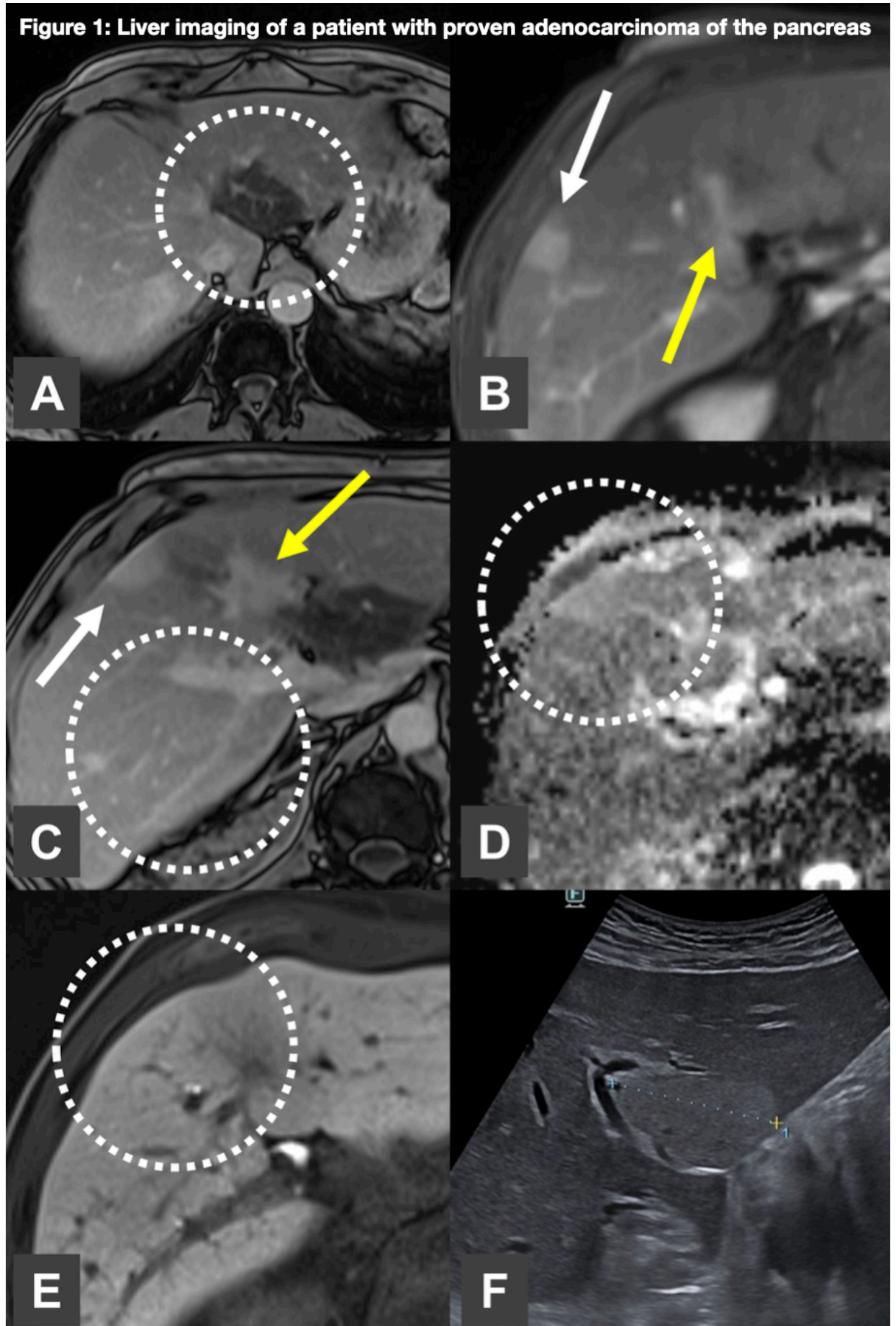
Diffusion-weighted imaging (DWI) did not reveal any diffusion restrictions, as shown by the apparent diffusion coefficient (ADC) map (Figure 1D). Furthermore, the liver parenchyma exhibited homogenous enhancement in the hepatobiliary phase following the application of a hepatocyte-specific contrast medium (Figure 1E). This suggested that the observed changes were not due to metastases. An additional contrast-enhanced ultrasound (CEUS) confirmed the absence of metastatic features in the initially identified lesions (Figure 1F).

The imaging findings suggested that the hypointense area in liver segment II on T1-weighted imaging and the apparent post-contrast enhancements were due to different degrees of inhomogeneous fat deposition within the liver, rather than metastatic disease. It had to be assumed that the entire liver parenchyma was more fatty (opposed phase with signal reduction of the parenchyma and good delineation of the vascular structures, see white dotted circle in Figure 1C) and the supposed metastases were rather unusual appearing focal liver areas with less fat. In contrast, the sharply bordered area in liver segment II (Figure 1A) showed an even higher degree of fatty degeneration than the otherwise fatty altered liver parenchyma.

This inhomogeneous fat distribution can mimic the appearance of liver metastases, creating "pseudolesions" even with a round shape (1-3). However, the lack of diffusion restrictions on DWI and the uniform enhancement after hepatocyte-specific contrast agent administration indicated that these were not true metastatic lesions. CEUS further corroborated the non-metastatic nature of these findings.

In the following, the patient underwent successful Whipple surgery for the treatment of the primary pancreatic adenocarcinoma. Despite the initial absence of liver metastases, a follow-up MRI performed two years later revealed a recurrence of pancreatic adenocarcinoma with locoregional lymph node involvement but without hepatic lesions.





## Conclusion

In conclusion, this case highlights the challenge of differentiating between hepatic pseudolesions caused by inhomogeneous fat distribution and true metastatic lesions. T1w opposed-phase imaging, diffusion-weighted imaging and hepatobiliary phase imaging after the administration of hepatocyte-specific contrast agents are crucial in making this distinction (4-5). The use of CEUS as a follow-up tool further aids in confirming the non-metastatic nature of such findings.



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## Conflict of interest:

The authors declare that there were no conflicts of interest within the meaning of the recommendations of the International Committee of Medical Journal Editors when the article was written.

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