Appendix F. Evidence Table: Diagnostic Accuracy Studies of Magnetic Resonance Imaging

**Table F1. Characteristics of diagnostic accuracy studies of magnetic resonance imaging**

| **Author, Year** | **Reason for MRI Imaginga** | **Scanner Type** | **Contrast, Rate** | **Delayed Phase?** | **Delayed Phase Timing >120 sb** | **Section Thickness (mm)** | **Did Study Meet All Imaging Criteria?c** | **Imaging Start Date** | **Reference Standardd** | **Country** | **Number of Patients** | **Population Characteristicse** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ahn, 2010[2](#_ENREF_2) | 2 | 1.5 T or 3 T | Gadoxetate disodium, rapid bolus | Yes | Yes | 2 | Yes | 2007 | 4 | South Korea | 59 | Age: 57 Male: 85% HBV: 76% Cirrhosis: 93% |
| Akai, 2011[3](#_ENREF_3) | 2 | 1.5 T | Gadoxetic acid disodium, rapid bolus | Yes | Yes | 5 | Yes | 2008 | 1 | Japan | 34 | Age: 65 Male: 79% HBV: NR Cirrhosis: NR |
| Alaboudy, 2011[4](#_ENREF_4) | 2 | 1.5 T or 3T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | NR | No | 2008 | 2 | Japan | 32 | Age: 68 years Male: 72% HBV: 22% Cirrhosis: NR |
| An, 2012[6](#_ENREF_6) | 2 | 3.0 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 2.5 | Yes | 2009 | 2 | South Korea | 175 | Age: 57 Male: 79% HBV: 77% Cirrhois: NR |
| An, 2013[5](#_ENREF_5) | 2 | 3.0 T | Gadoxetic acid disodium, 1-2 ml/s | No | NA | 2.5 | No | 2008 | 2 | South Korea | 86 | Age: 57 Male: 80% HBV: 87% Cirrhosis: 76% |
| Baek, 2012[8](#_ENREF_8) | 2 | 3 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 2 | Yes | 2008 | 4 | South Korea | 51 | Age: NR, range 32-80  Male: 84%  HBV: 80% Cirrhosis: 100% |
| Baird, 2013[9](#_ENREF_9) | 2 | 1.5 T | Gadoxetic acid, 2 ml/s | Yes | Yes | 3 | Yes | 2006 | 1 | Australia | 30 | Age: 51 Male: 77% HBV: 6.7% Cirrhosis: 100% |
| Burrel, 2003[13](#_ENREF_13) | 2, 5 | 1.5 T | Gadodiamide, 2 ml/s | Yes | NR | 4-5 | No | 2000 | 1 | Spain | 29 | Age: 56 Male: 66% HBV: NR Cirrhosis: 100% |
| Cereser, 2010[15](#_ENREF_15) | 2 | 1.5 T | Gadobenate dimeglumine, 2 ml/s | Yes | Yes | 4 | Yes | 2005 | 2 | Italy | 33 | Age: 64 Male: 82% HBV: 6% Cirrhosis: 100% |
| Choi, 2001 (2)[21](#_ENREF_21) | 2 | 1.5 T | Gadopentetate disodium, rate NR | Yes | Yes | 6-8 | No | 1998 | 2 | South Korea | 33 | Age: 54 Male: 73% HBV: 70% Cirrhosis: 67% |
| Choi, 2008[20](#_ENREF_20) | 2 | 1.5 T | Gadobenate dimeglumine, rate NR | Yes | Yes | 2.5 | Yes | 2003 | 1 | South Korea | 47 | Age: 49 Male: 60% HBV: 79% Cirrhosis: 100% |
| Chou, 2011[22](#_ENREF_22) | 3 | 1.5 T | Gadopentetate dimeglumine, rapid bolus | Yes | Yes | 8 | No | 2004 | 2 | Taiwan | 21 | Age: 62 Male: 62% HBV: 43% Cirrhosis: 100% |
| Chung, 2010[24](#_ENREF_24) | 3 | 3.0 T | Gadoxetic acid, 1 or 2 ml/s | Yes | NR | 2 or 3 | No | 2008 | 4 | South Korea | 62 | Age: 59 Male: 68% HBV: 50% Cirrhosis: 48% |
| Chung, 2011[23](#_ENREF_23) | 3 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | Yes | 6 | No | 2007 | 4 | South Korea | 46 | Age: 60 Male: 78% HBV: 76% Cirrhosis: 100% |
| de Ledinghen, 2002[27](#_ENREF_27) | 2 | 1.5 T | Gadopentetate dimeglumine, rate NR | No | NA | 8-10 | No | 1997 | 1 | France | 34 | Age: 54 Male: 71% HBV: 8.8% Cirrhosis: 100% |
| Di Martino, 2010[31](#_ENREF_31) | 2 | 1.5 T | Gadobenate dimeglumine, 2 ml/s | Yes | Yes | 3 | Yes | 2007 | 4 | Italy | 140 | Age: 59 Male: 74% HBV: NR Cirrhosis: 100% |
| Di Martino, 2013[30](#_ENREF_30) | 2 | 1.5 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 3 | Yes | 2007 | 4 | Italy | 58 | Age: 63 Male: 67% HBV: 14% Cirrhosis: 100% |
| Filippone, 2010[36](#_ENREF_36) | 4 | 1.5 T | Gadoxetic acid, 2 ml/s | Yes | Yes | 3 | Yes | 2007 | 4 | Italy | 34 | Age: 59 Male: 79% HBV: NR Cirrhosis: NR |
| Forner, 2008[37](#_ENREF_37) | 3 | 1.5 T | Gadodiamide, 2 ml/s | Yes | Yes | 3 | Yes | 2003 | 2 | United States | 89 | Age: Median 65 Male: 60% HBV: 6.7% Cirrhosis: 100% |
| Freeman, 2006[40](#_ENREF_40) | 2, 5 | NR | NR | NR | NR | NR | No | 2003 | 1 | United States | 789 | Age: 56 Male: 77% HBV: NR Cirrhosis: NR |
| Gatto, 2012[45](#_ENREF_45) | 3 | 1.5 T | Gadobenate, 2.5 ml/s | Yes | Yes | 3.8 | Yes | NR | 2 | Italy | 25 | Age: 68 Male: 80% HBV: 24% Cirrhosis: 100% |
| Giorgio, 2007[46](#_ENREF_46) | 3 | 1.5 T | Gadobenate dimeglumine, 3 ml/s | Yes | No | 4 | No | 2003 | 4 | Italy | 73 | Age: 63 Male: 67% HBV: 4.1% Cirrhosis: 100% |
| Golfieri, 2009[48](#_ENREF_48) | 3 | 1.5 T | Ferucarbotran and gadopentetate dimeglumine, 2 ml/s | Yes | Yes | 4-5 | Yes | 2003 | 2 | Italy | 63 | Age: 64 Male: 84% HBV: 35% Cirrhosis: 100% |
| Goshima S, 2004[49](#_ENREF_49) | 3 | 1.5 T | Gadopentetate dimeglumine, rapid bolus | Yes | Yes | 8 | No | 1998 | 4 | Japan | 8 | Age: 71 Male: 63% HBV: NR Cirrhosis: NR |
| Guo, 2012[51](#_ENREF_51) | 2 | 3 T | Gadodiamide, 3 ml/s | Yes | No | 4.8-5 | No | 2009 | 4 | China | 46 | Age: 56 Male: 82% HBV: 89% Cirrhosis: 100% |
| Haradome, 2011[52](#_ENREF_52) | 2 | 1.5 T | Gadoxetic acid disodium, 1 ml/s | Yes | Yes | 4 | Yes | 2008 | 2 | Japan | 75 | Age: 55 Male: 80% HBV: 19% Cirrhosis: 72% |
| Hardie, 2011[53](#_ENREF_53) | 2 | 1.5 T | No contrast | No | NA | 8 | No | 2008 | 1 | United States | 37 | Age: 57 Male: 68% HBV: NR Cirrhosis: 100% |
| Hardie, 2011 (2)[54](#_ENREF_54) | 2 | 1.5 T | Gadopentetate dimeglumine | Yes | Yes | NR | No | 2008 | 1 | United States | 37 | Age: 57 Male: 73% HBV: NR Cirrhosis: NR |
| Hardie, 2011 (3)[55](#_ENREF_55) | 2 | 1.5 T | No contrast | No | NA | 6, 10 | No | 2008 | 1 | United States | 25 | NR |
| Hecht, 2006[57](#_ENREF_57) | 2 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | Yes | 2-3 | Yes | 1999 | 1 | United States | 38 | Age: 54 Male: 74% HBV: 10% Cirrhosis: 100% |
| Hidaka, 2013[58](#_ENREF_58) | 2 | 1.5 T | Gadoxetic acid disodium, 1.5 ml/s | Yes | Yes | NR | No | 2008 | 1 | Japan | 11 | Age: NR Male: NR HBV: 27% Cirrhosis: NR |
| Hirakawa, 2011[60](#_ENREF_60) | 2 | 1.5 T | Gadopentetate dimeglumine, rate NR | Yes | Yes | NR | No | 1999 | 1 | Japan | 25 | Age: 55 Male: 52% HBV: NR Cirrhosis: 100% |
| Hori, 1998[64](#_ENREF_64) | 2 | 1.5 T | Gadopentetate dimeglumine, 1 ml/s | Yes | Yes | 7-8 | No | 1995 | 3 | Japan | 50 | Age: 65 Male: 76% HBV: 10% Cirrhosis: NR |
| Hwang, 2012[65](#_ENREF_65) | 2 | 3.0 T | Gadoxetic acid disodium, rate NR | Yes | Yes | 2 | Yes | 2008 | 4 | South Korea | 54 | Age: NR, range 33 to 81  Male: 81% HBV: 70% Cirrhosis: NR |
| Iavarone, 2010[68](#_ENREF_68) | 2 | 1.5 T | Gadobenate dimeglumine, 2 ml/s | Yes | Yes | 3 | Yes | 2006 | 2 | Italy | 59 | Age: median 66 Male: 69% HBV: 12% Cirrhosis: 100% |
| Ichikawa, 2010[69](#_ENREF_69) | 2 | 1.5 T | Gadoxetic acid disodium, rate NR | Yes | Yes | 5-10 | No | 2001 | 4 | Japan | 151 | Age: 66 years Male: 72%  HBV: NR Cirrhosis: 66% |
| Inoue, 2012[73](#_ENREF_73) | 2 | 1.5 T or 3 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 3-5 | Yes | 2008 | 2 | Japan | 66 | Age: 66 Male: 64% HBV: 30% Cirrhosis: 62% |
| Ito, 2004[76](#_ENREF_76) | 4 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s | No | NA | 10 | No | 2002 | 4 | Japan | 40 | Age: 62 Male: 58% HBV: NR Cirrhosis: NR |
| Jeong, 1999[84](#_ENREF_84) | 4 | 1.5 T | Gadopentetate dimeglumine, rapid bolus | Yes | Yes | 8-10 | No | 1996 | 4 | South Korea | 51 | Age: 54 Male: 67%  HBV: NR Cirrhosis: NR |
| Jeong, 2011[83](#_ENREF_83) | 2 | 1.5 T | Gadobenate dimeglumine, 2 ml/s | Yes | Yes | 3 | Yes | 2006 | 4 | South Korea | 19 | Age: 54 Male: NR HBV: NR Cirrhosis: 100% |
| Jin, 2013[85](#_ENREF_85) | 5 | NR | Gadoxetic acid disodium, 2 ml/s | Yes | NR | 5-8 | No | 2009 | 4 | South Korea | 104 | Age: 55 Male: 84%  HBV: 73% Cirrhosis: NR |
| Kakihara, 2013[86](#_ENREF_86) | 2 | 1.5 T | Gadoxetic acid, variable rate | Yes | Yes | 4 | Yes | 2008 | 1 | Japan | 15 | Age: Median 55 Male: 73% HBV: 27% Cirrhosis: 100% |
| Kamura T, 2002[87](#_ENREF_87) | 4 | 1.5 T | Gadopentetate dimeglumine or gadodiamide, rate NR | Yes | Yes | 4-5 | Yes | 1996 | 4 | Japan | NR | NR |
| Kawada, 2010[89](#_ENREF_89) | 2 | 3.0 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 5 | Yes | 2008 | 2 | Japan | 13 | Age: median 67 Male: 77% HBV: 7.7% Cirrhosis: NR |
| Khalili, 2011[92](#_ENREF_92) | 3 | 1.5 T | Gadobenate dimeglumine, 2 ml/s | Yes | Yes | NR | No | 2006 | 4 | Canada | 84 | Age: 58 Male: 63% HBV: 50% Cirrhosis: 100% |
| Kim AY, 2012[94](#_ENREF_94) | 2 | 3.0 T | Gadoxetic acid disodium, 1 ml/s | Yes | Yes | 2 | Yes | 2009 | 4 | South Korea | 189 | Age: 63 Male: 77% HBV: 90% Cirrhosis: 100% |
| Kim DJ, 2012[96](#_ENREF_96) | 3 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s | Yes | Yes | 5 | Yes | 2008 | 4 | South Korea | 65 | Age: NR, range 37-82  Male: 80% HBV: 69% Cirrhosis: 100% |
| Kim MJ, 2012[98](#_ENREF_98) | 2 | 3.0 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 2 | Yes | 2008 | 2 | South Korea | 50 | Age: 54 Male: 80% HBV: 84% Cirrhosis: 84% |
| Kim SH, 2009[101](#_ENREF_101) | 2 | 3.0 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 2 | Yes | 2007 | 2 | South Korea | 62 | Age: 55 Male: 87% HBV: 85% Cirrhosis: 48% |
| Kim TK, 2011[106](#_ENREF_106) | 3 | 1.5 T | Gadobenate dimeglumine, 2 ml/s | Yes | Yes | 5 | Yes | 2006 | 4 | South Korea | 96 | Age: 58 Male: 60% HBV: 53% Cirrosis: NR |
| Kim YK, 2004[118](#_ENREF_118) | 2 | 1.5 T | Gadopentetate dimeglumine and ferucarbotran | Yes | Yes | 3.5-4 | Yes | 2002 | 4 | South Korea | 27 | Age: 54 Male: 63% HBV: NR Cirrhosis: NR |
| Kim YK 2004 (2)[119](#_ENREF_119) | 1 | 1.5 T | Gadobenate dimeglumine | Yes | Yes | 2.3 | Yes | 2001 | 4 | South Korea | 29 | Age: 58 Male: 66% HBV: NR Cirrhosis: 100% |
| Kim YK, 2006[116](#_ENREF_116) | 2 | 1.5 T | Gadopentetate dimeglumine, rate NR | Yes | Yes | 3.5-4 | Yes | 2003 | 4 | South Korea | 31 | Age: 57 Male: 90% HBV: 97% Cirrhosis: 100% |
| Kim YK, 2007[115](#_ENREF_115) | 2 | 1.5 T | Gadobenate dimeglumine, rate NR and ferucarbotran | Yes | Yes | 3.5-4 | Yes | 2004 | 4 | South Korea | 29 | Age: 56 Male: 72% HBV: 100% Cirrhosis: !00% |
| Kim YK, 2008[113](#_ENREF_113) | 2 | 1.5 T | Gadobenate dimeglumine, 2 mL/s | Yes | Yes | 3.5-4 | Yes | 2004 | 4 | South Korea | 115 | Age: NR, range 40 to 74 Male: 77% HBV: 96% Cirrhosis: 100% |
| Kim YK, 2008 (2)[114](#_ENREF_114) | 2 | 1.5 T | Gadobutrol, 2 ml/s | Yes | Yes | 3.5-4 | Yes | 2005 | 4 | South Korea | 23 | Age: NR, range 40 to 74  Male: 83% HBV: 100% Cirrhosis: 100% |
| Kim YK, 2009 (2)[112](#_ENREF_112) | 2 | 1.5 T | Gadoxetic acid disodium solution, 2 ml/s | Yes | Yes | 2.5-3 | Yes | 2007 | 4 | South Korea | 62 | Age: NR Male: 81% HBV: 90% Cirrhosis: NR |
| Kim YK, 2010[109](#_ENREF_109) | 2 | 1.5 T | Gadoxetic acid disodium, 1 ml/s or gadopentetate dimeglumine, 2 ml/s, and ferucarbotran | Yes | Yes | 2.5-3 | Yes | 2009 | 4 | South Korea | 41 patients 41 (100%) with HCC 56 HCC lesions | Age (mean): not reported, range 40 to 74 years Male: 76% Cirrhosis: NR |
| Kim YK, 2010 (2)[110](#_ENREF_110) | 2 | 1.5 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 2.5-3 | Yes | 2007 | 4 | South Korea | 89 | Age: NR, range 40 to 74  Male: 70% HBV: 93% Cirrhosis: NR |
| Kim YK, 2011[107](#_ENREF_107) | 2 | 1.5 T or 3.0 T | Gadoxetic acid, 1 ml/s | Yes | Yes | 3 | Yes | 2009 | 4 | South Korea | 40 | Age: 63 Male: 70% HBV: 95% Cirrhosis: 95% |
| Kim YK, 2011 (2)[108](#_ENREF_108) | 2 | 1.5 T | Gadoxetic acid, 1 ml/s | Yes | Yes | 2.5-3 | Yes | 2009 | 4 | South Korea | 14 | Age: NR Male: 71%  HBV: 100% Cirrhosis: 100% |
| Kondo, 2005[121](#_ENREF_121) | 2 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s | Yes | Yes | 8 | No | 1998 | 2 | Japan | 49 | Age: 62 Male: 69%  HBV: NR Cirrhosis: 100% Note: describes entire sample, including those not included in analysis |
| Koushima, 2002[123](#_ENREF_123) | 2 | 1.5 T | No contrast | No | NA | NA | No | 1998 | 4 | Japan | 29 | Age: 63 for cases, NR for controls Male: 76% of cases, 50% of controls HBV: 14% Cirrhosis: 100% |
| Krinsky, 2001[125](#_ENREF_125) | 2 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | No | 5-8 | No | 1995 | 1 | United States | 71 | Age: 50 Male: 59% HBV: 13% Cirrhosis: 100% |
| Krinsky, 2002[124](#_ENREF_124) | 2 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | NR | NR | No | 1995 | 1 | United States | 24 | Age: 52 Male: NR HBV: NR Cirrhosis: 100% |
| Kumano, 2009[126](#_ENREF_126) | 2 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | No | NA | 7 | No | 2002 | 4 | Japan | 28 | Age: NR Male: 79% HBV: NR Cirrhosis: NR |
| Kwak, 2004[129](#_ENREF_129) | 2 | 1.5 T | Gadopentetate dimeglumine, rapid bolus and ferumoxides | Yes | Yes | 6 | No | 2000 | 4 | South Korea | 24 | Age: 52 Male: 75% HBV: 100% Cirrhosis: NR |
| Kwak, 2005[128](#_ENREF_128) | 2 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s and ferumoxides | Yes | Yes | 2.3 | Yes | 2002 | 4 | South Korea | 49 | Age: 57 Male: 80% HBV: 100% Cirrhosis: 100% |
| Lauenstein, 2007[131](#_ENREF_131) | 2 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | Yes | 2-3 | Yes | 2004 | 1 | United States | 115 | Age: 54 Male: 67% HBV: 9% Cirrhosis: NR |
| Lee CH, 2012[132](#_ENREF_132) | 2 | 3.0 T | Gadoxetic acid disodium, 1 ml/s | Yes | Yes | 5 | Yes | 2008 | 4 | South Korea | 46 | Age: 57 Male: 83% HBV: 80% Cirrhosis: NR |
| Lee JY, 2010[137](#_ENREF_137) | 2 | 3.0 T | Gadoxetic acid disodium, 2 ml/s and ferucarbotran | Yes | Yes | 2 | Yes | 2007 | 2 | South Korea | 27 | Age: 54 Male: 78% HBV: 93% Cirrhosis: 52% |
| Lee MH, 2011[138](#_ENREF_138) | 4 | 3.0 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 2 | Yes | 2008 | 2 | South Korea | 66 | Age: 59 Male: 77% HBV: 68% Cirrhosis: 100% |
| Libbrecht, 2002[144](#_ENREF_144) | 2, 5 | 1.5 T | Gadopentetate dimeglumine or gadoterate meglumine, 1.5 to 2 ml/s | No | NA | 8 | No | 2000 | 1 | Belgium | 49 | Age; 53 Male: 65% HBV: 19% Cirrhosis: 100% |
| Lin MT, 2011[148](#_ENREF_148) | 2 | NR | NR | NR | NR | NR | No | 2006 | 2 | Taiwan | 343 | Age: 56 Male: 78% HBV: 57% Cirrhosis: 47% |
| Lu CH, 2010[153](#_ENREF_153) | 2, 5 | 1.5 T | Gadopentetate dimeglumine, 1.6-1.8 ml/s | Yes | No | 5 | No | 2006 | 1 | Taiwan | 57 | Age: 51 Male: 89% HBV: NR Cirrhosis: NR |
| Marin, 2009 (2)[163](#_ENREF_163) | 2 | 1.5 T | Gadobenate dimeglumine, 2 ml/s | Yes | Yes | 5 | Yes | 2005 | 4 | Italy | 36 | Age: 66 Male: 75% HBV: 29% Cirrhosis: NR Note: described entire sample, including those excluded from analysis |
| Marrero, 2005[164](#_ENREF_164) | 3 | 1.5 T | Gadopentetate dimeglumine, rate NR | Yes | Yes | NR | No | 2002 | 2 | United States | 94 | Age: 56 years Male: 69% HBV: 11% Cirrhosis: NR |
| Matsuo, 2001[165](#_ENREF_165) | 2 | 1.5 T | Gadopentetate dimeglumine, rate NR | Yes | Yes | 8-10 | No | 1998 | 4 | Japan | 53 | Age: 64 Male: 75% HBV: NR Cirrhosis: 90% |
| Mori, 2005[169](#_ENREF_169) | 2 | 1.5 T | Gadodiamide, 2.5 ml/s | Yes | Yes | 8-9 | No | 2002 | 4 | Japan | 31 | Age: 68 Male: 84% HBV: NR Cirrhosis: NR |
| Motosugi, 2010[172](#_ENREF_172) | 4 | 1.5 T | Gadoxetic acid disodium, 1 ml/s | Yes | Yes | NR | No | 2008 | 4 | Japan | 80 | Age: 69 Male: 69% HBV: 19% Cirrhosis: NR |
| Nakamura, 2000[177](#_ENREF_177) | 2 | 1.5 T | NR | NR | NR | 8 | No | 1997 | 3 | Japan | 30 | Age: 63 Male: 97% HBV: NR Cirrhosis: 83% |
| Nakamura, 2013[176](#_ENREF_176) | 2 | 1.5 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 5 | Yes | 2008 | 1 | Japan | 11 | Age: 69 Male: 73% HBV: 9% Cirrhosis: 100% |
| Noguchi, 2003[179](#_ENREF_179) | 2 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | Yes | NR | No | NR | 4 | Japan | 53 | Age: 63 Male: 68% HBV: NR Cirrhosis: 100% |
| Onishi, 2012[182](#_ENREF_182) | 2 | 1.5 T or 3.0 T | Gadoxetic acid disodium, 1 ml/s | Yes | Yes | 4 | Yes | 2008 | 4 | Japan | 31 | Age: 70 Male: 90% HBV: 13% Cirrhosis: NR |
| Ooka, 2013[184](#_ENREF_184) | 2 | 1.5 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 6 | No | 2008 | 2 | Japan | 54 | Age: 69 Male: 74% HBV: 20% Cirrhosis: NR |
| Park G, 2010[189](#_ENREF_189) | 2 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s or Gadoxetic acid disodium, 3 ml/s | Yes | Yes | 2.5-3 | Yes | 2008 | 4 | South Korea | 43 | Age: NR, range 44 to 70  Male: 65% HBV: 98%  Cirrhosis: NR |
| Park, 2010[188](#_ENREF_188) | 2 | 3.0 T | Gadoxetic acid disodium and gadobenate dimeglumine, 2 ml/s | Yes | Yes | 2 | Yes | 2007 | 2 | South Korea | 18 | Age: 53 Male: 94% HBV: 89% Cirrhosis: 67% |
| Park, 2012[186](#_ENREF_186) | 2 | 1.5 T | No contrast or gadopentetate dimeglumine, rate NR | Yes | NR | 2-3 | No | 2005 | 1 | United States | 52 | Age: 57 Male: NR HBV: NR Cirrhosis: 100% |
| Park MJ, 2013[185](#_ENREF_185) | 4 | 3.0 T | Gadoxetic acid, 1 ml/s | Yes | Yes | 2 | Yes | 2010 | 2 | Korea | 148 | Age: 55 Male: 70% HBV: NR Cirrhosis: NR |
| Pauleit, 2002[192](#_ENREF_192) | 2 | 1.5 T | Gadopentetate dimeglumine, 5 ml/s and ferumoxides | Yes | Yes | 8-9 | No | NR | 4 | Germany | 43 | Age: 60 Male: 79% HBV: 23% Cirrhosis: 63% |
| Petruzzi, 2013[195](#_ENREF_195) | 2 | 1.5 T or 3.0 T | NR | Yes | NR | NR | No | 2009 | 1 | United States | 45 | NR |
| Piana, 2011[196](#_ENREF_196) | 2 | 1.5 T | No contrast or gadoterate meglumine, 2 ml/s | Yes | Yes | NR | No | 2004 | 4 | France | 91 | Age: 63 Male: 74% HBV: 20% Cirrhosis: NR |
| Pitton, 2009[197](#_ENREF_197) | 2 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | Yes | 4 | Yes | 2006 | 4 | Germany | 28 | Age: 67 Male: 89% HBV: NR Cirrhosis: NR |
| Pugacheva, 2011[199](#_ENREF_199) | 2 | 1.5 T | Gadopentetate dimeglumine, rate NR | Yes | Yes | NR | No | 2006 | 4 | Japan | 38 (30 underwent CT or MRI) | Age: 69 Male: 75% HBV: 7.9% Cirrhosis: NR |
| Rhee, 2012[202](#_ENREF_202) | 4 | 3.0 T | Gadoxetic acid disodium, 2 ml/s | Yes | Yes | 2 | Yes | 2008 | 2 | South Korea | 34 | Age: 57 Male: 88% HBV: 82% Cirrhosis: 97% |
| Rimola, 2012[204](#_ENREF_204) | 3 | 1.5 T | Gadodiamide, 2 ml/s | Yes | NR | 2.5 | No | 2003 | 2 | Spain | 159 | Age: 63 Male: 58% HBV: 14% Cirrhosis: 100% |
| Rode, 2001[206](#_ENREF_206) | 2 | 1.5 T | Gadopentetate dimeglumine, rapid bolus | Yes | NR | 6-8 | No | 1996 | 1 | France | 43 | Age: 51 Male: 70% HBV: 9.3% Cirrhosis: 100% |
| Sangiovanni, 2010[208](#_ENREF_208) | 3 | 1.5 T | Gadobenate dimelumine, 2 ml/s | Yes | Yes | 3 | Yes | 2006 | 2 | Italy | 64 | Age: NR Male: NR HBV: NR Cirrhosis:100% |
| Sano, 2011[209](#_ENREF_209) | 2 | 1.5 T | Gadoxetic acid, 1 ml/s | Yes | Yes | 5 | Yes | 2008 | 2 | Japan | 64 | Age: 66 Male: 73% HBV: NR Cirrhosis: NR |
| Secil, 2008[211](#_ENREF_211) | 2 | 1.5 T with and without dynamic subtract-tion | Gadopentetate dimeglumine, rapid bolus | Yes | NR | NR | No | NR | 4 | Turkey | 32 | Age: NR Male: NR HBV: NR Cirrhosis: 100% |
| Seitz, 2010[213](#_ENREF_213) | 3 | 1.5 T | Gadopentetate dimeglumine, rate NR | No | NA | 5-8 | No | 2004 | 4 | Germany | 269 | Age: 53 Male: 41 HBV: NR Cirrhosis: NR |
| Serste, 2012[214](#_ENREF_214) | 3 | 1.5 T | NR | Yes | NR | NR | No | 2005 | 2 | France | 74 | Age: 60 Male: 78% HBV: 27% Cirrhosis: 82% |
| Simon, 2005[216](#_ENREF_216) | 2 | 1.5 T | Gadopentetate dimeglumine, rate NR | Yes | No | 4.4 | No | 1999 | 4 | Germany | 25 | Age: 60 Male: 84% HBV: NR Cirrhosis: 84% |
| Singh, 2007[217](#_ENREF_217) | 1 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s | NR | NR | NR | No | 2005 | 2 | United States | 17 | Age: 56 Male: NR HBV: NR Cirrhosis: 100% |
| Sugimoto, 2012[221](#_ENREF_221) | 4 | 1.5 T | Gadoxetic acid disodium, rate NR | Yes | Yes | 3 | Yes | 2008 | 2 | Japan | 66 | Age: 69 Male: 70% HBV: 12% Cirrhosis: NR |
| Sugimoto, 2012 (2) [222](#_ENREF_222) | 2 | 1.5 T | Gadoxetic acid, 2 ml/s | Yes | Yes | 3 | Yes | 2008 | 2 | Japan | 54 | Age: 70 Male: 54% HBV: 5.6% Cirrhosis: NR |
| Suh, 2011[224](#_ENREF_224) | 3 | 3.0 T | Gadoxetic acid disodium, rapid bolus | Yes | Yes | 2 | Yes | 2007 | 4 | South Korea | 48 | Age: 56 Male: 62% HBV: NR Cirrhosis: NR |
| Sun, 2010[225](#_ENREF_225) | 4 | 3.0 T | Gadoxetic acid disodium, 1.5 ml/s | Yes | Yes | 4.8 | Yes | 2008 | 4 | South Korea | 69 | Age: 56 Male: 82% HBV: 81% Cirrhosis: 100% |
| Takahashi, 2013[228](#_ENREF_228) | 4 | 1.5 T | Gadoxetic acid, 1.0 ml/s | Yes | Yes | 4 | No | 2008 | 2 | Japan | 56 | Age: 66 Male: 71% HBV: 14% Cirrhosis: 79% |
| Tanaka, 2005[231](#_ENREF_231) | 2 | 1.5 T | Gadopentetate dimeglumine, rate NR | Yes | Yes | 6-9 | No | NR | 4 | Japan | 31 | Age: 67 Male: 65% HBV: NR Cirrhosis: NR |
| Tang, 1999[233](#_ENREF_233) | 2 | 1.5 T | Gadopentetate dimeglumine, rapid bolus | Yes | Yes | 8 | No | 1997 | 4 | Japan | 53 | Age: 63 Male: 60% HBV: NR Cirrhosis: NR |
| Tanimoto, 2002[234](#_ENREF_234) | 2 | 1.5 T | Gadopentetate dimeglumine, 1 ml/s | Yes | Yes | NR | No | 1998 | 4 | Japan | 50 | Age: 63 Male: NR HBV: NR Cirrhosis: 60% |
| Teefey, 2003[235](#_ENREF_235) | 2 | 1.5 T | Gadodiamide, 2 ml/s | Yes | Yes | 8 | No | 1996 | 2 | United States | 25 | Age; 47 Male: 65% HBV: NR Cirrhosis: 100% |
| Toyota, 2013[236](#_ENREF_236) | 2 | 1.5 T | Gadoxetic acid, 2 ml/s | Yes | Yes | 2 | Yes | 2008 | 2 | Japan | 50 | Age: 69 Male: 64% HBV: 36% Cirrhosis: NR |
| Tsurusaki, 2008[238](#_ENREF_238) | 2 | 1.5 T with and without SENSE, high vs. low spatial resolution | Gadopentetate dimeglumine at 2 ml/s | No | NA | 4 | No | NR | 4 | Japan | 35 | Age: 65 Male: 69% HBV: NR Cirrhosis: NR |
| Vandecaveye, 2009[241](#_ENREF_241) | 4 | 1.5 T | Gadobenate dimeglumine, rate NR | Yes | NR | 4 | No | NR | 4 | Belgium | 55 | Age: NR Male: NR HBV: 13% Cirrhosis: 100% |
| Wagnetz, 2011[243](#_ENREF_243) | 2 | 1.5 T | Gadodiamide or gadobutrol, rate NR | Yes | No | 5 | No | 2005 | 2 | Canada | 292 | Age: 60 Male: 38% HBV: NR Cirrhosis: NR |
| Xu, 2009[252](#_ENREF_252) | 2 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | Yes | 7 | No | 2005 | 4 | China | 37 | Age: 46 Male: 95% HBV: NR Cirrhosis: NR |
| Xu, 2010[251](#_ENREF_251) | 4 | 1.5 T | Gadopentetate dimeglumine, 2 ml/s | Yes | Yes | 7 | No | 2007 | 2 | China | 54 | Age: 48 Male: 85% HBV: 100% Cirrhosis: NR |
| Yan, 2002[256](#_ENREF_256) | 2 | 1.5 T | Gadopentetate dimeglumine, rate NR | Yes | Yes | NR | No | 1996 | 4 | China | 53 | Age: 61 Male: 79% HBV: NR Cirrhosis: NR |
| Yoo, 2013[257](#_ENREF_257) | 2 | 3.0 T | Gadoxetic acid, 2 ml/s | Yes | Yes | 2.8 | Yes | 2009 | 2 | Korea | 33 | Age: 53 Male: 82% HBV: NR Cirrhosis: 100% |
| Yoshioka, 2002[260](#_ENREF_260) | 2 | 1.5 T with and without SENSE | Gadodiamide, 2.5 ml/s | Yes | Yes | 8-10 | No | 2000 | 4 | Japan | 40 | Age: 62 Male: 80% HBV: NR Cirrhosis: NR |
| Youk, 2004[261](#_ENREF_261) | 3 | 1.5 T | Gadopentetate, rate NR | Yes | Yes | 7 | No | 2000 | 4 | Korea | 46 | Age: 62 Male: 85%  HBV: NR Cirrhosis: NR |
| Yu, 2002[268](#_ENREF_268) | 4 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s | Yes | Yes | NR | No | NR | 4 | South Korea | 120 | Age: NR Male: NR HBV: 77% Cirrhosis: NR |
| Yu, 2008[267](#_ENREF_267) | 2 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s | Yes | Yes | 8-10 | No | 2000 | 1 | United States | 53 | Age: 57 Male: 74% HBV: 85% Cirrhosis: NR |
| Yu, 2009[266](#_ENREF_266) | 2 | 1.5 T | Gadopentetate dimeglumine, 3 ml/s and ferucarbotran | Yes | Yes | 8-10 | No | 2003 | 1 | United States | 42 | Age: NR, range 44 to 73 Male: 70% HBV: 69% Cirrhosis: 86% |
| Yu, 2011[265](#_ENREF_265) | 2 | 1.5 T | Gadodiamide, rate NR | Yes | NR | NR | No | 1999 | 1 | United States | 638 | Age: 53 Male: 64% HBV: 10% Cirrhosis: NR |
| Yu, 2013 (3)[264](#_ENREF_264) | 2 | 1.5 T (n=39) or 3.0 T (n=33) | Gadoxetic acid, 1-1.5 ml/s | Yes | Yes | 3.5-6.0 | No | 2009 | 4 | Korea | 68 | Age: 62 Male: 81%  HBV: NR Cirrhosis: NR |
| Zhao, 2007[271](#_ENREF_271) | 2 | 1.5 T | Gadopentetate dimeglumine, rapid bolus | Yes | Yes | 7 | No | 2002 | 4 | China | 24 | Age: 56 Male: 78% HBV: NR Cirrhosis: 100% Note: describes entire sample, including those excluded from analysis |

HBV = hepatitis B virus; MRI = magnetic resonance imaging; NA = not applicable; NR = not reported; s = second; T = tesla

a Reason for MRI imaging key: 1=surveillance; 2=detection rate in patients undergoing surgery or with known HCC; 3=evaluation/characterization of liver mass; 4=differentiation between HCC and another type of lesion; 5=staging

b Delayed phase reported as time after gadolinium contrast injection

c Imaging criteria = 3.0 T MRI; delayed phase (or hepatobiliary for gadobenate or gadoxetic acid contrast); timing of delayed phase >120 s after contrast injection; slice thickness <5 mm

d Reference standard key: 1=explanted livers only; 2=histological specimen (may include some explanted livers); 3=imaging and clinical criteria; 4=mixed histological and imaging/clinical criteria

e Age reported as mean (years), unless otherwise noted