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**Complementary comments on metastatic liver lesions with exceptional and rare cases**

Memis KB *et al*. Metastatic liver lesions

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**Author contributions:** Memis KB and Aydin S designed and performed research; Aydin S analyzed data and added radiological images, revised the letter; Memis KB wrote the letter.

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**Abstract**

Liver metastases can appear in different forms in magnetic resonance imaging. Contrary to popular belief, while radiologists report hypovascular or hypervascular metastatic lesions, exceptional examples may be detected in various tumors. The aim of this article is to improve this review by presenting rare and atypical examples of liver metastasis, as well as cases that might potentially be misdiagnosed as metastases during the process of differential diagnosis.

**Key Words:** Hepatic lesions; Magnetic resonance imaging; Liver metastases; Echinococcus alveolaris; Prostate adenocarcinoma; Appendix neuroendocrine tumor

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**Core Tip:** Maino *et al* summarized the most frequent appearances of liver metastasis in detail. This letter adds to the mentioned literature with atypical examples and a potential misleading infectious cause, alveolar echinococcosis.

**TO THE EDITOR**

Maino *et al*[1] recently published research suggesting the role of magnetic resonance imaging (MRI) in liver metastases. They reviewed the importance of MRI in the diagnosis and evaluation of liver metastases, as well as a description of their primary imaging characteristics. Additionally, they described MRI protocols using contrast agents to better diagnose liver metastases. Furthermore, the study emphasises the added value of the most recent imaging tools as well as the usual and atypical appearance of liver metastases, which increases their effect[1]. This letter aims to contribute to this review by presenting rare and atypical examples of liver metastases.

According to the authors of this study, hypovascular lesions are the most common typical appearances of liver metastases, but some tumors will present with atypical appearances, such as hypervascular metastases. As mentioned in the literature, hypervascular liver metastases typically arise from hypervascular primary cancers such as neuroendocrine cancers, kidney cancer, melanoma, and thyroid cancer[1,2]. In 73% of patients, hepatic metastases of neuroendocrine tumors displayed a characteristic hypervascular appearance. However, it should be kept in mind that hypervascular neuroendocrine tumors may cause hypovascular liver metastasis[3]. As seen in Figure 1, neuroendocrine tumors should also be included in the differential diagnosis of hypovascular liver metastases.

The article by Ozaki *et al*[2] demonstrated the prevalence of synchronous liver metastasis in primary tumors originating from various organs. They determined that the pancreas had the highest prevalence (77.6%), whereas the prostate had the lowest prevalence (4.8%). We intended to make this unusual entity memorable with our case in Figure 2, which shows the metastasis of prostate adenocarcinoma to the liver.

When describing the visible liver lesions as metastases, a differential diagnosis between primary benign or malignant liver masses and infectious diseases should be made initially. While multiple liver abscesses are the most common among these infectious lesions, alveolar echinococcosis (AE), a rare parasitic disease that we present in Figure 3, can also be misdiagnosed as metastases. The WHO classification system for PNM, based on imaging findings, also emphasises AE as a potential alternative differential diagnosis for malignant liver masses. To distinguish AE from other tumors, serology findings and multiple imaging modalities (ultrasonography and computed tomography), and most importantly, keeping the diagnosis in mind, are required[4-6].

Our objective in this letter was to make a contribution to the literature with images of exceptional and rarely occurring cases in daily practice. All authors are in complete agreement with the information stated. The content of this manuscript is our original work and has not been published, in whole or in part, before or simultaneously with this submission.

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**Footnotes**

**Conflict-of-interest statement:** The authors declare no conflict of interest.

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**Figure Legends**



**Figure 1 Liver metastases from an appendix neuroendocrine tumor.** In Gd-DOTA-magnetic resonance imaging of a 60-year-old male patient.A: On sagittal MIP computed tomography images, there is an enhancing lesion located at the tip of the appendix (red arrow); B and C: On consecutive T2-weighted images, lesions appear slightly hyperintense (red arrows); D: Diffusion restriction in lesions on diffusion weighted imaging (red arrows); E: Before contrast administration, lesions are hypointense; F: During the post-contrast late hepatic arterial phase, lesions appear hypovascular (red arrows); G and H: Lesions are hyperintense on the portal-venous and delayed post-contrast phase.



**Figure 2 Liver metastases from prostate adenocarcinoma.** In Gd-EOB-magnetic resonance imaging of a 52-year-old male patient. A: On in-phase images, there is a focal hypointense liver lesion; B: On out-of-phase images, the lesion persists hypointense compared to the healthy liver parenchyma; C: On T2-weighted images, the lesion appears slightly hyperintense (red arrow); D: Diffusion restriction in the lesion on diffusion-weighted imaging (red arrow); E: Before contrast administration, the lesion is hypointense (red arrow); F: The lesion appears hypervascular due to peripheral rim-like hyperenhancement during the post-contrast late hepatic arterial phase (red arrow); G: The lesion is hypointense on the portal-venous phase compared to the healthy liver parenchyma (red arrow); H: On the hepatobiliary phase, low signal intensity of the lesion due to washout is observed, especially in the peripheral areas (red arrow).



**Figure 3 A case of Echinococcus alveolaris in the liver.** In Gd-EOB-magnetic resonance imaging of a 69-year-old male patient. A and B: On with and without fat-suppressed T2-weighted images the lesions appear slightly hyperintense and hypointense areas in the central part of the largest lesion (red arrows); C: Diffusion-weighted imaging reveals restriction of diffusion of the lesions (red arrows); D: The lesions show peripheral rim-like enhancement on the hepatobiliary phase (red arrows).