

표 1. 복부 핵심질문 2 근거표

핵심질문 2

문헌정보	연구유형	대상자 수	문헌 질 KCIG
Scott DJ, Guthrie JA, Arnold P, et al. Dual phase helical CT versus portal venous phase CT for the detection of colorectal liver metastases: correlation with intra-operative sonography, surgical and pathological findings. Clin Radiol 2001;56:235-42.	Retrospective Cross-sectional Diagnostic	33	2
Furukawa H, Ikuma H, Seki A, et al. Positron emission tomography scanning is not superior to whole body multidetector helical computed tomography in the preoperative staging of colorectal cancer. Gut 2006;55(7):1007e1011	Observational Retrospective Diagnosis	44	3
Nahas CS, Akhurst T, Yeung H, et al. Positron emission tomography detection of distant metastatic or synchronous disease in patients with locally advanced rectal cancer receiving preoperative chemoradiation. Ann Surg Oncol 2008;15(3):704e711. Erratum in: Ann Surg Oncol 2008;15(4):1265.	Prospective cohort	93	2
Park IJ, Kim HC, Yu CS, et al. Efficacy of PET/CT in the accurate evaluation of primary colorectal carcinoma. Eur J Surg Oncol 2006;32(9):941e947.	Prospective Cross-sectional Diagnostic	100	3
Veit-Haibach P, Kuehle CA, Beyer T, et al. Diagnostic accuracy of colorectal cancer staging with whole-body PET/CT colonography. JAMA 2006;296(21):2590e2600.	Prospective Cross-sectional	47	1
Kinner S, Antoch G, Bockisch A, Veit-Haibach P. Whole-body PET/CT-colonography: a possible new concept for colorectal cancer staging. Abdom Imaging 2007;32(5):606e612.	Cross-sectional Diagnosis	55	4
Orlacchio A, Schillaci O, Fusco N, et al. Role of PET/CT in the detection of liver metastases from colorectal cancer. Radiologia Medica 2009;114(4):571e585.	Retrospective Cross-sectional Diagnostic	467	2
Facey K, Bradbury I, Laking G, Payne E. Overview of the clinical effectiveness of positron emission tomography imaging in selected cancers. Health Technol Assess 2007;11(44): iii-iv, xi-267.	systematic review	158 (23)	2
Numminen K, Isoniemi H, Halavaara J, et al. Preoperative assessment of focal liver lesions: multi-detector computed tomography challenges magnetic resonance imaging. Acta Radiol 2005;46:9-15.	Prospective Cross-sectional Diagnostic	31	1
Soyer P, Pocard M, Boudiaf M, et al. Detection of hypovascular hepatic metastases at triple-phase helical CT: sensitivity of phases and comparison with	Prospective Cross-sectional	59	1

surgical and histopathologic findings. Radiology 2004;231:413–20.			
Ichikawa T, Saito K, Yoshioka N, et al. Detection and characterization of focal liver lesions: a Japanese phase III, multicenter comparison between gadoxetic acid disodium-enhanced magnetic resonance imaging and contrast-enhanced computed tomography predominantly in patients with Hepatocellular carcinoma and chronic liver disease. Invest Radiol 2010;45:133–41.	Prospective Cross-sectional Multicenter P-III clinical trial	178	1
Valls C, Andia E, Sanchez A, et al. Hepatic metastases from colorectal cancer: preoperative detection and assessment of resectability with helical CT. Radiology 2001;218:55–60.	Retrospective Cross-sectional Diagnostic	157	1
Huppertz A, Balzer T, Blakeborough A, et al. Improved detection of focal liver lesions at MR imaging: multicenter comparison of gadoxetic acid-enhanced MR images with intraoperative findings. Radiology 2004;230:266–75.	Prospective Cross-sectional Multicenter Diagnostic	169	1
Niekel MC, Bipat S, Stoker J. Diagnostic imaging of colorectal liver metastases with CT, MR imaging, FDG PET, and/or FDG PET/CT: a metaanalysis of prospective studies including patients who have not previously undergone treatment. Radiology 2010; 257: 674–684	Meta-analysis	39	1
Ohlsson B, Tranberg KG, Lundstedt C, Ekberg H, Hederstrom E. Detection of hepatic metastases in colorectal cancer: a prospective study of laboratory and imaging methods. Eur J Surg 1993;159: 275–81.	Cohort Diagnostic	71	2
Wernecke K, Rummeny E, Bongartz G, et al. Detection of hepatic masses in patients with carcinoma: comparative sensitivities of sonography, CT, and MR imaging. AJR Am J Roentgenol 1991;157:731–9.	Cross-sectional Diagnosis	75	1
Floriani I, Torri V, Rulli E et al. Performance of imaging modalities in diagnosis of liver metastases from colorectal cancer: a systematic review and meta-analysis. J Magn Reson Imaging 2010;31:19–31	systematic review	25	
Quaia E, D'Onofrio M, Palumbo A et al. Comparison of contrastenhanced ultrasonography versus baseline ultrasound and contrastenhanced computed tomography in metastatic disease of the liver: diagnostic performance and confidence. Eur Radiol 2006; 16: 1599–1609	Retrospective Cross-sectional Diagnostic	253	1
Rafaelsen SR, Jakobsen A. Contrast-enhanced ultrasound vs multidetector-computed tomography for detecting liver metastases in colorectal cancer: a prospective, blinded, patient-by-patient analysis.	Prospective Cross-sectional Diagnostic	271	1

Colorectal Dis 2011; 13: 420-425			
Niekel MC, Bipat S, Stoker J. Diagnostic imaging of colorectal liver metastases with CT, MR imaging, FDG PET, and/or FDG PET/CT: a metaanalysis of prospective studies including patients who have not previously undergone treatment. Radiology 2010; 257: 674-684	Meta-analysis	39	1
Berman JM, Cheung RJ, Weinberg DS. Surveillance after colorectal cancer resection. Lancet 2000;355:39 5-9.	expert opinion > systematic review	NA	5
Bipat S, van Leeuwen MS, IJzermans JN, Bossuyt PM, Greve JW, Stoker J. Imaging and treatment of patients with colorectal liver metastases in the Netherlands: a survey. Neth J Med 2006;64:147-51.	Survey of current practice	107 (No of chairmen)	5
Facey K, Bradbury I, Laking G, Payne E. Overview of the clinical effectiveness of positron emission tomography imaging in selected cancers. Health Technol Assess 2007;11(44): iiiiv,xi-267.	systematic review	158 (23)	2
Capirci C, Rampin L, Erba PA, et al. Sequential FDG-PET/CT reliably predicts response of locally advanced rectal cancer to neo-adjuvant chemo-radiation therapy. Eur J Nucl Med Mol Imaging 2007;34(10):15 83e1593.	Observational Retrospective Diagnosis	130	1
Numminen K, Isoniemi H, Halavaara J, et al. Preoperative assessment of focal liver lesions: multidetector computed tomography challenges magnetic resonance imaging. Acta Radiol 2005;46:9-15.	Prospective Cross-sectional Diagnostic	31	1
Kinkel K, Lu Y, Both M, Warren RS, Thoeni RF. Detection of hepatic metastases from cancers of the gastrointestinal tract by using noninvasive imaging methods (US, CT, MR imaging, PET): a meta-analysis. Radiology 2002;224:748-56.	Meta-analysis	54	1
Meyerhardt JA, Mangu PB, Flynn PJ, et al. Follow-up care, surveillance protocol, and secondary prevention measures for survivors of colorectal cancer: American Society of Clinical Oncology clinical practice guideline endorsement. J Clin Oncol 2013;31:4465-70.	Expert opinion	NA	5
Jeffery M, Hickey BE, Hider PN. Follow-up strategies for patients treated for non-metastatic colorectal cancer. Cochrane Database Syst Rev 2007:CD002200.	systematic review	15	1
Moulton CA, GU CS, Law CH, et al. Effect of PET before liver resection on surgical management for colorectal adenocarcinoma metastases: a randomized clinical trial. JAMA 2014;311:1863-9.	RCT	440	1
Mäkelä JT, Laitinen SO, Kairaluoma MI. Five-year follow-up after radical surgery for colorectal cancer. Results of a prospective randomized trial. Arch Surg	Prospective cohort? Randomized trial	106	3

1995; 130: 1062-1067			
Jeffery GM, Hickey BE, Hider P. Follow-up strategies for patients treated for non-metastatic colorectal cancer. Cochrane Database Syst Rev 2002;1: CD002200	systematic review	15	1
Winawer S, Fletcher R, Rex D et al. Colorectal cancer screening and surveillance: clinical guidelines and rationale-Update based on new evidence. Gastroenterology 2003; 124: 544-560	Guideline	NA	5
Wiering B, Krabbe PF, Jager GJ, Oyen WJ, Ruers TJ. The impact of fluor-18-deoxyglucose-positron emission tomography in the management of colorectal liver metastases. Cancer 2005;104:2658-70.	systematic review	32	2
Kamel IR, Cohade C, Neyman E, Fishman EK, Wahl RL. Incremental value of CT in PET/CT of patients with colorectal carcinoma. Abdom Imaging 2004;29:6 63-8.	Observational Retrospective Diagnosis	90	1
Selzner M, Hany TF, Wildbrett P, McCormack L, Kadry Z, Clavien PA. Does the novel PET/CT imaging modality impact on the treatment of patients with metastatic colorectal cancer of the liver? Ann Surg 2004;240:1027-34.	Prospective cohort	76	3
Valls C, Andia E, Sanchez A, et al. Hepatic metastases from colorectal cancer: preoperative detection and assessment of resectability with helical CT. Radiology 2001;218:55-60.	Retrospective Cross-sectional Diagnostic	157	1
Vitola JV, Delbeke D, Sandler MP, et al. Positron emission tomography to stage suspected metastatic colorectal carcinoma to the liver. Am J Surg 1996;171:21-6.	Cross-sectional Diagnosis	24	2
Llamas-Elvira JM, Rodríguez-Fernández A, Gutierrez-Sainz J, et al. Fluorine-18 fluorodeoxyglucose PET in the preoperative staging of colorectal cancer. Eur J Nucl Med Mol Imaging 2007;34(6):859e867.	Prospective Cross sectional Diagnosis	104	2
Ruers TJ, Wiering B, van der Sijp JR et al. Improved selection of patients for hepatic surgery of colorectal liver metastases with (18)F-FDG PET: a randomized study. J Nucl Med 2009; 50: 1036-1041	RCT	150	1
Rappeport ED, Loft A, Berthelsen AK, et al. Contrast-enhanced FDG-PET/CT vs. SPIO-enhanced MRI vs. FDG-PET vs. CT in patients with liver metastases from colorectal cancer: a prospective study with intraoperative confirmation. Acta Radiol 2007;48(4): 369e378.	Prospective Cross-sectional Diagnostic	35	1
Huguet EL, Old S, Praseedom RK, Balan KK, Gibbs P, Jamieson NV. F18-FDG-PET evaluation of patients for resection of colorectal liver metastases. Hepato-	Cross-sectional Diagnostic	31	2

gastroenterology 2007;54(78):1667e1671.			
Adie S, Yip C, Chu F, et al. Resection of liver metastases from colorectal cancer: does preoperative chemotherapy affect the accuracy of PET in preoperative planning? ANZ J Surg 2009;79(5):358e361.	Observational Retrospective Diagnosis	74	2
Numminen K, Isoniemi H, Halavaara J, et al. Preoperative assessment of focal liver lesions: multi-detector computed tomography challenges magnetic resonance imaging. Acta Radiol 2005;46:9-15.	Prospective Cross-sectional Diagnostic	31	1
Soyer P, Pocard M, Boudiaf M, et al. Detection of hypovascular hepatic metastases at triple-phase helical CT: sensitivity of phases and comparison with surgical and histopathologic findings. Radiology 2004; 231:413-20.	Prospective Cross-sectional	59	1
Ichikawa T, Saito K, Yoshioka N, et al. Detection and characterization of focal liver lesions: a Japanese phase III, multicenter comparison between gadoxetic acid disodium-enhanced magnetic resonance imaging and contrast-enhanced computed tomography predominantly in patients with Hepatocellular carcinoma and chronic liver disease. Invest Radiol 2010;45:133-41.	Prospective Cross-sectional Multicenter P-III clinical trial	178	1
Valls C, Andia E, Sanchez A, et al. Hepatic metastases from colorectal cancer: preoperative detection and assessment of resectability with helical CT. Radiology 2001;218:55-60.	Retrospective Cross-sectional Diagnostic	157	1
Hammerstingl R, Huppertz A, Breuer J, et al. Diagnostic efficacy of gadoxetic acid (Primovist)-enhanced MRI and spiral CT for a therapeutic strategy: comparison with intraoperative and histopathologic findings in focal liver lesions. Eur Radio 2008;18:457-67.	Prospective Multicenter Cross-sectional	169	1
Brush J, Boyd K, Chappell F, et al. The value of FDG positron emission tomography/computerised tomography (PET/CT) in pre-operative staging of colorectal cancer: a systematic review and economic evaluation. Health Technol Assess 2011;15:1-192, iii-iv.	systematic review	30	2
Moulton CA, GU CS, Law CH, et al. Effect of PET before liver resection on surgical management for colorectal adenocarcinoma metastases: a randomized clinical trial. JAMA 2014;311:1863-9.	RCT	440	1
Kim YK, Lee MW, Lee WJ, et al. Diagnostic accuracy and sensitivity of diffusion-weighted and of gadoxetic acid-enhanced 3-T MR imaging alone or in combination in the detection of small liver metastasis	Observational Retrospective Diagnosis	86	1

($\leq$ 1.5 cm in diameter). Invest Radiol 2012;47:159–66.			
Kulemann V, Schima W, Tamandl D, et al. Preoperative detection of colorectal liver metastases in fatty liver: MDCT or MRI? Eur J Radiol 2011;79:e1–6.	Observational Retrospective Diagnosis	20	1
Knowles B, Welsh FK, Chandrakumaran K, John TG, Rees M. Detailed liver-specific imaging prior to pre-operative chemotherapy for colorectal liver metastases reduces intra-hepatic recurrence and the need for a repeat hepatectomy. HPB (Oxford) 2012;14: 298–309.	Observational Retrospective Clinical outcome	242	2
Sofue K, Tsurusaki M, Murakami T, et al. Does Gadoteric acid-enhanced 3.0T MRI in addition to 64-detector-row contrast-enhanced CT provide better diagnostic performance and change the therapeutic strategy for the preoperative evaluation of colorectal liver metastases? Eur Radiol 2014;24:2532–9.	Observational Retrospective Diagnosis	39	2
Briggs RH, Chowdhury FU, Lodge JP, Scarsbrook AF. Clinical impact of FDG PET-CT in patients with potentially operable metastatic colorectal cancer. Clin Radiol 2011;66:1167–74.	Observational Retrospective Diagnosis	102	2
Wiering B, Krabbe PF, Jager GJ, Oyen WJ, Ruers TJ. The impact of fluor-18-deoxyglucose-positron emission tomography in the management of colorectal liver metastases. Cancer 2005;104:2658–70	systematic review	32	2
Truant S, Huglo D, Hebbard M, Ernst O, Steinling M, Pruvot FR. Prospective evaluation of the impact of [18F]fluoro-2-deoxy-D-glucose positron emission tomography of resectable colorectal liver metastases. Br J Surg 2005;92:362–9.	Prospective Cross-sectional Diagnosis	53	1
Floriani I, Torri V, Rulli E et al. Performance of imaging modalities in diagnosis of liver metastases from colorectal cancer: a systematic review and meta-analysis. J Magn Reson Imaging 2010; 31: 19–31	systematic review	25	1
Niekel MC, Bipat S, Stoker J. Diagnostic imaging of colorectal liver metastases with CT, MR imaging, FDG PET, and/or FDG PET/CT: a metaanalysis of prospective studies including patients who have not previously undergone treatment. Radiology 2010; 257: 674–684	Meta-analysis	39	1
Ruers TJ, Wiering B, van der Sijp JR et al. Improved selection of patients for hepatic surgery of colorectal liver metastases with (18)F-FDG PET: a randomized study. J Nucl Med 2009; 50: 1036–1041	RCT	150	