Supplementary Table 1. Characteristics of the included articles

Author (year)	Recruit time	Cause of liver disease (%)	Dose	Body mass index (kg/m²) *
Hatanaka (2008)	Jan 2007–Aug 2007	liver cirrhosis or chronic hepatitis (73)	0.015 mL/kg	NA
Kan (2010)	Jan 2007–Aug 2007	HBV (85.5), HCV (7.2), both HBV and HCV (4.3)	4 μl/kg	NA
Luo (2010)	Nov 2007–May 2008	NA	0.2ml	NA
Shagdarsuren (2016)	Dec 2007–June 2014	Virus infection (87.7), Liver cirrhosis (87)	0.7ml	22.6 (15–42)
Hsiao (2019)	Dec 2017–Dec 2018	Liver cirrhosis (39.4), fatty liver (10.6)	0.01 mL/kg	22.8 ± 2.4
Kudo (2019)	Jan 2009–Dec 2010	HBV (33), HCV (67)	0.01 ml/ kg	NA
Zhai (2019)	NA	NA	0.12 μL/kg	20.5 ± 1.3
Park (2019)	Oct 2014–Aug 2016	HBV (94.1), HCV (3.8), both HBV/HCV (0.6), Primary biliary liver cirrhosis (0.6), Alcoholic hepatitis (0.2)	0.015 mL/kg	24.1 (22.2–25.6)
Kang (2020)	Feb 2019–Aug 2019	HBV (59), HCV (12), Alcohol (8.5), Other (20)	NA	NA
Kang (2022)	June 2020–July 2021	HBV (70.5), HCV (2.8), Alcohol (8.6), NAFLD (10.5), Other (7.6)	NA	NA
Hwang (2022)	Sept 2013–June 2020	HBV (62.6), HCV (10.6), Alcohol (10.6), Other (16.3)	0.015 mL/kg	NA
Li (2022)	Mar 2020–Oct 2020	HBV (93.2), HCV (2.1), Alcohol (0.3), NAFLD (0.3), Other (4.1)	0.015 ml/kg	NA
Sugimoto (2022)	Mar 2017–Dec 2021	HCV (34.2), Alcohol (27.5), HBV (25.0), non-alcoholic steatohepatitis (11.7), autoimmune hepatitis (1.7)	0.5ml	NA
Huang (2023)	Aug 2021–Feb 2022	HBV (86.4), Cirrhosis 40 (67.8), HBV + cirrhosis (61.1)	0.6-0.8 mL	NA

* Data are expressed as median (range) or mean ± standard deviation. HBV, hepatitis B virus; HCV, hepatitis C virus NA, not available; NAFLD, non-alcoholic fatty liver disease

Supplementary Table 2. Diagnostic accuracy of Sonazoid and Sonovue CEUS

HCC	SEN	SPE	PLR	NLR	DOR	AUC
SNZ	0.75 (0.63–0.84)	0.97 (0.86–0.99)	21.7 (4.9–95.2)	0.26 (0.17–0.40)	82 (15–445)	0.95 (0.93–0.97)
SVE	0.64 (0.51–0.76)	0.98 (0.91–0.99)	26.5 (6.6–106)	0.37 (0.26–0.52)	72 (17–11)	0.97 (0.95–0.98)

SNZ, Sonazoid; SVE, Sonovue; HCC hepatocellular carcinoma; SEN, sensitivity; SPE, specificity; PLR, positive likelihood ratio; NLR, negative likelihood ratio; DOR, diagnostic odds ratio; AUC, area under the curve

Supplementary Table 3. Diagnostic accuracy of HCC, liver metastasis and all liver malignancy

SNZ	SEN	SPE	PLR	NLR	DOR	AUC
HCC	0.92 (0.85–0.96)	0.91 (0.85–0.95)	10.5 (5.9–18.9)	0.09 (0.04–0.17)	121 (41–357.03)	0.96(0.94–0.98)
MT	0.86 (0.76–0.92)	0.99 (0.94–1.00)	59.9 (14.1–255.0)	0.15 (0.09–0.25)	410 (80–2115)	0.90(0.87–0.92)
ALL	0.92 (0.87–0.95)	0.92 (0.83–0.96)	11.4 (5.2–24.9)	0.09 (0.05–0.14)	129 (49–343)	0.94(0.91–0.96)

SNZ, Sonazoid; SVE, Sonovue; HCC, hepatocellular carcinoma; SEN, sensitivity; SPE, specificity PLR, positive likelihood ratio; NLR, negative likelihood ratio; DOR, diagnostic odds ratio; AUC, area under the curve; MT, metastasis.

Supplementary Table 4. Diagnostic accuracy of LI-RADS v2017 and Modified LI-RADS

Author		TP	FP	FN	TN	SEN	SPE
Hwang (2022)	Modified LI-RADS	69	7	8	39	89.6%	84.8%
	LI-RADS v2017	63	7	14	39	81.8%	84.8%
Li (2022)	Modified LI-RADS	245	5	29	25	89.4%	83.3%
	LI-RADS v2017	189	4	85	26	69.0%	86.7%
Sugimoto (2022)	Modified LI-RADS	73	1	35	11	67.6%	91.7%
	CT/MRI LI-RADS v2018	73	0	35	12	67.6%	100.0%
Huang (2023)	Modified LI-RADS	42	0	13	7	76.4%	100.0%
	LI-RADS v2017	41	0	14	7	74.5%	100.0%
Pooled diagnostic performance	Modified LI-RADS	/	/	/	/	88% (84–91)	86% (76–92)
	LI-RADS v2017	/	/	/	/	72% (68–76)	87% (78–93)

TP, true positive; FP, false positive; FN, false negative; TN, true negative; SEN, sensitivity; SPE, specificity; LI-RADS, liver imaging reporting and data system; CT, computed tomography; MRI, magnetic resonance imaging