ACR Appropriateness Criteria® Suspected Liver Metastases

Expert Panel on Gastrointestinal Imaging: *Harmeet Kaur, MD*[a], *Nicole M. Hindman, MD*[b], *Waddah B. Al-Refaie, MD*[c], *Hina Arif-Tiwari, MD*[d], *Brooks D. Cash, MD*[e], *Victoria Chernyak, MD, MS*[f], *James Farrell, MD*[g], *Joseph R. Grajo, MD*[h], *Jeanne M. Horowitz, MD*[i], *Michelle M. McNamara, MD*[j], *Richard B. Noto, MD*[k], *Aliya Qayyum, MD*[l], *Tasneem Lalani, MD*[m], *Ihab R. Kamel, MD, PhD*[n]

Abstract

Liver metastases are the most common malignant liver tumors. The accurate and early detection and characterization of liver lesions is the key to successful treatment strategies. Increasingly, surgical resection in combination with chemotherapy is effective in significantly improving survival if all metastases are successfully resected. MRI and multiphase CT are the primary imaging modalities in the assessment of liver metastasis, with the relative preference toward multiphase CT or MRI depending upon the clinical setting (ie, surveillance or presurgical planning). The optimization of imaging parameters is a vital factor in the success of either modality. PET/CT, intraoperative ultrasound are used to supplement CT and MRI.

The American College of Radiology Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed annually by a multidisciplinary expert panel. The guideline development and revision include an extensive analysis of current medical literature from peer-reviewed journals and the application of well-established methodologies (RAND/UCLA Appropriateness Method and Grading of Recommendations Assessment, Development, and Evaluation or GRADE) to rate the appropriateness of imaging and treatment procedures for specific clinical scenarios. In those instances where evidence is lacking or equivocal, expert opinion may supplement the available evidence to recommend imaging or treatment.

Key Words: Appropriateness Criteria, Appropriate Use Criteria, AUC, liver metastasis imaging, liver metastasis surveillance, liver presurgical staging, MRI, multidetector CT, PET/CT

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[a]Principal Author, University of Texas, MD Anderson Cancer Center, Houston, Texas.

[b]Co-author, New York University Medical Center, New York, New York.

[c]Georgetown University Hospital, Washington, District of Columbia; American College of Surgeons.

[d]University of Arizona, Banner University Medical Center, Tucson, Arizona.

[e]University of South Alabama, Mobile, Alabama; American Gastroenterological Association.

[f]Montefiore Medical Center, Bronx, New York.

[g]Interventional Endoscopy and Pancreatic Diseases, New Haven, Connecticut; American Gastroenterological Association.

[h]University of Florida College of Medicine, Gainesville, Florida.

[i]Northwestern University, Chicago, Illinois.

[j]University of Alabama Medical Center, Birmingham, Alabama.

[k]Brown University Rhode Island Hospital, Providence, Rhode Island.

[l]University of Texas, MD Anderson Cancer Center, Houston, Texas.

[m]Specialty Chair, Inland Imaging Associates and University of Washington, Seattle, Washington.

[n]Panel Chair, Johns Hopkins University School of Medicine, Baltimore, Maryland.

Corresponding author: Harmeet Kaur, MD, Attn: Dept of Radiology, MD Anderson Cancer Center, 1400 Pressler St Unit 1473, Houston, TX 77036; e-mail: hkaur@mdanderson.org.

The American College of Radiology seeks and encourages collaboration with other organizations on the development of the ACR Appropriateness Criteria through society representation on expert panels. Participation by representatives from collaborating societies on the expert panel does not necessarily imply individual or society endorsement of the final document.

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ACR Appropriateness Criteria® Suspected Liver Metastases. Variants 1, 2, and 3 and Table 1.

Variant 1. Suspected liver metastases. Initial imaging test following detection of primary tumor.

Radiologic Procedure	Rating	Comments	RRL
CT abdomen with IV contrast	9		☢☢☢
MRI abdomen without and with IV contrast	8		○
CT abdomen without and with IV contrast	5		☢☢☢☢
MRI abdomen without IV contrast	5		○
FDG-PET/CT skull base to midthigh	5		☢☢☢☢
In-111 somatostatin receptor scintigraphy	5		☢☢☢☢
US abdomen	4		○
CT abdomen without IV contrast	4		☢☢☢

Note: Rating scale: 1, 2, 3 = usually not appropriate; 4, 5, 6 = may be appropriate; 7, 8, 9 = usually appropriate. FDG-PET = positron emission tomography using fluorine-18-2-fluoro-2-deoxy-D-glucose imaging; IV = intravenous; RRL = relative radiation level; US = ultrasound.

Variant 2. Suspected liver metastases. Surveillance following treatment of primary tumor.

Radiologic Procedure	Rating	Comments	RRL
CT abdomen with IV contrast	8		☢☢☢
MRI abdomen without and with IV contrast	6		○
CT abdomen without and with IV contrast	5		☢☢☢☢
MRI abdomen without IV contrast	5		○
FDG-PET/CT skull base to midthigh	5		☢☢☢☢
In-111 somatostatin receptor scintigraphy	5		☢☢☢☢
CT abdomen without IV contrast	4		☢☢☢
US abdomen	4		○

Note: Rating scale: 1, 2, 3 = usually not appropriate; 4, 5, 6 = may be appropriate; 7, 8, 9 = usually appropriate. FDG-PET = positron emission tomography using fluorine-18-2-fluoro-2-deoxy-D-glucose imaging; IV = intravenous; RRL = relative radiation level; US = ultrasound.

Variant 3. Presurgical assessment of liver metastases.

Radiologic Procedure	Rating	Comments	RRL
MRI abdomen without and with IV contrast	9		○
CT abdomen with IV contrast	8		☢☢☢
US abdomen intraoperative	8	This procedure is complementary to MRI or CT.	○
MRI abdomen without IV contrast	6		○
FDG-PET/CT skull base to midthigh	6		☢☢☢☢
CT abdomen without and with IV contrast	5		☢☢☢☢
CT abdomen without IV contrast	3		☢☢☢
US abdomen	3		○

Note: Rating scale: 1, 2, 3 = usually not appropriate; 4, 5, 6 = may be appropriate; 7, 8, 9 = usually appropriate. FDG-PET = positron emission tomography using fluorine-18-2-fluoro-2-deoxy-D-glucose imaging; IV = intravenous; RRL = relative radiation level; US = ultrasound.