

## 胰腺实性假乳头状瘤的CT诊断要点

林少春, 黄斯韵, 黄 丽, 方壮念, 林锦江, 李雪华  
(中山大学附属第一医院放射科, 广东 广州 510080)

**摘要:**【目的】探讨CT对胰腺实性假乳头状瘤(SPTP)的诊断和鉴别诊断价值。【方法】回顾性分析20例经手术病理证实的SPTP患者CT表现,总结其CT特征。【结果】SPTP有实性及囊性结构,具有包膜,与正常胰腺组织分界清晰,常不伴有胰管扩张;CT增强扫描动脉期肿瘤实质部分轻度强化,门静脉期及延迟期呈渐进强化。【结论】SPTP的CT表现具有相对特异性,掌握其CT影像特点有助于对该病的早期诊断及鉴别诊断。

**关键词:**胰腺实性假乳头状瘤;CT诊断

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### Diagnostic Essentials of Solid Pseudopapillary Tumor of Pancreas on CT

LIN Shao-chun, HUANG Si-yun, HUANG Li, FANG Zhuang-nian, LIN Jin-jiang, LI Xue-hua  
(Department of Radiology, The First Affiliated Hospital of Sun Yat-Sen University, Guangzhou 510080, China)  
Corresponding to: LI Xue-hua, E-mail: lixuehua803@163.com

**Abstract:** 【Objective】 To discuss the CT diagnosis and differential diagnosis of solid pseudopapillary tumor of the pancreas (SPTP). 【Methods】 The CT findings of 20 patients with SPTP proved by surgically pathology were retrospectively analyzed and summarized. 【Results】 SPTP were composed of solid and cystic components with surrounding capsule resulting to clear demarcation between tumor and normal pancreas without dilation of pancreatic duct. The tumor parenchyma was slightly hyperenhancement on arterial phase and showed gradual enhancement on venous and delayed phase. 【Conclusions】 The CT findings of SPTP have relative specificity and can contribute to early diagnosis and differential diagnosis of SPTP.

**Key words:** solid pseudopapillary tumor of the pancreas; CT diagnosis

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胰腺实性假乳头状瘤(solid pseudopapillary tumor of the pancreas, SPTP)是一种罕见的良性至低度恶性的胰腺肿瘤,由Frantz于1959年首次报道,2004年WHO肿瘤组织学分类将其统一命名为实性假乳头状瘤<sup>[1-4]</sup>。胰腺实性假乳头状瘤好发于女性,临床发病率低且缺乏特异性的临床症状及实验室检查,术前容易误诊,但其手术切除率高且早期治疗的预后效果较好,因此术前的准确诊断与鉴别诊断十分重要。本文收集20例经手术切除及病理证实的胰腺实性假乳头状瘤,对其临床资料及CT表现进行回顾性分析,结合文献总结其影像学特征,旨在进一步提高加深对胰腺实性假

乳头状瘤的影像认识和提高其术前诊断准确性。

### 1 材料与方 法

#### 1.1 一般资料

选取经手术病理证实的胰腺实性假乳头状瘤患者20例,所有患者手术前均行上腹部多层螺旋CT平扫及三期动态增强扫描。本组20例患者均为女性,年龄19-47岁,平均年龄(33.58±3.16)岁,其中14(70%)例临床表现为腹部包块或腹部不适就诊,另外6(30%)例为体检偶然发现胰腺或腹腔肿物就诊,无明显临床症状。本组20例患者的相

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作者简介:林少春,硕士,主管技师, E-mail: yjdlsc2000@126.com;李雪华,通信作者,硕士,主治医师, E-mail: lixuehua803@163.com

关血清肿瘤标志物[糖抗原 125(CA125)、糖抗原 199(CA199)、癌胚抗原(CEA)、甲胎蛋白(AFP)]、血(尿)淀粉酶、肝功能、肾功能等实验室检测均未见异常。20例患者均接受手术治疗。

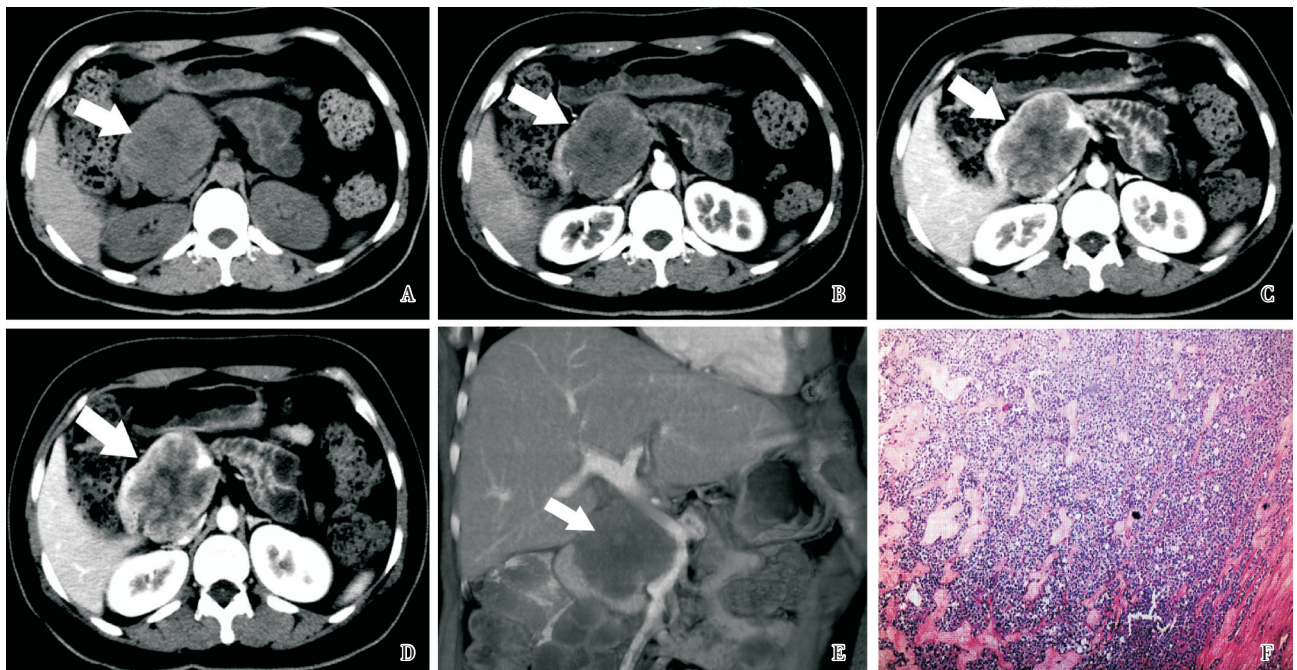
## 1.2 检查方法

采用日本TOSHIBA AQUILION 64排螺旋CT扫描仪,扫描参数:管电压120kV、管电流为自动毫安秒、层厚1 mm、层间距0.8 mm,矩阵512×512。所有患者均常规CT平扫后行三期动态增强扫描。增强扫描选用300 mg/mL碘普罗胺为对比剂,总剂量为80 mL,以高压注射器于肘静脉行静脉推注,注射速率控制在3.0 mL/s,将增强动脉期扫描时间设定为用药后35 s,门静脉期扫描时间设定为用药后65 s,延迟期扫描时间设定为用药后180 s。扫描范围自膈顶至肾下极。对CT平扫及三期动态增强扫描图像进行冠状位及矢状位三维重建后处理(层厚5 mm,层间距5 mm),观察肿瘤发生的部位、肿瘤大小、形态、CT密度及增强表现、肿瘤包膜及周围情况等CT表现。

## 2 结果

### 2.1 CT表现

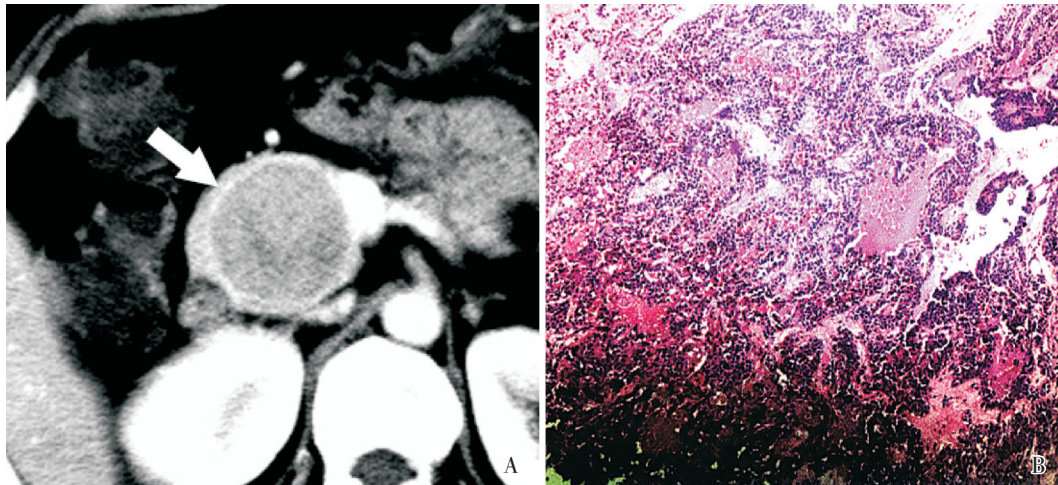
①肿瘤部位:本组20例患者肿瘤均为单发,其中7(35%)例肿瘤发生于胰头,4(20%)例发生于胰体,9(45%)例发生于胰尾。②肿瘤大小、形态:本组20例患者中,肿瘤最大直径约为4-13 cm,平均为8.6 cm;本组20例患者肿瘤中,10例(50%)为圆形,6例(30%)为不规则分叶形,4例(20%)为椭圆形。③肿瘤CT密度及增强表现:本组20例患者的肿瘤均为囊实性混合结构,CT平扫显示实性成分呈等或稍低密度,肿瘤囊性成分的密度低于实性成分;5例肿瘤出现斑点状、斑片状钙化灶,其中2例肿瘤钙化灶发生于实性成分内,3例肿瘤钙化灶位于包膜。CT增强扫描显示肿瘤不均匀强化,其中实性成分在动脉期呈轻度强化,门静脉期及延迟期呈渐进性强化,而囊性部分未见强化,肿瘤CT增强扫描各期强化程度始终低于



(A) The tumor showed a slightly lower density, with an irregular and lower density region. The enhanced scanning including arterial phase (B), venous phase (C) and delay phase (D) showed that the tumor was asymmetrical and progressive enhancement, and the intensity of the tumor was always lower than that of the adjacent pancreas. The coronary angiogram (E) showed the tumor pushing the portal vein, but the pancreatic duct and the intrahepatic bile ducts did not expand and (F) showed the pathology turn out to be solid pseudopapillary tumor of pancreas. The tumor tissues are composed by consistent solid nests tumor cells, and the fake papillary structure could be observed (hematoxylin-eosin staining, ×200).

图1 胰头实性假乳头状瘤(女性,31岁)的CT图像及病理结果

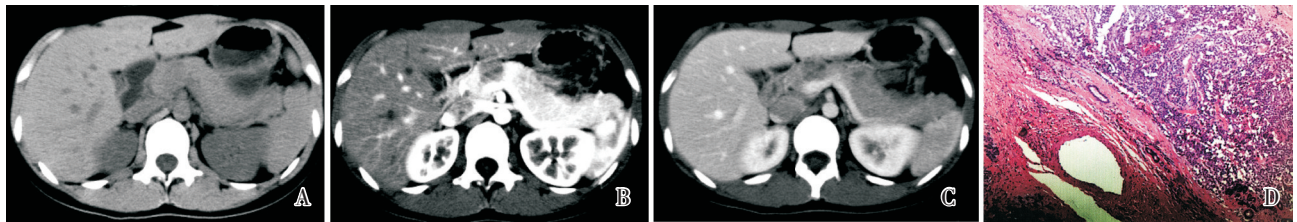
Fig.1 A CT scan of the head of the pancreas with pseudopapilloma and pathology (female, 31 years old)



(A) Enhancement scan of venous phase showed the tumor envelope completed and enhanced and (B) showed the pathology turn out to be solid pseudopapillary tumor of pancreas. The tumor tissues are composed by consistent solid nests tumor cells, and the fake papillary structure could be observed (hematoxylin-eosin staining,  $\times 200$ ).

图2 胰头实性假乳头状瘤(女性,26岁)的CT图像及病理结果

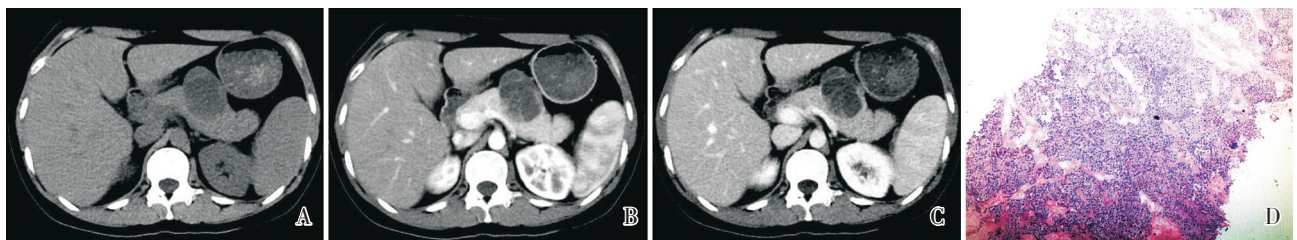
Fig.2 CT images of the pseudopapilloma of the pancreas and pathology (female, 26 years old)



(A) A tumor form the head of pancreas showed lower density, with an irregular region. The enhanced scanning including arterial phase (B), venous phase (C) showed that the tumor was slightly heterogeneous enhancement, and the intensity of the tumor was always lower than that of the adjacent pancreas and (D) showed the pathology turn out to be solid pseudopapillary tumor of pancreas. The tumor tissues are composed by consistent solid nests tumor cells, and the fake papillary structure could be observed (hematoxylin-eosin staining,  $\times 200$ ).

图3 胰腺实性假乳头状瘤(女性,34岁)的CT图像及病理结果

Fig.3 A CT scan of the pancreas with pseudopapilloma and pathology (female, 34 years old)



(A) A tumor form the body of pancreas showed lower density, with a smooth region, some of the tumor going forward. The enhanced scanning including arterial phase (B), venous phase (C) showed that the tumor was slightly heterogeneous enhancement, and the intensity of the tumor was always lower than that of the adjacent pancreas (D) showed the pathology turn out to be solid pseudopapillary tumor of pancreas. Photomicrographs of the mass demonstrate solid and pseudopapillary tumor nests invading through the tumor capsule into the pancreas parenchyma on the low power view (hematoxylin-eosin staining,  $\times 40$ ).

图4 胰体实性假乳头状瘤(女性,26岁)的CT图像及病理结果

Fig.4 A CT scan of the body of pancreas with pseudopapilloma and pathology (female, 26 years old)

邻近胰腺实质(图1)。**④肿瘤包膜:**本组20例患者均具有包膜结构,其中16例包膜完整,4例包膜不完整,增强扫描包膜延迟强化(图2)。**⑤肿瘤与胰腺关系及周围情况:**本组20例患者肿瘤与正常胰腺组织均分界清晰;肿瘤均呈宽基底与胰腺相连,肿瘤与胰腺组织间呈现抱球征改变(图3);胰腺导管可见受压、移位,但所有患者胰腺导管和胆道系统均未见扩张(图4)。本组20例患者中,肿瘤远侧胰腺实质均未见萎缩,未见胰腺炎征象;本组20例患者肿瘤周围脂肪间隙清晰,周围器官未见侵犯;胰周、腹主动脉旁未见淋巴结肿大;均未见腹水征象。

## 2.2 手术病理结果

本组20例患者肿瘤均行手术切除,病理诊断均为胰腺实性假乳头状瘤。其中,16例包膜完整的肿块为良性病变,4例包膜不完整的肿块为低度恶性病变。

## 3 讨论

胰腺实性假乳头状瘤(SPTP)是一种罕见的良性至低度恶性的胰腺肿瘤,约占所有胰腺肿瘤的0.9%<sup>[5-6]</sup>。胰腺实性假乳头状瘤好发于年轻女性,平均发病年龄约为23-30岁,男女比例约为1:10<sup>[7-9]</sup>,本组20例患者均为女性。肉眼观察肿物多为巨大圆形或椭圆形的囊实性肿物,平均直径8~10 cm,边界清楚,有包膜,切面分叶状,呈灰白、灰黄或灰红色,可见出血、坏死及囊性变。镜下肿瘤细胞主要呈实性片状及假乳头状排列,瘤细胞大小较为一致,呈圆形或卵圆形,胞质丰富,微嗜酸性或透明状,细胞核多居中,可见核沟或切迹,核仁不明显,核分裂相罕见。可伴有不同程度的硬化透明变性纤维间质,且有时伴有钙化,可见泡沫样胞质的肿瘤细胞或由异物巨细胞环绕的胆固醇裂隙结晶,偶见怪异核。目前,SPTP的诊断主要依靠其病理形态学特征。SPTP的组织起源及发病机制一直未明。有关组织起源的文献报道结果也不尽相同,有人认为该肿瘤可能来源于胰腺导管上皮或腺泡上皮<sup>[10]</sup>。胰腺实性假乳头状瘤通常经手术切除预后较好,很少复发,完全不同于胰腺癌<sup>[10-11]</sup>;然而该肿瘤发病率低,临床表现不典型,再加上对其影像特征认识不足,仍具有较高的误诊率。本研究对20例SPTP患者的CT表现进行

总结,旨在为SPTP的早期诊断提供依据,以提高本病的诊断准确率。

SPTP可发生于胰腺各部位,偶有报道肿瘤发生于腹膜后而与胰腺无关,甚至发生于肝脏。本组20例患者肿瘤均发生于胰腺,以胰尾和胰头部多见。SPTP常呈实性及囊性混合结构,实性部分位于肿瘤边缘,增强扫描动脉期呈不均匀轻度强化,门脉期及平衡期呈渐进性、不均匀强化,但其强化程度始终低于临近胰腺实质,低密度的囊性部分则多位于肿瘤中央,增强后不强化。文献报道SPTP偶为完全实性或囊性,后者无分隔,因此若肿瘤内缺乏囊变亦不能排除是SPTP的可能性<sup>[12]</sup>。有关文献<sup>[13]</sup>认为,SPTP实性成分含有较多胶原纤维,且假乳头状结构之间血窦形成,因此CT增强出现渐进性强化表现。本组20例患者术前CT及手术病理所见肿瘤均呈囊实性混合结构,CT增强扫描实性部分动脉期呈轻度强化,门静脉期及延迟扫描呈渐进性强化,囊性部分不强化,与文献报道相符<sup>[12]</sup>。

SPTP多呈圆形、椭圆形或不规则分叶形,并且具有肿瘤包膜结构,包膜主要由纤维组织组成,因其CT密度与肿瘤密度相近导致CT平扫包膜显示不佳,增强扫描包膜多数可显示,包膜强化特点多样,可呈明显强化或与肿瘤相同程度强化或稍低强化,因存在包膜组织所以肿瘤与正常胰腺之间分界清晰。据文献报道包膜完整与否是判断其良性和低度恶性的重要依据之一,当包膜不完整时可提示肿瘤具备侵袭性或恶性<sup>[13]</sup>,因此在发现肿瘤包膜不完整的CT征象后,应仔细观察肿瘤是否侵犯周围组织,有无肿大淋巴结及远处转移,本组20例患者中,16例CT显示肿瘤包膜完整,4例CT显示包膜不完整,增强后均延迟强化,但无邻近组织受侵犯,未见淋巴结肿大及远处转移,上述征象经手术病理证实4例包膜不完整的肿块为低度恶性病变。本组20例患者均未见胰腺导管及胆道系统的扩张。Lee等学者<sup>[9]</sup>报道了8例经手术病理证实恶性SPTP,有4例肿瘤引起胰管扩张,推测胰管扩张可能与SPTP恶性生物学行为相关。SPTP需要与胰腺其他囊性或囊实性肿瘤或肿瘤样病变鉴别诊断。**①浆液性囊腺瘤:**好发于老年女性,绝大部分无临床症状,少数仅有腹痛、体质量减轻、腹部包块等症状、体征;浆液性囊腺瘤可发生于胰腺各部,以胰头偏多;肿瘤表现为边界清

晰的由多个小囊组成而呈蜂窝状的圆形肿块,内见中央瘢痕,增强后不均匀强化;中央瘢痕可见钙化<sup>[14-15]</sup>。②黏液性囊腺肿瘤:多见于中老年女性,患者可无症状,或由肿瘤占位效应引起腹痛、腹胀等不适;CEA、CA199可升高;肿瘤多见于胰体及胰尾,呈单囊或多房囊性肿块,囊壁或间隔可见钙化;囊壁及其实性结节、间隔、乳头状突起强化。③胰腺癌囊变:胰腺癌是最常见的胰腺恶性肿瘤,好发中老年人,以男性患者多见;常见症状为黄疸、腹痛、体质量减轻等;CEA、CA199增高;胰腺癌好发于胰头,为乏血供肿瘤,增强扫描各期均呈相对低强化,肿瘤无包膜结构,和胰腺分界不清,常伴胰管或胆总管扩张。④无功能性胰岛细胞瘤:无功能性胰岛细胞瘤体积较大,临床症状也多不典型,可发生于胰腺各部位;肿瘤内可出现囊变,但实性部分为富血供病变,CT增强扫描时其动脉期和门静脉期的强化程度高于胰腺实质,同时病变在动脉期的强化程度也高于门静脉期。⑤胰腺假性囊肿:往往有胰腺炎病史,可以发生在胰腺各部位,囊壁薄、均匀,囊内无实性成分、分隔及附壁结节,增强扫描囊壁无明显强化。

综上所述,胰腺实性假乳头状瘤的CT表现具有一定特性,对其CT表现总结分析,并结合其临床资料,有助于对SPTP的诊断及鉴别诊断。

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