

MSCT对主胰管型胰腺导管内乳头状黏液瘤良恶性鉴别的进展

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Distinguishing benign from malignant main duct intraductal papillary mucinous neoplasms of the pancreas by multislice helical computed tomography

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Abstract

Main duct intraductal papillary mucinous neoplasms (MD-IPMNs) of the pancreas are located in the dilated main pancreatic duct and associated with mucin overproduction. They may have a high degree of malignancy and lack specific clinical manifestations. With advantages of thin slice thickness, high resolution, multi-phase dynamic scan and multiple post-processing techniques, multislice helical computed tomography (MSCT) can accurately diagnose and differentiate malignant from benign MD-IPMNs. This paper will review the current advances in differentiating malignant from benign MD-IPMNs by MSCT.

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Key Words: Pancreas; Intraductal papillary mucinous neoplasms; Cystic neoplasm; Spiral computed tomography

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摘要

主胰管型胰腺导管内乳头状黏液瘤(main duct intraductal papillary mucinous neoplasms, MD-IPMNs)是一种位于扩张的主胰管内、伴大量黏液分泌的肿瘤,该病恶变程度高

■背景资料

胰腺导管内乳头状黏液瘤(intraductal papillary mucinous neoplasms, IPMNs)由日本学者Ohhashi于1982年首次报道,以胰腺导管内上皮乳头状异常增生并产生大量黏液为特征,伴有分支胰管的囊状扩张或主胰管局限性或弥漫性扩张。IPMNs有一定的恶变倾向,主胰管型(main duct, MD)恶变率高达61.6%。通过影像学检查对其行早期良恶性鉴别有重要意义。

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■ 研发前沿

如何诊断MD-IPMNs并鉴别其良恶性仍是研究的热点和重点. 到目前为止通过多种影像学检查方法可较为准确的评估该病的良恶性. 对该病多个影像学特征量化评估以期达到准确的分级诊断是今后面临的挑战.

且缺乏临床特异性. 多层螺旋CT(multislice helical computed tomography, MSCT)具有层厚薄、分辨率高、多期动态扫描及多种后处理技术等优势, 可以对该病进行较为准确的诊断和良恶性鉴别, 从而指导临床制定治疗方案、评估患者预后. 本文就国内外近年来关于MSCT对MD-IPMNs的诊断及良恶性鉴别的研究现状作一综述.

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关键词: 胰腺; 导管内乳头状瘤; 囊性肿瘤; 螺旋计算机断层扫描

核心提示: 主胰管扩张、壁结节、胰腺实质萎缩、胰腺实质内钙化和肝内外胆管扩张等特征对鉴别主胰管型胰腺导管内乳头状黏液瘤良、恶性起着关键的作用, 多层螺旋CT可通过其技术上的优势清晰地显示以上特征有无及病变程度, 从而指导临床制定合理的治疗方案及预后评估.

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0 引言

胰腺导管内乳头状黏液瘤(intraductal papillary mucinous neoplasms, IPMNs)是一种少见的胰腺外分泌肿瘤, 以胰腺导管内上皮乳头状异常增生并产生大量黏液为特征, 伴有分支胰管的囊状扩张或主胰管局限性或弥漫性扩张^[1-4]. IPMNs占全部胰腺外分泌肿瘤的1%-3%, 其发病率呈逐年上升趋势^[5,6]. IPMNs按累及部位分为主胰管型(main duct, MD)、分支胰管型(branch duct, BD)及混合型(mixed, MT); 按细胞的异型性分为低、中、高级别异型增生和浸润癌, 并将低、中级别异型增生定为良性, 将高级别异型增生、浸润癌定为恶性^[1-3]. 综合国内外文献报道, 主胰管型胰腺导管内乳头状黏液瘤(main duct intraductal papillary mucinous neoplasms, MD-IPMNs)的平均恶变率高达61.6%(36%-100%)^[7]. 由于临床上还存在对此病认识不足且该病缺乏临床特异性, 当患者能够被确诊时多数已发展为恶性^[8]. 由此可见, 对MD-IPMNs早期诊断和良恶性鉴别可以指导临床制定合理的治疗方案以

及对预后进行评估^[9-11]. 临床对IPMNs的诊断方法较多, 而MSCT具有无层间距、层厚薄、多期动态扫描等优势, 可获得胰腺的高分辨率薄层图像, 并可通过多种三维后处理技术清楚地显示MD-IPMNs病变的部位、特征以及与主胰管的关系, 从而成为IPMNs最常用的检查方法. 本文就MSCT对IPMNs良恶性鉴别诊断作一综述.

1 MSCT对MD-IPMNs诊断的相关技术

MSCT目前已成为胰腺疾病首选的检查方法, 检查前30 min需口服清水作为阴性对比剂, 常规行平扫与增强扫描, 一般采用静脉推注对比剂, 3.5 mL/s、用量1.25 mL/kg; 近年来提倡团注三期扫描, 即动脉期(注射对比剂后20 s)、胰腺期(35-42 s)和肝脏期(75-80 s), 对比剂的注射流率和注射量直接影响胰腺实质和胰周血管的增强效果, 加大注射流率和注射剂量可明显提高增强效果^[12-16]. 在对MD-IPMNs诊断及良恶性鉴别方面, 常规横轴位的高分辨率薄层图像可清楚地观察胰腺导管的扩张、主胰管和囊性病变更关系、壁结节等细微改变^[17]. 动脉期胰周动脉强化最为显著, 可清楚地显示胰周动脉的走行以及血管是否受侵. 胰腺期正常的胰腺组织呈明显均一强化, CT值约为125 HU^[12], 可与IPMNs的囊性病变更形成鲜明对比, 从而清楚地显示病变大小、形态、囊内分隔及囊壁结节. 肝脏期主要用于评价肿瘤的血供特点及肝脏的病变, 有利于IPMNs和其他囊性疾病的鉴别.

MSCT不仅可得到高分辨横断面图像, 还可通过多种后处理技术对原始图像进行三维后处理, 从而为诊断提供更多有价值的参考信息. 在MD-IPMNs的诊断上常用的三维后处理技术包括多平面重组(multiplanar reconstruction, MPR)、曲面重组(curved planar reconstruction, CRP)和最大密度投影(maximum intensive projection, MIP)三种技术. MPR对胰腺囊性病灶的定位和空间关系判断有重要意义, 是横断扫描的重要补充. CRP可以将迂曲走形的主胰管重建成一副拉直展开的图像, 直观地显示MD-IPMNs患者主胰管的全程, 进而评价其扩张程度及形态^[18,19]. MIP可以很好地显示血管与非血管间的差别, 薄层MIP技术有利于显示IPMNs病变周围的细小血管, 对恶性

■ 相关报道

近年来关于MD-IPMNs的研究多被本综述引用在内, 这类研究主要目的是评价该病主胰管扩张程度、壁结节是否强化、胰腺实质萎缩、胰腺实质内钙化及肝内外胆管扩张等影像学表现, 从而准确地对该病进行良恶性鉴别.

IPMNs术前评估有着重要的意义^[18].

2 MSCT对MD-IPMNs诊断及良恶性鉴别

MD-IPMNs的主要影像学表现: (1)主胰管(main pancreatic duct, MPD)弥漫性或节段性扩张并除外其他引起的梗阻, 诊断标准为胰头处MPD直径 >5 mm, 胰体处 >4 mm, 胰尾处 >3 mm; 此点为必要诊断条件^[1,2]; (2)主胰管内存在壁结节, MSCT增强扫描部分壁结节强化^[20,21]; (3)胰腺实质萎缩, 标准为胰头 <20 mm、胰体或胰尾 <10 mm^[22]; (4)少数MD-IPMNs患者胰管内结石或胰腺实质内钙化; (5)MPD内大量黏液积聚堵塞十二指肠乳头或肿物进入Vater壶腹还会造成肝内外胆管扩张, 扩张标准为肝内胆管分支直径 >5 mm, 肝外胆管直径 >8 mm^[2,23,24]. 以上特征的存在与否及病变程度都对MD-IPMNs的良恶性鉴别起着关键的作用.

2012年IPMNs国际共识指南^[7]中指出: MPD扩张至5-9 mm视为可疑恶性, MPD直径 ≥ 10 mm时提示高度恶性. 当MDP直径 ≥ 10 mm时, 可作为单独评判MD-IPMN恶性的指标, 需进行外科手术切除; 若MPD直径5-9 mm, 需联合其他指征共同判断, 若仅表现为主胰管单纯性扩张至5-9 mm, MD-IPMNs更倾向于良性^[1,2,7]. Kang等^[25]分析了375例IPMNs患者影像学特征, 将7 mm作为提示高度恶性的临界值; MPD直径 >7 mm为浸润癌的敏感性和特异性分别为53.8%和80.7%. Barron等^[26]提出, MPD直径在3-5 mm时, 仍有恶变的可能, 所以影像学检查中发现早期胰管扩张时, 建议短期随访.

壁结节的存在被认为是MD-IPMNs与恶性相关的另一重要因素^[20,21,27]. 包括结节大小、存在部位以及是否强化. MSCT检查中发现主胰管内存在壁结节, 提示MD-IPMNs可疑恶性^[2,7,27]. Tawada等^[27]指出, 将壁结节直径7.5 mm作为临界值判断MD-IPMNs良恶性的敏感性和特异性分别为66.7%和83.3%. 增强扫描壁结节若强化, 提示MD-IPMNs高度恶性, 此点也可作为评判MD-IPMNs恶性的独立指标^[1,7]. 而壁结节存在于主胰管的位置, 与MD-IPMNs的良恶性没有明显的相关性^[1,27].

MD-IPMNs通常伴有胰腺实质萎缩, 检查中若发现主胰管截断伴上游胰腺实质萎缩, 则提示可疑恶性^[7,28]. MD-IPMNs胰管结石及胰腺

实质内钙化少见, 若病灶内出现钙化, 则倾向于恶性^[24]. 但出现钙化MD-IPMNs又与慢性胰腺炎难以鉴别, Kim等^[29]指出: MPD扩张不伴局部狭窄、壶腹部膨胀、壁结节、葡萄串状囊性改变和囊内结节更倾向于IPMNs的诊断. 病灶周围若出现肿大淋巴结或血管侵犯, 亦支持恶性的诊断. 肝内外胆管扩张为MD-IPMNs的继发病状, 可作为判断其恶性的独立指标^[1,7,24].

总之, MSCT可通过其技术上的优势评估主胰管形态及扩张程度、壁结节大小及强化情况、胰腺实质的萎缩及肝内外胆管的扩张, 并对病灶内钙化显示清楚, 从而帮助临床早期发现MD-IPMNs并对其良恶性进行鉴别. 但同时MSCT检查也存在技术上的不足, 如碘过敏和放射损伤等.

3 其他影像学检查方法对MD-IPMNs诊断的优势与不足

3.1 磁共振成像 在磁共振成像(magnetic resonance imaging, MRI)检查中T2WI上液体呈高信号, 所以更易于发现囊性病灶, 且MRI有着较高的组织分辨率, 能更好的显示囊腔内容物的特征^[30-33]. 磁共振胰胆管造影(magnetic resonance cholangiopancreatography, MRCP)技术可直观地显示主胰管迂曲扩张的程度、囊性病灶与主胰管关系, 一直以来被认为是诊断IPMNs的金标准^[34-37]. 但随着MSCT技术的提高, 通过对原始薄层图像的三维重建也可以明确病灶与主胰管之间的关系, 可以媲美MRCP^[17,38]. 此外, MRI在显示钙化方面不如MSCT, 安装心脏起搏器和金属内固定等患者亦无法行MRI检查.

3.2 内镜逆行胰胆管造影 IPMNs患者行内镜逆行胰胆管造影(endoscopic retrograde cholangiopancreatography, ERCP)检查时, 可见黏液从扩张的“鱼嘴状”十二指肠乳头溢出, 该表现对IPMNs的诊断具有特异性; ERCP还可对胰管刷检行脱落细胞检查、收集胰液行细胞学及生物化学诊断, 提高了IPMNs良恶性鉴别的准确性^[2,39]. 但是, 就诊断而言, ERCP为有创检查, 易引发碘过敏、急性胰腺炎、胰漏等并发症, 并对操作者技术要求较高, 已不作为首选诊断方法^[40,41]. 在治疗方面, ERCP可清除黏液栓, 置入胰管支架或同时置入胆管支架, 可缓解黄疸、腹痛、胰腺炎等临床症状; 不适合外科手

■ 创新盘点

本文介绍了多层螺旋CT对MD-IPMNs诊断的相关技术, 详细叙述了多种影像学特征与该病良恶性的关系, 并比较了其他影像学检查手段较多层螺旋CT的优势与不足, 从而指导临床制定合理的诊疗方案.

应用要点

多层螺旋CT具有无层间距、层厚薄、多期动态扫描等优势,可获得胰腺的高分辨率薄层图像,再联合多种三维后处理技术可评估MD-IPMNs主胰管形态及扩张程度、壁结节大小及强化情况、胰腺实质的萎缩及肝内外胆管的扩张,并对病灶内钙化显示清楚,从而帮助临床早期发现MD-IPMNs并对其良恶性进行鉴别。

术的患者可考虑ERCP治疗^[39-42]。

3.3 超声内镜 超声内镜(endoscopic ultrasound, EUS)可接近囊性病变进行检查,能够较好的显示分隔、壁结节等囊腔内结构以及血流情况^[43-46]。Tawada等^[27]认为, EUS发现壁结节的概率高于CT和MRI。超声内镜引导下细针穿刺活检(endoscopic ultrasound-guided fine-needle aspiration biopsy, EUS-FNA)相关技术是目前胰腺囊性病变领域研究的热点; EUS-FNA可获得标本用于IPMNs的细胞学或组织学诊断,并可抽吸囊液,通过检查其性状、淀粉酶水平、肿瘤标志物和其他分子标志物辅助IPMNs的诊断及良恶性的辨别^[2,47]。

3.4 正电子发射断层成像 目前研究支持¹⁸F-FDG正电子发射断层成像(positron emission computed tomography, PET-CT)对IPMNs良恶性鉴别有一定的价值^[2,48-50]。恶性IPMNs组织代谢活性增高,对¹⁸F-FDG摄取率高于正常组织,通过测定其葡萄糖标准摄取值(standard uptake value, SUV)来判断IPMNs的良恶性;当SUVmax>2.5时,判断为恶性^[12,50]。且PET-CT为全身扫描,对显示远处转移灶有一定优势。但PET-CT不能清楚地显示病灶的解剖位置及周围血管情况。

4 结论

MD-IPMNs发病率低、恶变程度高且缺乏临床特异性,目前临床上对此病还存在认识不足。根据现有文献研究发现大部分影像学手段基本未对该病的良恶性进行分级诊断,从而很难为下一步制定准确的治疗方案提供有价值的参考信息。MSCT具有层厚薄、分辨率高、多期动态扫描及多种后处理技术等优势,可以对MD-IPMNs进行较为准确的诊断和良恶性鉴别。因此,今后影像学检查还需不断完善和规范影像学检查技术、联合多种MSCT后处理技术对该病多个影像学特征指标进行量化评估,以期达到准确的分级诊断目的,从而为临床治疗方案的准确制定和患者的预后评估提供重要的参考价值。

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名词解释

主胰管型胰腺导管内乳头状黏液瘤(MD-IPMNs): 起源于主胰管上皮细胞并呈乳头状异常增生的肿瘤, 该肿瘤分泌大量黏液导致主胰管弥漫性或节段性扩张, 并有较高的恶变倾向。

同行评价

MD-IPMNs临床少见, 多层螺旋CT检查方法对该病诊断具有重要的参考价值。该综述多角度论述了多层螺旋CT对MD-IPMNs诊断的相关技术、诊断要点及良恶性鉴别, 可帮助临床进一步认识此病。

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