ISSN 2307-8960 (online)

World Journal of *Clinical Cases*

World J Clin Cases 2022 February 26; 10(6): 1754-2052

Published by Baishideng Publishing Group Inc

World Journal of Clinical Cases

Contents

Thrice Monthly Volume 10 Number 6 February 26, 2022

OPINION REVIEW

MINIREVIEWS

ORIGINAL ARTICLE

Retrospective Cohort Study

Retrospective Study

Observational Study

Prospective Study

World Journal of Clinical Cases

Thrice Monthly Volume 10 Number 6 February 26, 2022

Contents

World Journal of Clinical Cases

Thrice Monthly Volume 10 Number 6 February 26, 2022

Contents

Contents

Thrice Monthly Volume 10 Number 6 February 26, 2022

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Navdeep Singh, MBBS, MS, Assistant Professor, Division of Transplantation, Department of Surgery, The Ohio State University, Columbus, OH 43210, United States. navdeep.singh@osumc.edu

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (*WJCC*, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The *WJCC* is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, Scopus, PubMed, and PubMed Central. The 2021 Edition of Journal Citation Reports® cites the 2020 impact factor (IF) for *WJCC* as 1.337; IF without journal self cites: 1.301; 5-year IF: 1.742; Journal Citation Indicator: 0.33; Ranking: 119 among 169 journals in medicine, general and internal; and Quartile category: Q3. The *WJCC*'s CiteScore for 2020 is 0.8 and Scopus CiteScore rank 2020: General Medicine is 493/793.

RESPONSIBLE EDITORS FOR THIS ISSUE

NAME OF JOURNAL
World Journal of Clinical Cases

ISSN
ISSN 2307-8960 (online)

LAUNCH DATE
April 16, 2013

FREQUENCY
Thrice Monthly

PUBLICATION DATE
February 26, 2022

World Journal of Clinical Cases

Submit a Manuscript: https://www.f6publishing.com

World J Clin Cases 2022 February 26; 10(6): 1973-1980

DOI: 10.12998/wjcc.v10.i6.1973

ISSN 2307-8960 (online)

CASE REPORT

Cavernous hemangioma of an intrapancreatic accessory spleen mimicking a pancreatic tumor: A case report

Jia-Yan Huang, Rui Yang, Jia-Wu Li, Qiang Lu, Yan Luo

Specialty type: Gastroenterology and hepatology

Provenance and peer review: Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B, B
Grade C (Good): 0
Grade D (Fair): 0
Grade E (Poor): 0

P-Reviewer: Khuroo S, Zharikov YO

Received: August 25, 2021
Peer-review started: August 25, 2021
First decision: October 27, 2021
Revised: November 2, 2021
Accepted: January 11, 2022
Article in press: January 11, 2022
Published online: February 26, 2022

Jia-Yan Huang, Rui Yang, Jia-Wu Li, Qiang Lu, Yan Luo, Department of Medical Ultrasound, West China Hospital of Sichuan University, Chengdu 610041, Sichuan Province, China

Corresponding author: Yan Luo, MD, Full Professor, Department of Medical Ultrasound, West China Hospital of Sichuan University, No. 37 Guo Xue Xiang, Chengdu 610041, Sichuan Province, China. luoyan15957@126.com

Abstract

BACKGROUND

Intrapancreatic accessory spleen (IPAS) is an uncommon condition, with the majority of cases presenting as solid lesions. Thus, this condition is frequently misdiagnosed as pancreatic solid neoplasm. Moreover, splenic cavernous hemangioma is a rare disorder, whereas lesions with a cystic appearance arising from IPAS have not been reported.

CASE SUMMARY

Herein, we present a case involving a 32-year-old male who had a complex cystic lesion in the tail of the pancreas revealed by conventional ultrasound. The lesion was misdiagnosed as a pancreatic cystadenoma because of its confusing anatomic location, as well as due to its peripheral nodular and internal septal enhancement patterns on contrast-enhanced ultrasound. After multidisciplinary discussion, the patient finally underwent laparoscopic pancreatic body and tail resections. Postoperative pathology demonstrated the lesion to be a cavernous hemangioma arising from the IPAS.

CONCLUSION

Cavernous hemangioma in the intrapancreatic accessory spleen may mimic pancreatic cystadenoma, which is a condition with the potential to be malignant. Imaging follow-ups or surgical interventions may be helpful for the exclusion of malignant risks in complicated cystic lesions, especially those with parietal and septal enhancements.

Key Words: Intrapancreatic accessary spleen; Pancreas; Diagnosis; Contrast enhanced ultrasound; Case report

Core Tip: Intrapancreatic accessory spleen (IPAS) is an uncommon condition; however, overlapping imaging manifestations of IPAS and pancreatic tumors may lead to unnecessary surgery. Cystic splenic cavernous hemangioma is a rare disorder, whereas lesions with a cystic appearance arising from IPAS have not been reported. Herein, we report a cavernous hemangioma in the IPAS that was misdiagnosed as being a pancreatic cystadenoma *via* contrast-enhanced modalities. The diagnosis of cystic lesions in IPAS can be challenging. Imaging follow-ups or surgical interventions may be needed for the possible malignancy risk of a complicated cystic lesion, especially those with parietal and septal enhancements.

Citation: Huang JY, Yang R, Li JW, Lu Q, Luo Y. Cavernous hemangioma of an intrapancreatic accessory spleen mimicking a pancreatic tumor: A case report. *World J Clin Cases* 2022; 10(6): 1973-1980
URL: https://www.wjgnet.com/2307-8960/full/v10/i6/1973.htm
DOI: https://dx.doi.org/10.12998/wjcc.v10.i6.1973

INTRODUCTION

An intrapancreatic accessory spleen (IPAS) is an uncommon condition, with a prevalence ranging from 1.1%-3.4% in individuals[1,2]. An IPAS is typically asymptomatic and has an innocuous nature. However, overlapping imaging manifestations of an IPAS and primary pancreatic tumors may lead to unnecessary surgery[3]. A typical IPAS demonstrates a solid lesion with a round, oval or triangular shape, which is similar to the spleen on both precontrast and contrast-enhanced images. Therefore, this disorder is frequently confused with adenocarcinomas, neuroendocrine tumors or other solid pancreatic entities. When compared with a solid IPAS, cystic lesions arising from an IPAS are rare but necessitate a differential diagnosis with pancreatic cystic neoplasms, especially those possessing the potential to be malignant. Moreover, when considering the high likelihood of false-negative results, biopsy of cystic pancreatic lesions is seldom performed, and surgery is ultimately performed in most patients.

Herein, we report such a case involving a patient who underwent laparoscopic pancreatic body and tail resections because of an indeterminate pancreatic cystic lesion. Postoperative pathology confirmed this lesion as being a cavernous hemangioma arising from an IPAS. Furthermore, the clinical and imaging characteristics of IPAS and pancreatic cystic neoplasms (according to the previous literature) were also reviewed (Table 1).

CASE PRESENTATION

Chief complaints

A 32-year-old male was referred to our hospital because of a suspicious lesion neighboring the hilum of the spleen, which was detected *via* conventional grayscale ultrasound in a local community hospital. The patient did not complain of obvious discomfort.

History of past illness

The patient had a history of chronic hepatitis B.

Physical examination

The patient did not complain of abdominal pain or any remarkable discomfort during the physical examination.

Laboratory examinations

In addition to a slightly increased albumin-globulin ratio (2.96) and glutamine transpeptidase level (63 IU/L), no abnormal laboratory test results, including those of related tumor markers, were found.

Imaging examinations

The patient underwent contrast-enhanced ultrasound (CEUS) in our department. Before the CEUS, a baseline ultrasound illustrated a complicated cystic nodule measuring 2 cm, with a well-defined border in the tail of the pancreas without salient blood supply on color Doppler ultrasound (Figure 1). For the CEUS, a bolus injection of the US contrast agent SonoVue (Bracco, Milan, Italy) was administered through the antecubital vein, followed by a flush of 5 mL of 0.9% normal saline. The lesion demonstrated peripheral nodular and internal septal isoenhancement in the arterial phase, followed by slight hyperenhancement of the enhanced area in the venous phase. The predominant cystic area of the lesion did not show any enhancement in either phase. According to the aforementioned enhancing pattern in the CEUS, the lesion was suspected to be a pancreatic cystadenoma *via* CEUS (Figure 1).

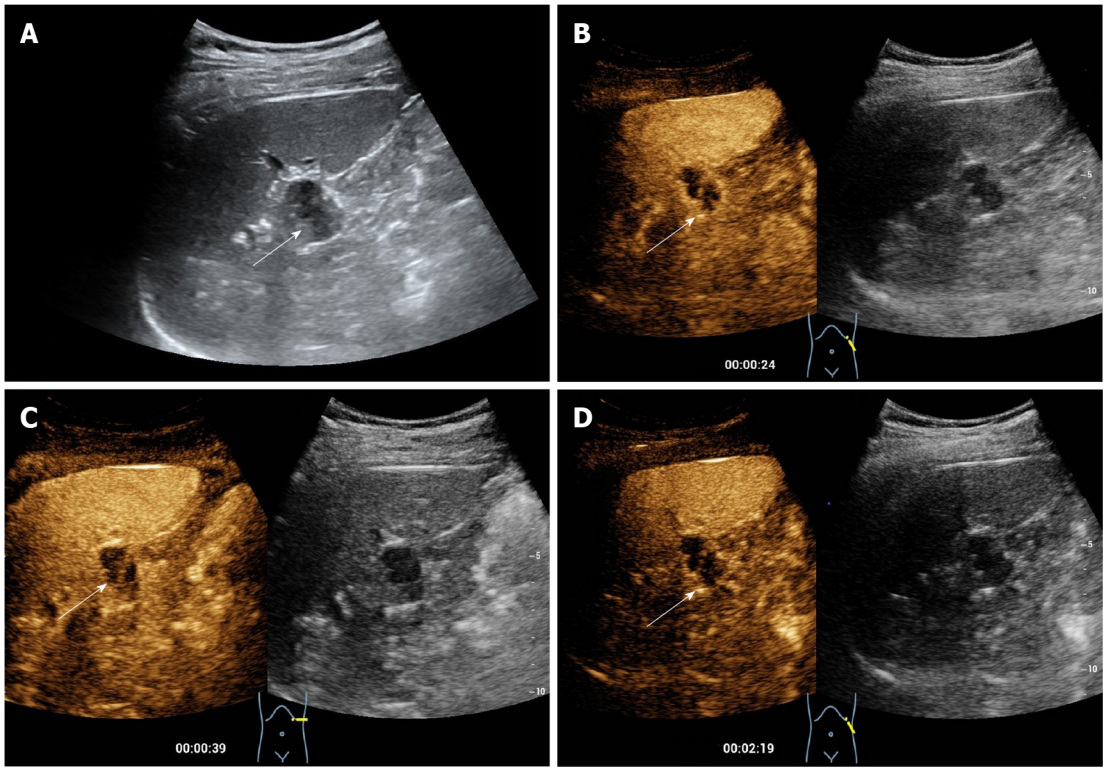

Figure 1 Pre-contrast and contrast enhanced ultrasound of the pancreatic lesion. A: A complicated cystic lesion (arrow) measuring 2 cm was detected in the tail of the pancreas by grayscale ultrasound in a 32-year-old male patient; B: Peripheral nodular and internal septal isoenhancement (arrow) in the arterial phase was shown on contrast-enhanced ultrasound; C and D: The enhanced part of the lesion exhibited mild hyperenhancement in the early venous phase without definite washout in the late venous phase. The cystic component did not show any enhancement through either phase.

Contrast-enhanced computed tomography (CECT) was performed to further examine the lesion. On the unenhanced CT, a nodule with a diameter of 2.2 cm and slightly low density was identified in the tail of the pancreas. Septa were observed, whereas no significant enhancement was presented within the lesion (Figure 2). The nodule was diagnosed as being a pancreatic cystic lesion *via* the CECT. Moreover, no salient abnormalities were found in the liver, kidney, spleen or biliary system *via* imaging evaluations.

FINAL DIAGNOSIS

The lesion was misdiagnosed as pancreatic cystadenoma by CEUS and CECT.

TREATMENT

After multidisciplinary discussion and communication with the patient, as well as with his family, laparoscopic pancreatic body and tail resections were performed.

OUTCOME AND FOLLOW-UP

Postoperative pathology demonstrated that the lesion was a splenic cavernous hemangioma in the pancreas (Figure 3). After an uneventful postoperative course, the patient was discharged on postoperative day 5. No obvious abnormality was found in a follow-up abdominal US one month later (Timeline of diagnosis and treatment of the pancreatic lesion is presented in Supplementary Figure 1).

DISCUSSION

Intrapancreatic accessory spleen is a rare congenital condition, compared with an accessory spleen

Table 1 Clinical and radiological characteristics of intrapancreatic accessory spleen and pancreatic cystic neoplasms

		Pancreatic cystic neoplasms				
	IPAS	**Pseudocyst**	**SCA**	**MCA**	**SPN**	**IPMN**
Clinical features[1,17,18]						
Age (mean: year)	40 to 65	At any age	60	40 to 50	30	65
Gender	Slightly higher in males	Males > females	Older females	Females > males	Young females	Males > females
Incidence	11%–17% of AS	5%-40% after pancreatitis	16% of PCN	29% of PCN	2% and 3% of PCN	20%-50% of PCN
Benign/malignant	Benign	Benign	Benign	Low malignant potential	Low malignant potential	Malignant potential
Anatomic location	Tail > head/body	1/3 near the head	Head > body/tail	Body/tail > head	Body/tail > head	Arising from the pancreatic ducts
Size (mean: cm)	≤ 2	Depending on the duration of disease	5-8	7-10	6	0.8
Potential mimickers	NET and PDAC	MCA	MCA and IPMN	MCA: IPMN and MCAC	MCA: IPMN and MCAC	SCA: MCA and MCAC
Radiological diagnosis						
Ultrasound[7,17,19-21]						
Baseline US	Hypoechoic lesion with well-defined border	Transonic: net separation: irregular internal outline: fluid-containing lesion	Small transonic lesions with thin septa inside	Unilocular or septated cystic lesions with thickened walls and well-defined margins	Encapsulated mixed mass (solid and cystic)	Lesions developed inside the main/branch pancreatic ducts: parietal nodules and septa can be seen in the cysts
Doppler US	Blood supply may from the splenic vessels	No obvious blood flow encompass or inside the lesion	No obvious blood flow encompass or inside the lesion	No obvious blood flow encompass or inside the lesion	Blood flow signal around the tumor	No obvious blood flow encompass or inside the lesion
CEUS[19,21]	Inhomogeneous hyperenhancement followed by homogeneous hyperenhancement	Iso- or hyperenhancement of the cystic wall: without definite washout	Isoenhancement of the cystic walls and septa: without definite washout	Iso-enhancement of the cystic walls and nodules: without definite washout	Rim hyperenhancement in the capsule:centripetal hyperenhancement followed by mild washout in the solid part: no enhancement in the cystic components	Iso-enhancement in the cystic wall and nodules
CECT[18,21-23]	Inhomogeneous hyperenhancement followed by homogeneous hyperenhancement	Round or oval fluid collection with a thin: hardly perceptible wall or enhancing thick wall	Well-defined: polycystic or honeycomb lesions showing enhancing internal septa and cyst walls	Well-circumscribed round/oval macrocystic lesions with enhancement of the walls	Hypo-attenuating on pancreatic phase followed by homogeneous gradual enhancement to iso-attenuating on the hepatic venous phase	Dilated main/side pancreatic ducts: nodules arising from the ducts manifest hyperattenuating at contrast-enhanced CT
CEMRI[22,24]						
T1-W	Inhomogeneous hypointensity	Blood products and necrotic components commonly present intrins-	High intensity fluid in the cysts	Homogeneous low t1 signal intensity	Low signal intensity: SPN with hemorrhage presents t1 hyperintensity	Loss of t1 signal and delayed uptake of contrast material

		ically increased t1 signal intensity: the thickend wall shows a rim hyperintensity				
T2-W	Homogeneous hyperintensity	The hyperintensity in tissues surrounding the pseudocyst represents the inflammation on t2 fat-suppressed images	Honeycomb pattern (microcysts) or macrocysts manifest signal intensity of simple fluid	Homogeneous high t2 signal intensity	Predominantly solid show mildly increased t2 signal intensity: cystic-dominated present t2 signal intensity closer to that of fluid	Papillary excrescences or nodules in the walls of the dilated ducts present hypointense on t2-weighted images
Management	Usually require no treatment	Serial imaging follow-up	Follow-up or resection depending on the size of the tumor	Surgical resection	Surgical resection	Recommended to be surgically resected

AS: Accessory spleen; IPAS: Intrapancreatic accessory spleen; PCN: Pancreatic cystic neoplasm; SCA: Serous cystadenoma; MCA: Mucinous cystadenoma; SPN: Solid pseudopapillary neoplasm; IPMN: Intraductal papillary mucinous neoplasm; MCAC: Mucinous cystadenocarcinoma; US: Ultrasound; CEUS: Contrast enhanced ultrasound; CECT: Contrast enhanced computerized tomography; CEMRI: Contrast enhanced magnetic resonance imaging; T1-W: T1-weighted; T2-W: T2-weighted.

located at the hilum of the spleen[2,4]. Due to its innocuous nature and infrequent induction of symptoms, IPAS seldom requires therapy unless they cause symptoms as a result of the compression, torsion or spontaneous rupture of a hemorrhage[5,6].

Typical IPAS presents as a solid lesion and demonstrates similar manifestations to the spleen on both precontrast and contrast-enhanced ultrasound[7,8]. However, cystic neoplasm development in IPASs is rare. Sporadic cases of epidermoid cysts in IPASs (known as ECIPASs) have been reported[6,9-11]. The walls of ECIPASs are irregularly thickened and thicker than those of mucinous cystic neoplasms (MCNs) and intraductal papillary mucinous neoplasms (IPMNs)[9]. Moreover, the evident contrast enhancement of the partially thickened wall of ECIPAS (which is similar to that of the spleen) makes it possible to distinguish ECIPASs from MCNs or IPMNs.

The differential diagnosis was even more considerable in our case. The cystic cavernous hemangioma in the IPAS (known as CHIPAS) presented peripheral nodular and internal septal enhancements, which are frequently observed in pancreatic mucinous cystadenomas (MCAs). Furthermore, the majority of MCAs are located in the tail of the pancreas, where IPASs are also frequently discovered[12]. Therefore, this increases the difficulty of an accurate diagnosis. However, the ancillary features of a fibrous pseudocapsule or calcified contents inside of the MCNs have also been reported[13]. Another pancreatic cystic lesion that warrants vigilant discrimination from the CHIPAS is an IPMN. An IPMN in the main duct possesses a high risk of malignancy, with 38%–68% being confirmed as high-grade dysplasia or pancreatic cancer in postoperative specimens[14]. Fortunately, CEUS is sensitive in being demonstrated in the dilated main pancreatic duct and the polycystic lesion connecting to the pancreatic duct or in developing within the duct in cases of IPMNs[15].

To our knowledge, there is only one case report of solid cavernous hemangioma detected in both the spleen and the IPAS[16]. In this case, the CHIPAS was accurately identified by the investigators because of a similar enhancement pattern of the pancreatic lesion and the splenic lesions on CECT and contrast-enhanced magnetic resonance imaging. An accurate diagnosis was more difficult, as in our patient, because there was no lesion in the spleen for comparison. Moreover, a splenic hemangioma typically shows a hyperechoic and solid appearance. The atypical cystic appearance in our patient increased the

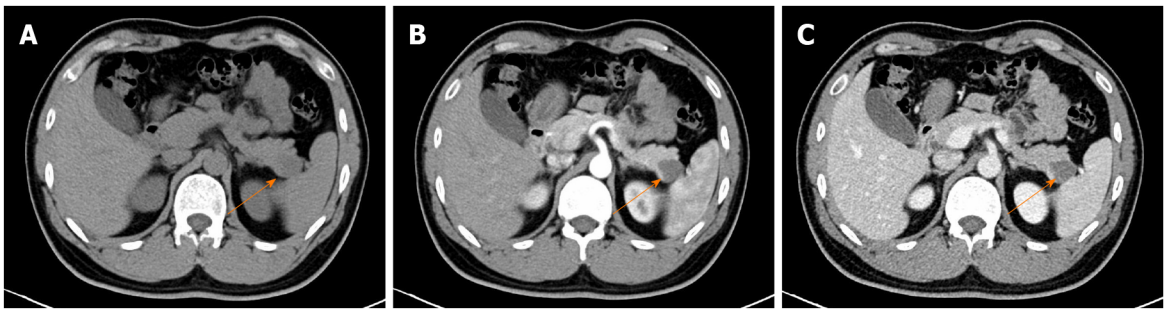

Figure 2 Pre-operative computed tomography scan of the pancreatic lesion. A: A slightly low-density nodule measuring 2.2 cm (arrow) was found in the tail of the pancreas on unenhanced computed tomography (CT); B and C: Septa were faintly visible whereas no salient enhancement was presented within the lesion (arrows) in either the arterial or the venous phases on axial contrast-enhanced CT.

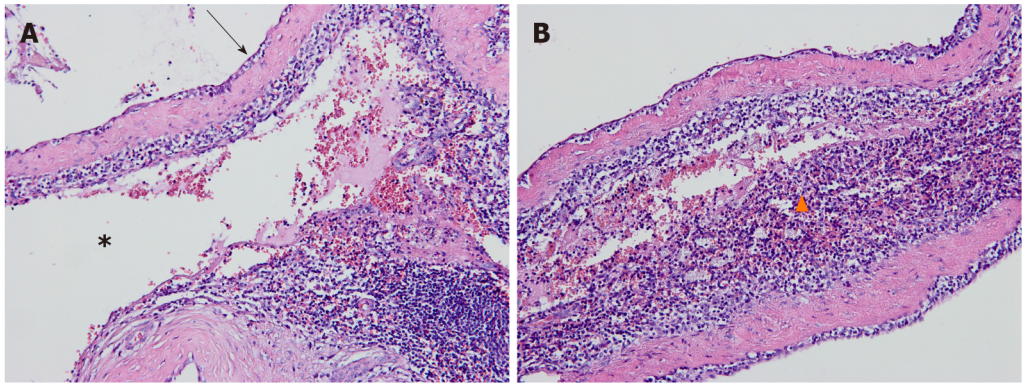

Figure 3 Hematoxylin-eosin staining of the cavernous hemangioma arising from the intrapancreatic accessory spleen. A: Large dilated vascular spaces (asterisk) separated by fibrous septa and endothelial cells (arrows) lining on the surface of the vascular spaces were observed in the intermediate-power view (original magnification, 200×); B: A high-powered photomicrograph (original magnification, 400×) illustrated splenic tissues (triangles) adjacent to the vascular spaces.

difficulty of making an accurate diagnosis.

Herein, we presented on an extremely rare case of a cystic cavernous hemangioma arising from an IPAS. Contrast-enhanced ultrasound is sensitive in demonstrating the enhancements of the septa and the parietal nodule. However, an accurate diagnosis of cystic cavernous hemangioma arising from an IPAS *via* imaging tools is challenging. Imaging follow-ups or surgical interventions may be needed, due to the possible malignancy risk of a complicated cystic lesion with parietal and septal enhancements.

CONCLUSION

Cavernous hemangioma in the intrapancreatic accessory spleen may mimic pancreatic cystadenoma, which is a condition with the potential for malignancy. Imaging follow-ups or surgical interventions may be helpful for the exclusion of malignant risks in complicated cystic lesions, especially those with parietal and septal enhancements.

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to the patient and his family.

FOOTNOTES

Author contributions: Luo Y performed the contrast-enhanced ultrasound examination for the patient and proposed writing it up as a case report; Huang JY collected the clinical information of the patient, reviewed the literature and contributed to manuscript drafting; Yang R provided the pathological data and helped with creating the figures; Li JW contributed to revising the grammar of the manuscript; Luo Y and Lu Q were responsible for the revision of the

manuscript for important intellectual content; all of the authors issued final approval for this version of the manuscript to be submitted.

Supported by the National Natural Science Foundation of China, No. 81571697.

Informed consent statement: Informed consent was obtained from the patient for the publication of any potentially identifiable images or data included in this article.

Conflict-of-interest statement: The authors declare that they have no conflicts of interest.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Country/Territory of origin: China

ORCID number: Jia-Yan Huang 0000-0002-1918-2874; Rui Yang 0000-0002-7733-0636; Jia-Wu Li 0000-0003-0844-5883; Qiang Lu 0000-0002-4057-1997; Yan Luo 0000-0003-2985-1768.

S-Editor: Zhang H
L-Editor: A
P-Editor: Zhang H

REFERENCES

1 **Li BQ**, Xu XQ, Guo JC. Intrapancreatic accessory spleen: a diagnostic dilemma. *HPB (Oxford)* 2018; **20**: 1004-1011 [PMID: 29843985 DOI: 10.1016/j.hpb.2018.04.004]
2 **Halpert B**, Gyorkey F. Lesions observed in accessory spleens of 311 patients. *Am J Clin Pathol* 1959; **32**: 165-168 [PMID: 13670140 DOI: 10.1093/ajcp/32.2.165]
3 **Sica GT**, Reed MF. Case 27: intrapancreatic accessory spleen. *Radiology* 2000; **217**: 134-137 [PMID: 11012435 DOI: 10.1148/radiology.217.1.r00oc30134]
4 **Jang KM**, Kim SH, Lee SJ, Park MJ, Lee MH, Choi D. Differentiation of an intrapancreatic accessory spleen from a small (<3-cm) solid pancreatic tumor: value of diffusion-weighted MR imaging. *Radiology* 2013; **266**: 159-167 [PMID: 23093681 DOI: 10.1148/radiol.12112765]
5 **Obuchi T**, Takagane A, Sato K, Yonezawa H, Funato O, Kobayashi M. Single-incision laparoscopic excision of symptomatic accessory spleen in the pelvis: An initial report. *J Minim Access Surg* 2017; **13**: 321-322 [PMID: 28872102 DOI: 10.4103/0972-9941.199212]
6 **Davidson ED**, Campbell WG, Hersh T. Epidermoid splenic cyst occurring in an intrapancreatic accessory spleen. *Dig Dis Sci* 1980; **25**: 964-967 [PMID: 7449592 DOI: 10.1007/BF01308048]
7 **Kim SH**, Lee JM, Han JK, Lee JY, Kim KW, Cho KC, Choi BI. Intrapancreatic accessory spleen: findings on MR Imaging, CT, US and scintigraphy, and the pathologic analysis. *Korean J Radiol* 2008; **9**: 162-174 [PMID: 18385564 DOI: 10.3348/kjr.2008.9.2.162]
8 **Kim SH**, Lee JM, Lee JY, Han JK, Choi BI. Contrast-enhanced sonography of intrapancreatic accessory spleen in six patients. *AJR Am J Roentgenol* 2007; **188**: 422-428 [PMID: 17242251 DOI: 10.2214/AJR.05.1252]
9 **Hwang HS**, Lee SS, Kim SC, Seo DW, Kim J. Intrapancreatic accessory spleen: clinicopathologic analysis of 12 cases. *Pancreas* 2011; **40**: 956-965 [PMID: 21562442 DOI: 10.1097/MPA.0b013e318216815b]
10 **Yamanishi H**, Kumagi T, Yokota T, Koizumi M, Azemoto N, Watanabe J, Mizuno Y, Sugita A, Abe M, Ikeda Y, Matsuura B, Hiasa Y, Onji M. Epithelial cyst arising in an intrapancreatic accessory spleen: a diagnostic dilemma. *Intern Med* 2011; **50**: 1947-1952 [PMID: 21921374 DOI: 10.2169/internalmedicine.50.5340]
11 **Kato T**, Matsuo Y, Ueda G, Aoyama Y, Omi K, Hayashi Y, Imafuji H, Saito K, Tsuboi K, Morimoto M, Ogawa R, Takahashi H, Kato H, Yoshida M, Naitoh I, Hayashi K, Takahashi S, Takiguchi S. Epithelial cyst arising in an intrapancreatic accessory spleen: a case report of robotic surgery and review of minimally invasive treatment. *BMC Surg* 2020; **20**: 263 [PMID: 33129283 DOI: 10.1186/s12893-020-00927-0]
12 **Crippa S**, Salvia R, Warshaw AL, Domínguez I, Bassi C, Falconi M, Thayer SP, Zamboni G, Lauwers GY, Mino-Kenudson M, Capelli P, Pederzoli P, Castillo CF. Mucinous cystic neoplasm of the pancreas is not an aggressive entity: lessons from 163 resected patients. *Ann Surg* 2008; **247**: 571-579 [PMID: 18362619 DOI: 10.1097/SLA.0b013e31811f4449]
13 **De Robertis R**, D'Onofrio M, Crosara S, Dal Corso F, Barbi E, Canestrini S, Mucelli RP. Contrast-enhanced ultrasound of pancreatic tumours. *Australas J Ultrasound Med* 2014; **17**: 96-109 [PMID: 28191218 DOI: 10.1002/j.2205-0140.2014.tb00032.x]
14 **Stark A**, Donahue TR, Reber HA, Hines OJ. Pancreatic Cyst Disease: A Review. *JAMA* 2016; **315**: 1882-1893 [PMID: 27139061 DOI: 10.1001/jama.2016.4690]

15 **Wang Y**, Wang Y, Fan Z, Shan J, Yan K. The Value of Contrast-Enhanced Ultrasound Classification in Diagnosis of Pancreatic Cystic Lesions. *Biomed Res Int* 2019; **2019**: 5698140 [PMID: 31737668 DOI: 10.1155/2019/5698140]

16 **Makino I**, Tajima H, Kitagawa H, Nakagawara H, Ohta T. A rare case of hemangiomatosis of the spleen and intrapancreatic accessory spleen. *Abdom Imaging* 2014; **39**: 1169-1174 [PMID: 24811762 DOI: 10.1007/s00261-014-0149-2]

17 **Choi JY**, Kim MJ, Lee JY, Lim JS, Chung JJ, Kim KW, Yoo HS. Typical and atypical manifestations of serous cystadenoma of the pancreas: imaging findings with pathologic correlation. *AJR Am J Roentgenol* 2009; **193**: 136-142 [PMID: 19542405 DOI: 10.2214/AJR.08.1309]

18 **Garcea G**, Ong SL, Rajesh A, Neal CP, Pollard CA, Berry DP, Dennison AR. Cystic lesions of the pancreas. A diagnostic and management dilemma. *Pancreatology* 2008; **8**: 236-251 [PMID: 18497542 DOI: 10.1159/000134279]

19 **Vasile TA**, Socaciu M, Stan Iuga R, Seicean A, Iancu C, al Hajjar N, Zaharie T, Badea R. Added value of intravenous contrast-enhanced ultrasound for characterization of cystic pancreatic masses: a prospective study on 37 patients. *Med Ultrason* 2012; **14**: 108-114 [PMID: 22675710]

20 **Misra AP**, Misra R, Kumar A. Giant cavernous haemangioma of the wandering spleen. *Indian J Surg* 2013; **75**: 54-55 [PMID: 24426387 DOI: 10.1007/s12262-012-0546-0]

21 **Yamashita Y**, Ueda K, Itonaga M, Yoshida T, Maeda H, Maekita T, Iguchi M, Tamai H, Ichinose M, Kato J. Usefulness of contrast-enhanced endoscopic sonography for discriminating mural nodules from mucous clots in intraductal papillary mucinous neoplasms: a single-center prospective study. *J Ultrasound Med* 2013; **32**: 61-68 [PMID: 23269711 DOI: 10.7863/jum.2013.32.1.61]

22 **Lee JE**, Choi SY, Min JH, Yi BH, Lee MH, Kim SS, Hwang JA, Kim JH. Determining Malignant Potential of Intraductal Papillary Mucinous Neoplasm of the Pancreas: CT versus MRI by Using Revised 2017 International Consensus Guidelines. *Radiology* 2019; **293**: 134-143 [PMID: 31478800 DOI: 10.1148/radiol.2019190144]

23 **Tang JY**, Chen J, Pan C, Yin MZ, Zhu M. Diffuse cavernous hemangioma of the spleen with Kasabach-Merritt syndrome misdiagnosed as idiopathic thrombocytopenia in a child. *World J Pediatr* 2008; **4**: 227-230 [PMID: 18822934 DOI: 10.1007/s12519-008-0042-6]

24 **Kang BK**, Kim JH, Byun JH, Lee SS, Kim HJ, Kim SY, Lee MG. Diffusion-weighted MRI: usefulness for differentiating intrapancreatic accessory spleen and small hypervascular neuroendocrine tumor of the pancreas. *Acta Radiol* 2014; **55**: 1157-1165 [PMID: 24259300 DOI: 10.1177/0284185113513760]

Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
Telephone: +1-925-3991568
E-mail: bpgoffice@wjgnet.com
Help Desk: https://www.f6publishing.com/helpdesk
https://www.wjgnet.com