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CT 联合 MRI 在早期肝癌诊断临床价值分析 *

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摘要 目的：探究 CT 联合 MRI 在早期肝癌诊断中的应用价值。**方法：**选择 2016 年 6 月至 2019 年 6 月于我院接受诊断治疗的 78 例已知或疑似肝癌患者，分别对其实施 CT 及 MRI 检测，以病灶部位病理学检查结果为金标准（50 例确诊为早期肝癌，28 例为良性病变），分别评估 CT、MRI、CT 联合 MRI 对早期肝癌的诊断价值，将确诊为肝癌的 50 例患者按照病灶大小区分为直径≤ 3 cm 组（21 例）和 >3 cm 组（29 例），对比 CT 与 MRI 对不同直径肝癌诊断率。**结果：**（1）检测发现，CT 对早期肝癌诊断一致性为 73.08 %，灵敏度为 72.00 %，特异度为 75.00 %；（2）MRI 对早期肝癌诊断一致性为 82.05 %，灵敏度为 82.00 %，特异度为 82.14 %；（3）CT 联合 MRI 检测对早期肝癌诊断一致性为 93.59 %，灵敏度为 92.00 %，特异度为 96.43 %；（4）对比发现，对直径≤ 3 cm 的早期肝癌患者，MRI 诊断率明显高于 CT（95.24 % vs 76.19 %，P<0.05）。**结论：**CT 及 MRI 对早期肝癌均具有较好的诊断价值，但联合检测明显优于任一单独检测，同时对病灶直径≤ 3 cm 的早期肝癌患者，MRI 诊断准确率更高。

关键词：CT；MRI；早期肝癌；诊断临床价值

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Clinical Value of CT Combined with MRI in the Diagnosis of Early Liver Cancer*

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ABSTRACT Objective: To explore the value of CT combined with MRI in the diagnosis of early liver cancer. **Methods:** A total of 78 patients with known or suspected liver cancer who were diagnosed and treated in our hospital from June 2016 to June 2019 were enrolled in the study. CT and MRI were performed on the patients. The pathological findings of the lesions were based on the gold standard (50 cases of early liver cancer, 28 cases of benign lesions). The diagnostic value of CT, MRI, CT combined with MRI in early liver cancer was evaluated. 50 patients diagnosed as liver cancer were divided into diameter ≤ 3 cm(21 cases) and >3 cm group (29 cases) according to lesion size, comparing the CT and MRI for the diagnosis rate of different diameters. **Results:** (1) The detection showed that the consistency of CT diagnosis of early liver cancer was 73.08 %, the sensitivity was 72.00 %, and the specificity was 75.00 %; (2) The consistency of MRI diagnosis of early liver cancer was 82.05 %, and the sensitivity was 82.00 %. The degree of diagnosis was 82.14 %; (3) CT combined with MRI showed a consistency of diagnosis of early liver cancer was 93.59 %, the sensitivity was 92.00 %, and the specificity was 96.43 %; (4) Contrast found that the diagnosis rate of MRI was obvious for early liver cancer patients with diameter ≤ 3 cm was significantly higher than that of CT (95.24% vs 76.19%, P<0.05). **Conclusion:** CT and MRI have good diagnostic value for early liver cancer, but the combined detection is better than any single detection. At the same time, the accuracy of MRI diagnosis is higher for early stage liver cancer patients with lesion diameter ≤ 3 cm.

Key words: CT; MRI; Early liver cancer; Clinical value of diagnosis

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前言

肝癌是指发生于肝脏部位的癌症，其发病率位居恶性肿瘤第 5 位，致死人数在肿瘤中位居第三位[1,2]。我国的一项调研指出，国内现有肝癌例数约 35 万，占同期癌症发病例数的 11.6 %[3,4]。肝癌患者常见临床症状包括低热、腹泻、黄疸等，晚期肝癌患者可因肝功能衰竭出现腹水、上消化道出血、贫血等症，严重影响其正常生活[5]。早期的诊断及治疗是改善肝癌患者预后的重要手段，也是延长患者生存期的重要基础，随着近些年影像学技术得不断发展，CT、MRI 等检测手段在肝癌早期诊断中的应用频率越来越高，相比于病理穿刺检测或造影检查，影像学检查具有可重复性高、简便快捷等优点，因而临床普及率不断提升，但是单独应用 CT、MRI 诊断肝癌，效果不甚明显，其原因可能是肝癌患者的供血多数由肝动脉完成，CT 扫描时对动脉期进

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行相应的强化，但却降低了门脉期的强度，而 CT 诊断的准确性依赖于病灶强化程度和肝实质间的差异性，从而降低了对疾病的诊断率[6,7]。MRI 诊断的灵敏度较 CT 高，对病灶直径 <1 cm 的检出率高于 CT。因此，可以将 CT 和 MRI 联合扫描，二者互补，有助于患者疾病的诊断。本文作者通过研究发现，CT 及 MRI 对早期肝癌均具有较好的诊断价值，但联合检测明显优于任一单独检测，同时对病灶直径≤ 3 cm 的早期肝癌患者，MRI 诊断准确率更高，现详述如下。

1 资料与方法

1.1 一般资料

选择 2016 年 6 月至 2019 年 6 月于我院接受诊断治疗的 78 例已知或疑似肝癌患者，其中男性 50 例，女性 28 例，年龄 39-63 岁，平均年龄（46.23± 2.66）岁。

纳入标准[8]：（1）甲胎蛋白≥ 400 μg/L，持续 1 个月以上或甲胎蛋白≥ 200 μg/L，持续 2 个月以上；（2）超声检测确定肝脏存在占位性病变；（3）病历资料齐全；（4）意识清晰能够配合进行调研；（5）调研经医院伦理学会批准实施；（6）患者及其家属对本次调研过程、方法、原理清楚明白并签署知情同意书。

排除标准：（1）合并精神疾患者；（2）妊娠期、活动期肝炎、生殖腺胚胎癌；（3）预计生存期≤ 3 个月者；（4）合并其他恶性肿瘤者；（5）对 MRI、CT 诊断有禁忌症的患者。

1.2 方法

78 例患者全部先进行 CT 检测，使用机器为通用电气制造的 64 排 Close PET 扫描仪，设定参数为层厚 3-5 mm，层距 3-5 mm，准直器 16 mm× 1.5 mm，螺距 0.569，重建矩阵为 512× 512，检测得到的图像采用后处理技术进行图像重组，记录结果，注意检测前患者应服用 1000 mL 水，保持胃部充盈；对患者实施平扫后再进行 CT 增强检查，于患者肘静脉处放置留置针，平扫后即实施增强扫描，动脉期为 24 s，门脉期为 66 s，延时扫描 2-3 min，造影剂注射速率约为 3.0 mL/s。而后对所有患者行 MRI 检测，检测仪器为通用电气制造的 Close 3.0 T Signa HDxt 核磁共振机，设定层厚为 3-5 mm，层距 0.3-0.6 mm，矩阵为 126× 512，采用轴位、冠状位、矢状位多方位扫描，检测前嘱患者禁食 6 h，检测时患者取仰卧位，扫描范围定位为肝脏全部，常规扫描后使用 0.1-0.2 mmol/kg 的剂量对所有患者进行增强扫描[9]，记录检查结果。

1.3 观察指标及评测标准

CT 及 MRI 检测结果分别由两名放射科医师进行解读，结合影像表现进行判断，如果两名医师意见有分歧则寻求第三位医师的帮助，确保意见最终一致，而后分别分析 CT 及 MRI 对早期肝癌的诊断价值[10,11]；最后依据病理检查结果将早期肝癌患者按照病灶直径大小区分为两组，并对比不同分组肝癌患者 CT 及 MRI 检测准确率。二者联合诊断判断标准，只有全部检测均为阳性者才判为阳性，凡有一项检测结果为阴性即判为阴性。

1.4 统计学方法

使用 SPSS19.0 对采集的数据实施分析，计数资料以率（%）的形式表示，采用卡方检验。灵敏度 = 真阳性 /（真阳性 + 假阴性）；特异度 = 真阴性 /（假阳性 + 真阴性）；一致性 =（真阳性 + 真阴性）/ 总例数。

2 结果

2.1 CT 对早期肝癌诊断价值分析

经评估分析发现，CT 对早期肝癌诊断一致性为 73.08 %，灵敏度为 72.00 %，特异度为 75.00 %，具体数据如表 1 所示。

表 1 CT 对早期肝癌诊断价值分析

Table 1 Analysis of CT diagnosis value of early liver cancer

CT detection	Pathologically positive（n=50）	Pathologically negative（n=28）
Positive（n=43）	36	7
Negative（n=35）	14	21

2.2 MRI 对早期肝癌诊断价值分析

经评估发现，MRI 对早期肝癌诊断一致性为 82.05 %，灵敏度为 82.00 %，特异度为 82.14 %，具体数据如表 2 所示。

表 2 MRI 对早期肝癌诊断价值分析

Table 2 Analysis of the value of MRI in the diagnosis of early liver cancer

MRI detection	Pathologically positive（n=50）	Pathologically negative（n=28）
Positive（n=49）	41	5
Negative（n=29）	9	23

2.3 联合检测对早期肝癌诊断价值分析

经检测发现，联合检测对早期肝癌诊断一致性为 93.59 %，灵敏度为 92.00 %，特异度为 96.43 %，具体数据如表 3 所示。

表 3 联合检测对早期肝癌诊断价值分析

Table 3 Analysis of the diagnostic value of combined detection for early liver cancer

Joint detection	Pathologically positive（n=50）	Pathologically negative（n=28）
Positive（n=47）	46	1
Negative（n=31）	4	27

2.4 不同检测方式一致性、灵敏度及特异度对比

经对比发现，联合检测对早期肝癌一致性、灵敏性和特异度均明显高于单独检测（P<0.05），具体数据如表 4 所示。

表 4 不同检测方式一致性、灵敏度及特异度对比（%）

Table 4 Comparison of consistency, sensitivity and specificity of different detection methods

Detection method	Consistency	Sensitivity	Specificity
CT	73.08	72.00	75.00
MRI	82.05	82.00	82.14
Joint detection	96.15°	96.00°	96.43°

Note: ° P<0.05 compared to CT and MRI.

2.5 CT 及 MRI 对病灶不同直径早期肝癌诊断率比较

经评估对比发现，对病灶直径≤ 3 cm 的早期肝癌患者，CT 诊断准确率为 76.19 %，MRI 为 95.24 %，两组对比差异具有统计学意义（P<0.05），对于病灶直径 >3 cm 的早期肝癌患者，CT 诊断准确率为 68.97 %，MRI 为 72.41 %，两组对比差异不具有统计学意义（P>0.05），具体数据如表 5 所示。

表 5 CT 及 MRI 对病灶不同直径早期肝癌诊断率比较

Table 5 Comparison of CT and MRI in the diagnosis of early liver cancer with different diameters

Detection method	Diameter		Total
	≤ 3 cm（n=21）	>3 cm（n=29）	
CT	16（76.19）	20（68.97）	36
MRI	20（95.24）	21（72.41）	41
x^2	3.625	1.035	-
P	<0.05	>0.05	-

3 讨论

肝癌是威胁人类健康的重要因素，也是常见的恶性肿瘤之一，统计数据显示，2013 年全球新发肝癌病例多达 79 万例，为恶性肿瘤新增病例的第 6 位，肝癌的发病趋势与地区存在一定关联[12,13]，我国作为发展中国家，肝癌的发病率一直居高不下，2012 年检测资料显示，我国肝癌发病率约为 27.04/10 万，且该发病率正呈现逐年递增趋势[14,15]，另有学者的研究指出，肝癌发病率会随着年龄的递增呈现上升趋势，随着我国人口老龄化趋势的显现，可以预见的是，肝癌会成为影响我国经济和社会发展的重要因素[16,17]。临床研究显示，80 %以上的肝癌是由肝炎肝硬化导致的，原发性肝癌患者预后较差，中晚期肝癌患者即使得到治疗平均生存时间也较短，因而对早期肝癌患者的干预就显得尤为重要[18,19]。目前肝癌早期诊断方式较为多样，如通过对患者 AFP 水平的检测实施评估，但临床实践指出，约有 30 %的肝癌患者其 AFP 水平呈阴性状态，且生化指标个体差异较大，易受各类因素影响，因而在肝癌诊断中具有一定局限性[20,21]。当前对肝癌的评估诊断一般采用影像学进行，CT、超声、MRI 等都是临床上较为常用的肝癌检查手段，B 超具有价格低廉、操作简单的优点，但诊断准确率较低，特别是直径 <2 cm 病灶的评估，误差较大，因而应用较少[22,23]。

近些年，CT、MRI 技术发展较快，多层螺旋 CT 技术的发展使检测分辨率有了明显提升，且便于对患者实施线性随访，追踪病灶生长情况，此外多种重建技术的加入也使肝脏微小病变的可视性成为可能[24,25]。研究通过评估个体肝脏 CT 征象中包膜是否完整、是否出现侵袭性及强化类型等指标，能够一定程度上判断个体是否出现肝癌[26]；学者通过对 36 例原发性肝癌患者实施 CT 诊断发现，CT 确诊 34 例，诊断正确率为 94.4 %，通过检查发现 CT 平扫及增强扫描能够较为直观的反应原发性肝癌的特征，在肝癌的诊断和鉴别中具有较高的应用价值[27]。MRI 在肝癌诊断中应用则更为广泛，相比于 CT 检测，MRI 具有无辐射、分辨率更高等优点[28]，有研究等通过对 30 例肝硬化史患者实施 MRI 平扫、动态增强及弥散加权成像检测发现，30 例肝硬化患者 MRI 征象有明显差异，早期小肝癌患者 T1W1 为等或稍低信号，T2W1 为高信号或部分稍高信号，DWI 为高信号，提示 MRI 对早期小肝癌具有较好的诊断和鉴别价值，能够对肝硬化再生结节、退变结节和早期小肝癌进行评估[29,30]。

本文作者通过设立实验组与对照组的方式，就 CT 联合 MRI 在早期肝癌诊断中的临床应用价值进行了探究，结果显示，CT 对早期肝癌诊断一致性为 73.08%，灵敏度为 72.00 %，特异度为 75.00 %，MRI 对早期肝癌诊断一致性为 82.05 %，灵敏度为 82.00 %，特异度为 82.14%，联合检测对早期肝癌诊断一致性为 96.15 %，灵敏度为 96.00 %，特异度为 96.43%，对比发现联合检测对早期肝癌检测一致性、灵敏度和特异度均优于单独检测。本文作者分析认为，CT 对肝癌检测能够不受肿瘤供血影响，但其分层扫描时易在断层间遗漏微小病灶，同时 CT 仅能在一个层面上实施动态扫描，且需要延迟扫描，一定程度上影响了诊断的准确性，同时，CT 扫描时对动脉期进行相应的强化，但却降低了门脉期的强度，而 CT 诊断的准确性依赖于病灶强化程度和肝实质间的差异性，从而降低了对疾病的诊断

率[31]。MRI 则是根据信号的变化来区分良恶性病变的,同时还能够在横断位、冠状位、矢状位多位置实施扫描,能够将病灶的脂肪变性、坏死结果完全显示出来[32],因而文中 MRI 对早期肝癌诊断要优于 CT。本文中结果指出,联合检测的优势较单独检测更为明显, 因 CT 可以通过密度差异分辨病灶良恶性,MRI 能够通过信号差异分辨病灶良恶性,联合检测降低了漏诊和误诊的几率,因而诊断效果更好。最后本研究还显示,MRI 对≤ 3 cm 病灶诊断准确率高于 >3 cm 病灶, 分析其原因为 MRI 分辨率更高,对微小病变的显示更为清晰所导致的。

总而言之, CT 及 MRI 对早期肝癌均具有较好的诊断价值,但联合检测明显优于任一单独检测,同时对病灶直径≤ 3 cm 的早期肝癌患者,MRI 诊断准确率更高。

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