

World Journal of *Clinical Cases*

World J Clin Cases 2021 June 16; 9(17): 4116-4459



EDITORIAL

- 4116 Is it time to put traditional cold therapy in rehabilitation of soft-tissue injuries out to pasture?
Wang ZR, Ni GX

MINIREVIEWS

- 4123 Health-related quality of life after gastric cancer treatment in Brazil: Narrative review and reflections
Pinheiro RN, Mucci S, Zanatto RM, Picanço Junior OM, Oliveira AF, Lopes Filho GJ
- 4133 Nonalcoholic fatty liver disease and COVID-19: An epidemic that begets pandemic
Ahmed M, Ahmed MH

ORIGINAL ARTICLE**Retrospective Study**

- 4143 Why *MUC16* mutations lead to a better prognosis: A study based on The Cancer Genome Atlas gastric cancer cohort
Huang YJ, Cao ZF, Wang J, Yang J, Wei YJ, Tang YC, Cheng YX, Zhou J, Zhang ZX
- 4159 Design and development of a new type of phimosis dilatation retractor for children
Yue YW, Chen YW, Deng LP, Zhu HL, Feng JH
- 4166 Primary needle-knife fistulotomy for preventing post-endoscopic retrograde cholangiopancreatography pancreatitis: Importance of the endoscopist's expertise level
Han SY, Baek DH, Kim DU, Park CJ, Park YJ, Lee MW, Song GA

Observational Study

- 4178 Patients with functional bowel disorder have disaccharidase deficiency: A single-center study from Russia
Dbar S, Akhmadullina O, Sabelnikova E, Belostotskiy N, Parfenov A, Bykova S, Bakharev S, Baulo E, Babanova A, Indeykina L, Kuzmina T, Kosacheva T, Spasenov A, Makarova A
- 4188 Self-perceived burden and influencing factors in patients with cervical cancer administered with radiotherapy
Luo T, Xie RZ, Huang YX, Gong XH, Qin HY, Wu YX

SYSTEMATIC REVIEWS

- 4199 COVID-19 in gastroenterology and hepatology: Lessons learned and questions to be answered
Liu S, Tang MM, Du J, Gong ZC, Sun SS

META-ANALYSIS

- 4210 Efficacy of topical *vs* intravenous tranexamic acid in reducing blood loss and promoting wound healing in bone surgery: A systematic review and meta-analysis

Xu JW, Qiang H, Li TL, Wang Y, Wei XX, Li F

CASE REPORT

- 4221 *Ex vivo* liver resection followed by autotransplantation in radical resection of gastric cancer liver metastases: A case report

Wang H, Zhang CC, Ou YJ, Zhang LD

- 4230 Bone marrow inhibition induced by azathioprine in a patient without mutation in the thiopurine S-methyltransferase pathogenic site: A case report

Zhou XS, Lu YY, Gao YF, Shao W, Yao J

- 4238 Eosinophilic gastroenteritis with abdominal pain and ascites: A case report

Tian XQ, Chen X, Chen SL

- 4244 Tunica vaginalis testis metastasis as the first clinical manifestation of pancreatic adenocarcinoma: A case report

Zhang YR, Ma DK, Gao BS, An W, Guo KM

- 4253 "AFGP" bundles for an extremely preterm infant who underwent difficult removal of a peripherally inserted central catheter: A case report

Chen Q, Hu YL, Su SY, Huang X, Li YX

- 4262 Dynamic magnetic resonance imaging features of cavernous hemangioma in the manubrium: A case report

Lin TT, Hsu HH, Lee SC, Peng YJ, Ko KH

- 4268 Diagnosis and treatment of pediatric anaplastic lymphoma kinase-positive large B-cell lymphoma: A case report

Zhang M, Jin L, Duan YL, Yang J, Huang S, Jin M, Zhu GH, Gao C, Liu Y, Zhang N, Zhou CJ, Gao ZF, Zheng QL, Chen D, Zhang YH

- 4279 Stevens-Johnson syndrome and concurrent hand foot syndrome during treatment with capecitabine: A case report

Ahn HR, Lee SK, Youn HJ, Yun SK, Lee IJ

- 4285 Rosai-Dorfman disease with lung involvement in a 10-year-old patient: A case report

Wu GJ, Li BB, Zhu RL, Yang CJ, Chen WY

- 4294 Acute myocardial infarction in twin pregnancy after assisted reproduction: A case report

Dai NN, Zhou R, Zhuo YL, Sun L, Xiao MY, Wu SJ, Yu HX, Li QY

- 4303 Complete recovery of herpes zoster radiculopathy based on electrodiagnostic study: A case report

Kim HS, Jung JW, Jung YJ, Ro YS, Park SB, Lee KH

- 4310** Acute liver failure with thrombotic microangiopathy due to sodium valproate toxicity: A case report
Mei X, Wu HC, Ruan M, Cai LR
- 4318** Lateral epicondyle osteotomy approach for coronal shear fractures of the distal humerus: Report of three cases and review of the literature
Li J, Martin VT, Su ZW, Li DT, Zhai QY, Yu B
- 4327** Pancreatic neuroendocrine carcinoma in a pregnant woman: A case report and review of the literature
Gao LP, Kong GX, Wang X, Ma HM, Ding FF, Li TD
- 4336** Primary primitive neuroectodermal tumor in the pericardium—a focus on imaging findings: A case report
Xu SM, Bai J, Cai JH
- 4342** Minimally invasive surgery for glycogen storage disease combined with inflammatory bowel disease: A case report
Wan J, Zhang ZC, Yang MQ, Sun XM, Yin L, Chen CQ
- 4348** Coronary sinus endocarditis in a hemodialysis patient: A case report and review of literature
Hwang HJ, Kang SW
- 4357** *Clostridium perfringens* bloodstream infection secondary to acute pancreatitis: A case report
Li M, Li N
- 4365** Kidney re-transplantation after living donor graft nephrectomy due to *de novo* chromophobe renal cell carcinoma: A case report
Wang H, Song WL, Cai WJ, Feng G, Fu YX
- 4373** Pelvic lipomatosis with cystitis glandularis managed with cyclooxygenase-2 inhibitor: A case report
Mo LC, Piao SZ, Zheng HH, Hong T, Feng Q, Ke M
- 4381** Prone position combined with high-flow nasal oxygen could benefit spontaneously breathing, severe COVID-19 patients: A case report
Xu DW, Li GL, Zhang JH, He F
- 4388** Primary intratracheal schwannoma misdiagnosed as severe asthma in an adolescent: A case report
Huang HR, Li PQ, Wan YX
- 4395** Prenatal diagnosis of cor triatriatum sinister associated with early pericardial effusion: A case report
Cánovas E, Cazorla E, Alonzo MC, Jara R, Álvarez L, Beric D
- 4400** Pulmonary alveolar proteinosis complicated with tuberculosis: A case report
Bai H, Meng ZR, Ying BW, Chen XR
- 4408** Surgical treatment of four segment lumbar spondylolysis: A case report
Li DM, Peng BG

- 4415** Efficacy of artificial liver support system in severe immune-associated hepatitis caused by camrelizumab: A case report and review of the literature
Tan YW, Chen L, Zhou XB
- 4423** Anti-Yo antibody-positive paraneoplastic cerebellar degeneration in a patient with possible cholangiocarcinoma: A case report and review of the literature
Lou Y, Xu SH, Zhang SR, Shu QF, Liu XL
- 4433** Intraneural ganglion cyst of the lumbosacral plexus mimicking L5 radiculopathy: A case report
Lee JG, Peo H, Cho JH, Kim DH
- 4441** Effectiveness of patient education focusing on circadian pain rhythms: A case report and review of literature
Tanaka Y, Sato G, Imai R, Osumi M, Shigetoh H, Fujii R, Morioka S
- 4453** Schwannoma mimicking pancreatic carcinoma: A case report
Kimura K, Adachi E, Toyohara A, Omori S, Ezaki K, Ihara R, Higashi T, Ohgaki K, Ito S, Maehara SI, Nakamura T, Fushimi F, Maehara Y

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Pietro Scicchitano, MD, Professor, Research Scientist, Department of Emergency and Organ Transplantation, School of Medicine, University of Bari, Bari 70124, Italy. piero.sc@hotmail.it

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 2020 Edition of Journal Citation Reports® cites the 2019 impact factor (IF) for *WJCC* as 1.013; IF without journal self cites: 0.991; Ranking: 120 among 165 journals in medicine, general and internal; and Quartile category: Q3. The *WJCC*'s CiteScore for 2019 is 0.3 and Scopus CiteScore rank 2019: General Medicine is 394/529.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Jia-Hui Li; Production Department Director: Yu-Jie Ma; Editorial Office Director: Jin-Lai Wang.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Dennis A Bloomfield, Sandro Vento, Bao-Gan Peng

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

June 16, 2021

COPYRIGHT

© 2021 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>

Schwannoma mimicking pancreatic carcinoma: A case report

Koichi Kimura, Eisuke Adachi, Ayako Toyohara, Sachie Omori, Kaoru Ezaki, Ryo Ihara, Takahiro Higashi, Kippe Ohgaki, Shuhei Ito, Shin-ichiro Maehara, Toshihiko Nakamura, Fumi Yoshi Fushimi, Yoshihiko Maehara

ORCID number: Koichi Kimura 0000-0003-4116-4135; Eisuke Adachi 0000-0002-3002-9651; Ayako Toyohara 0000-0002-8123-0849; Sachie Omori 0000-0003-2776-5639; Kaoru Ezaki 0000-0002-2872-1075; Ryo Ihara 0000-0001-5392-1637; Takahiro Higashi 0000-0003-2040-7548; Kippe Ohgaki 0000-0002-2738-8418; Shuhei Ito 0000-0002-3444-0659; Shin-ichiro Maehara 0000-0002-1235-2148; Toshihiko Nakamura 0000-0002-1614-2877; Fumi Yoshi Fushimi 0000-0002-3011-0097; Yoshihiko Maehara 0000-0002-1532-3537.

Author contributions: Kimura K was responsible for the study conception, design and drafting of the manuscript; Toyohara A, Omori S, Ezaki K, Ihara R, Higashi T, Ohgaki K, Ito S, Maehara S, Nakamura T and Fushimi F were responsible for data collection; Adachi E and Maehara Y were responsible for critical revision of the manuscript; all authors issued final approval for the version to be submitted.

Informed consent statement: Informed written consent was obtained from the patient for publication of this report and any accompanying images.

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

CARE Checklist (2016) statement:

Koichi Kimura, Eisuke Adachi, Ayako Toyohara, Sachie Omori, Takahiro Higashi, Kippe Ohgaki, Shuhei Ito, Shin-ichiro Maehara, Toshihiko Nakamura, Yoshihiko Maehara, Department of Surgery, Kyushu Central Hospital of the Mutual Aid Association of Public School Teachers, Fukuoka 815-8588, Japan

Kaoru Ezaki, Ryo Ihara, Department of Internal Medicine, Kyushu Central Hospital of the Mutual Aid Association of Public School Teachers, Fukuoka 815-8588, Japan

Fumi Yoshi Fushimi, Department of Histopathology, Kyushu Central Hospital of the Mutual Aid Association of Public School Teachers, Fukuoka 815-8588, Japan

Corresponding author: Koichi Kimura, MD, PhD, Doctor, Department of Surgery, Kyushu Central Hospital of the Mutual Aid Association of Public School Teachers, 3-23-1 Shiobaru, Minamiku, Fukuoka 815-8588, Japan. cubicseal@gmail.com

Abstract

BACKGROUND

Schwannoma of the pancreas is extremely rare. We report a case of pancreatic schwannoma that was difficult to distinguish from pancreatic carcinoma before surgery.

CASE SUMMARY

A 66-year-old male underwent a right-lobe hepatectomy for hepatocellular carcinoma. Post-surgical computed tomography showed a 10 mm long solid mass with ischemia, with no expansion into the main pancreatic duct. Upon magnetic resonance cholangiopancreatography, the tumor had high signal intensity in diffusion weighted images, consistent with pancreatic carcinoma. Endoscopic ultrasound (EUS) was performed to obtain more information about the tumor, and showed a 14 mm solid and hypoechoic mass in the pancreatic body. Contrast enhanced EUS revealed that the tumor showed a hyperechoic mass in the early phase, and the contrasting effect continuation was very short; findings also consistent with pancreatic carcinoma. Thus, we preoperatively diagnosed his condition as a pancreatic carcinoma and performed distal pancreatectomy with splenectomy. Microscopic examination showed that the tumor was in fact a benign schwannoma. Histology showed a proliferation of spindle-shaped cell in a vague fascicular and haphazard pattern, with palisading arrangement.

CONCLUSION

Schwannoma of the pancreas is very rare, however, clinicians should consider schwannoma as the differential diagnosis for pancreatic tumors.

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

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Specialty type: Medicine, research and experimental

Country/Territory of origin: Japan

Peer-review report's scientific quality classification

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

Received: February 16, 2021

Peer-review started: February 19, 2021

First decision: March 7, 2021

Revised: March 7, 2021

Accepted: March 29, 2021

Article in press: March 29, 2021

Published online: June 16, 2021

P-Reviewer: Zhu CF

S-Editor: Fan JR

L-Editor: A

P-Editor: Li JH



Key Words: Schwannoma; Pancreatic body; Pancreatic carcinoma; Pancreatic tumor; Distal pancreatectomy; Case report

©The Author(s) 2021. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: Schwannoma of the pancreas is extremely rare, with 68 cases reported in the literature. On the other hand, preoperative diagnosis of schwannomas can be difficult, as schwannomas have no specific imaging findings, thus the preoperative diagnosis is not easy to confirm. We have experienced a case of schwannoma in pancreatic body mimicking pancreatic carcinoma, and performed surgical treatment. Clinicians should consider nonepithelial tumors as a part of the differential diagnosis for pancreatic tumors despite their low frequency.

Citation: Kimura K, Adachi E, Toyohara A, Omori S, Ezaki K, Ihara R, Higashi T, Ohgaki K, Ito S, Maehara SI, Nakamura T, Fushimi F, Maehara Y. Schwannoma mimicking pancreatic carcinoma: A case report. *World J Clin Cases* 2021; 9(17): 4453-4459

URL: <https://www.wjgnet.com/2307-8960/full/v9/i17/4453.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v9.i17.4453>

INTRODUCTION

Schwannomas are usually benign nerve sheath tumors that originate from the Schwann cells and can arise in any aspect of the peripheral nerves[1]. Schwannomas are often found in the head and neck area, major nerve trunks. Intracavitary schwannomas are found in the retroperitoneum and posterior mediastinum, however, they are found in the gastrointestinal tract occasionally[2]. Moreover, schwannomas in pancreas are extremely rare. For the last 40 years, less than 70 cases of pancreatic schwannomas have been reported in English literature[3]. Preoperative diagnosis of pancreatic schwannoma is very difficult because of the wide variety of imaging findings. It has been reported that degenerative changes are found in approximately two-thirds of pancreatic schwannomas[4]. In general, pancreatic schwannomas are often benign tumors and surgical treatment is definitive, while in rare cases they develop into a malignant form[5]. Some reports have revealed that the malignant form of schwannoma occurs in about 5% of von Recklinghausen's disease cases[6].

Herein, we present a review of the literature and a novel case of a pancreatic schwannoma that was initially diagnosed as a pancreatic carcinoma, in a patient who underwent a distal pancreatectomy with splenectomy.

CASE PRESENTATION

Chief complaints

A 66-year-old male who was followed-up after right lobe hepatectomy for hepatocellular carcinoma (pT2N0M0 stage II) secondary to a hepatitis B infection for ten years and six months. He was found pancreatic tumor accidentally in ultrasonography on a health examination.

History of present illness

Ultrasonography revealed a 10 mm tumor in the pancreas.

History of past illness

The patient had a history of right lobe hepatectomy for S5/6 hepatocellular (pathological stage: pT2N0M0 stage II carcinoma ten years and six months ago, and followed up for five years after hepatectomy.

Personal and family history

There is no history of his family.

Physical examination

He had no physical abnormality, general condition was almost good.

Laboratory examinations

Laboratory findings indicated that white blood counts were 4000/ μ L (reference range 3500-8400/ μ L), alkaline phosphatase 217 U/L (reference range 115-359 U/L), gamma-glutamyl transpeptidase 17 U/L (reference range 10-47 U/L), C-reactive protein 0.04 mg/dL (reference range < 0.2 mg/dL), carcinoembryonic antigen 2.0 ng/mL (reference range < 5.0 ng/mL), CA19-9 antigen 0.4 U/mL (reference range < 37.0 U/mL), and immunoglobulin G4 21 mg/dL (reference range 5-117 mg/dL).

Imaging examinations

Computed tomography (CT) showed a 10 mm tumor with low density in the early phase (Figure 1A) and isodensity with pancreatic parenchyma in the late phase (Figure 1B). There was no expansion into the main pancreatic duct, and no swollen lymph nodes. Magnetic resonance cholangiopancreatography (MRI) revealed a 9 mm tumor in the pancreatic body. The tumor showed low intensity in T1-weighted images (Figure 2A) and showed slightly higher intensity in T2-weighted images (Figure 2B). The tumor also demonstrated high signal in diffusion weighted images (Figure 2C) and almost the same isodensity in an apparent diffusion coefficient-map phase (Figure 2D). Endoscopic ultrasound (EUS) was performed to obtain more information about the tumor. EUS images showed a 14 mm solid and low echoic mass in the pancreatic body (Figure 3A), EUS elastography showed a strain ratio < 0.05 (Figure 3B), and contrast enhanced EUS showed short term contrast effects in the early phase that washed out quickly (Figure 3C).

FINAL DIAGNOSIS

The patient was diagnosed with pancreatic carcinoma.

TREATMENT

He underwent a distal pancreatectomy with splenectomy. During surgery, there was no ascites, no peritoneal or liver metastasis, and no macroscopic lymphadenopathy. Distal pancreatectomy with splenectomy and lymphadenectomy of lymph nodes 8, 9, 10, 11, 14, 15, 18 were performed (Figure 4).

OUTCOME AND FOLLOW-UP

Histopathologic examination after surgery showed a proliferation of spindle-shaped cells in a vague fascicular and haphazard pattern, with palisading arrangement (Figure 5A and B). Mitotic figures were not evident. These features were consistent with schwannoma, not pancreatic carcinoma. There was in fact no evidence of malignancy. Immunohistochemical staining of S100 was positive (Figure 5C and D), and AE1/AE3, spinal muscular atrophy (SMA), and CD34 were all negative. There was no lymph node metastasis. As a result, the final diagnosis of the tumor proved to be a pancreatic schwannoma (11 mm \times 8 mm). Although the patient developed a grade B pancreatic fistula after surgery, this was resolved by conservative treatment.

DISCUSSION

We present a patient with a pancreatic schwannoma who underwent a distal pancreatectomy and splenectomy with a working diagnosis of pancreatic carcinoma. In the abdominal cavity, the retroperitoneum and stomach are the most frequently involved sites for schwannomas. On the other hand, other intraperitoneal organ schwannomas have been previously reported, such as in the gallbladder[7] and intrahepatic duodenal ligament[8]. To the best of our knowledge, less than 70 cases of schwannomas in the pancreas have been reported[3]. Schwannomas are histopathologically composed of spindle cells in a nuclear palisade arrangement and Verocay body

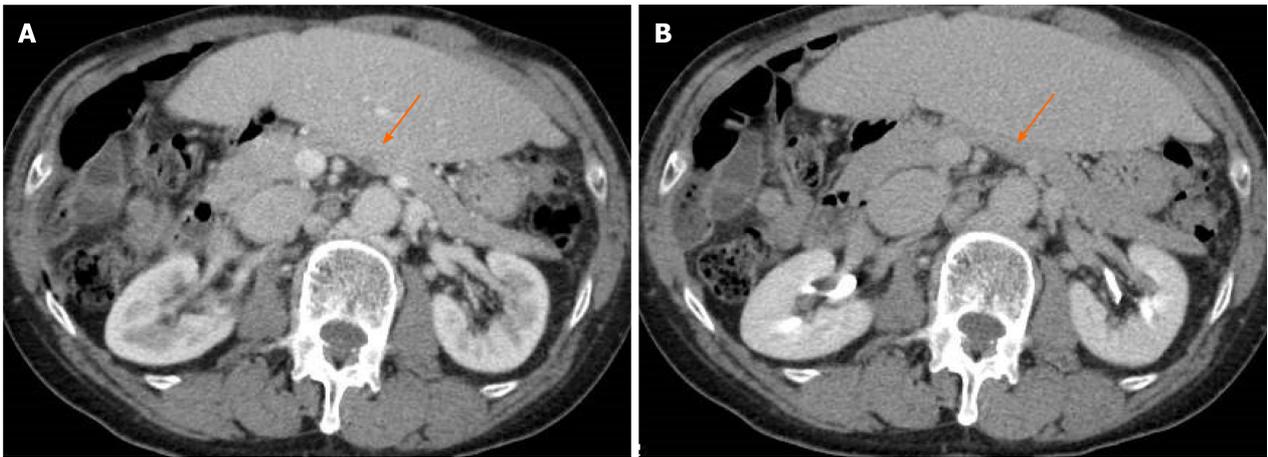


Figure 1 Computed tomography images. A: A 10 mm tumor that was hyperintense with ischemia in the early phase (orange arrowhead); B: A 10 mm tumor that was isodense with pancreatic parenchyma in late phase (orange arrowhead).

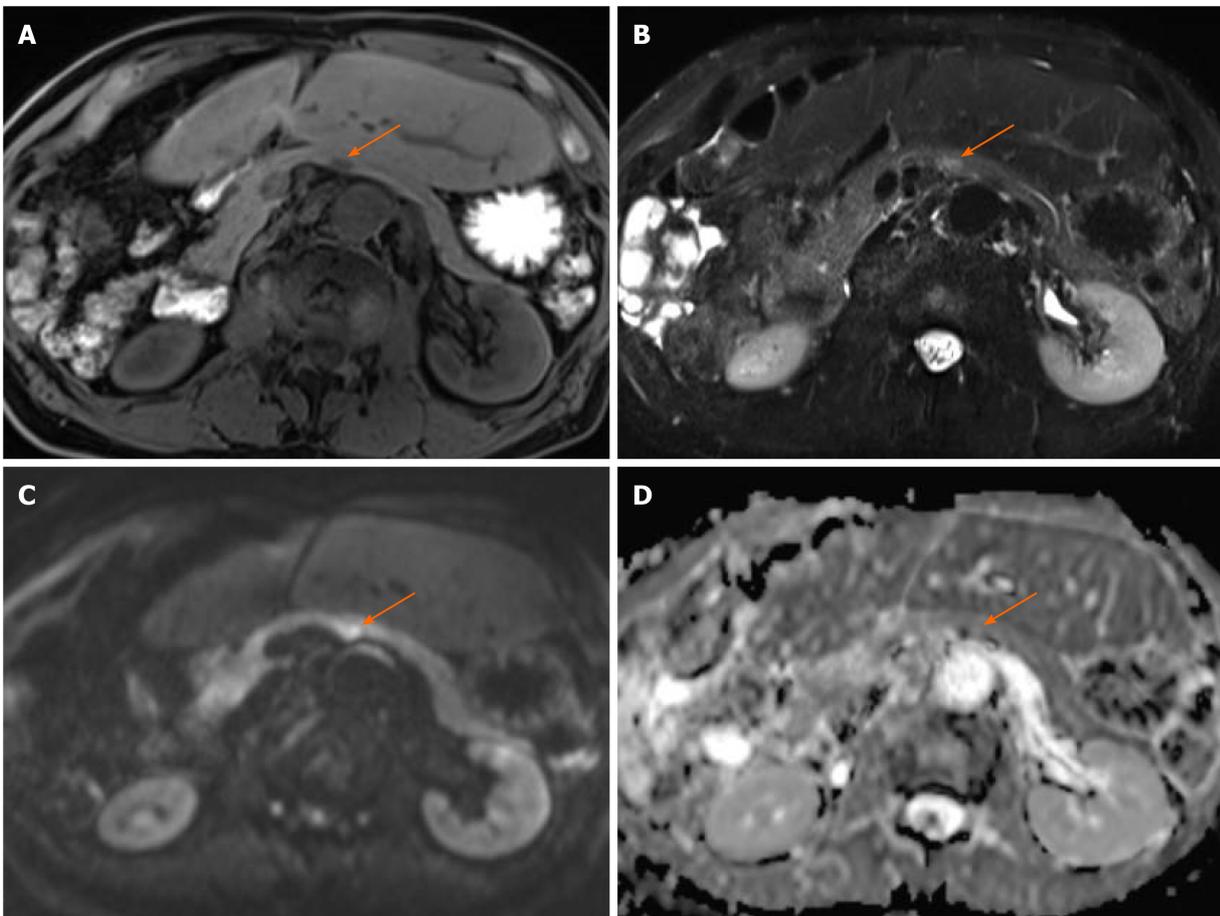


Figure 2 Magnetic resonance cholangiopancreatography images. A: The tumor showed low intensity in T1-weighted images (orange arrowhead); B: The tumor showed moderately high intensity in T2-weighted images (orange arrowhead); C: The tumor demonstrated high signal in diffusion weighted images (orange arrowhead); D: The tumor showed almost the same isodensity in an apparent diffusion coefficient-map phase (orange arrowhead).

formation[9]. Immunohistochemically, schwannomas are positive for S-100, and negative for desmin, smooth muscle myosin, SMA, CD34 and CD117[4]. Immunohistochemical examination in our case showed that S-100 was positive and the other markers were negative.

Preoperative diagnosis of schwannomas can be difficult, as schwannomas have no specific imaging findings, thus the preoperative diagnosis is not easy to confirm. Several imaging modalities such as ultrasonography, CT, MRI, and EUS may be useful in diagnosing. Contrast enhanced CT shows well-defined hypodense lesions with

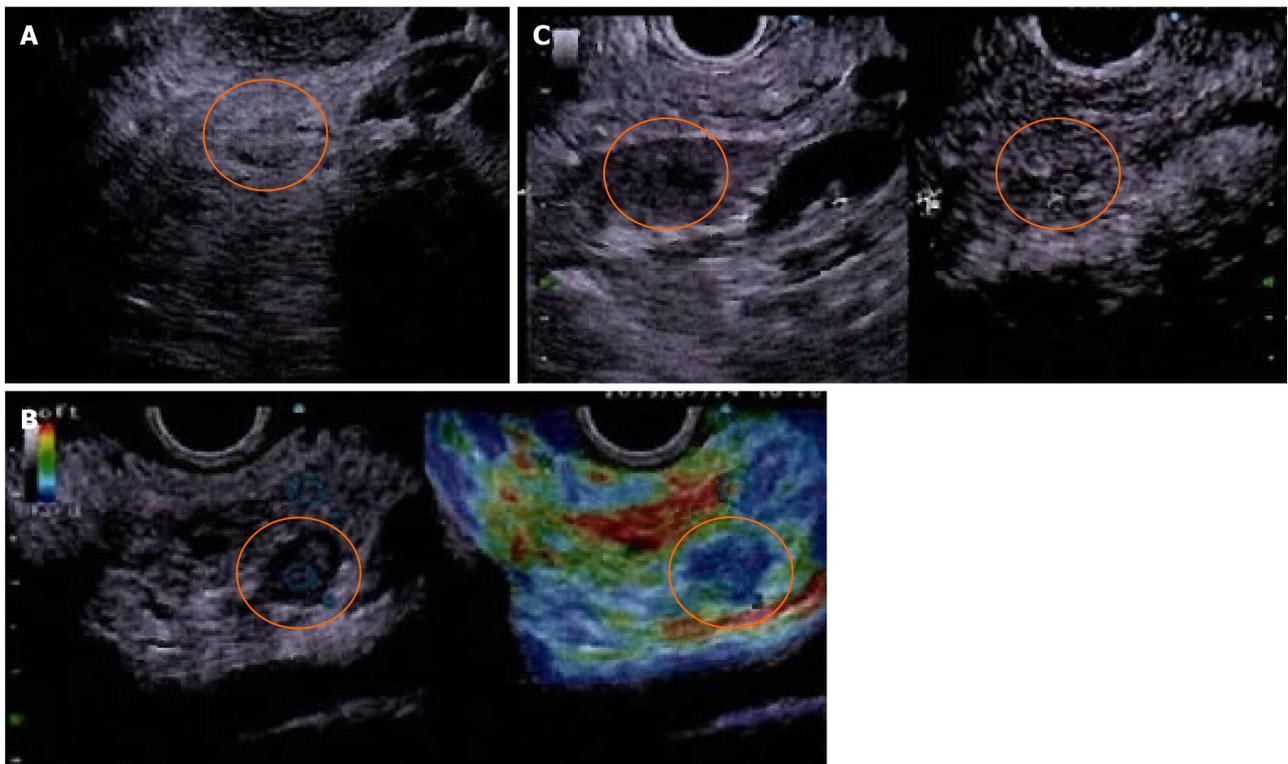


Figure 3 Endoscopic ultrasound images. A: The tumor showed a 14 mm solid and low echoic mass in the pancreatic body (orange circle); B: Endoscopic ultrasound (EUS) elastography showed a strain ratio < 0.05 (orange circle, right image: Elastography image); C: Contrast enhanced EUS showed short term contrast effects in the early phase and washed out quickly (orange circle, right image: Sonazoid mode of delay phase).

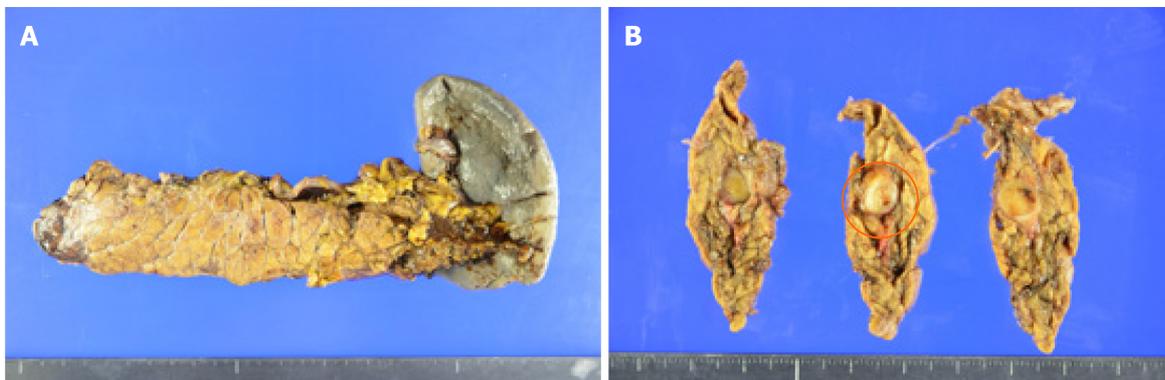


Figure 4 Macroscopic pathological findings of specimen. A: Specimen pathology; B: orange circle shows tumor.

encapsulation and/or cystic degeneration[8], and MRI shows hypointensity on T1-weighted images and lack of homogeneity and hyperintensity on T2-weighted images[10]. Crinò *et al*[11] reported that EUS is useful to diagnose pancreatic schwannoma. They also reported that contrast enhanced EUS can help achieve the diagnosis[11]. It has been reported that degenerative changes are found in almost 70% of schwannomas in pancreas[4]. Degenerative changes lead to the presence of obvious variety in the appearance and size of the tumors. Schwannomas are capsulated tumors that, at imaging, are generally round or oval and show well-defined margins. Histologically, schwannomas are comprised of two areas: Antoni A, characterized by packed spindle cells and a vascular component, and Antoni B, characterized by hypocellularity and occupied by loose stroma. The latter area may be the subject of degenerative changes, such as cyst formation, hemorrhage, necrosis, and calcification. Pancreatic schwannomas may mimic other, more common pancreatic lesions. Therefore, pancreatic schwannomas have a very high rate of misdiagnosis. In this case, imaging findings of contrast enhanced CT and MRI did not conflict with the above standard findings; however, imaging findings from EUS were consistent with pancreatic

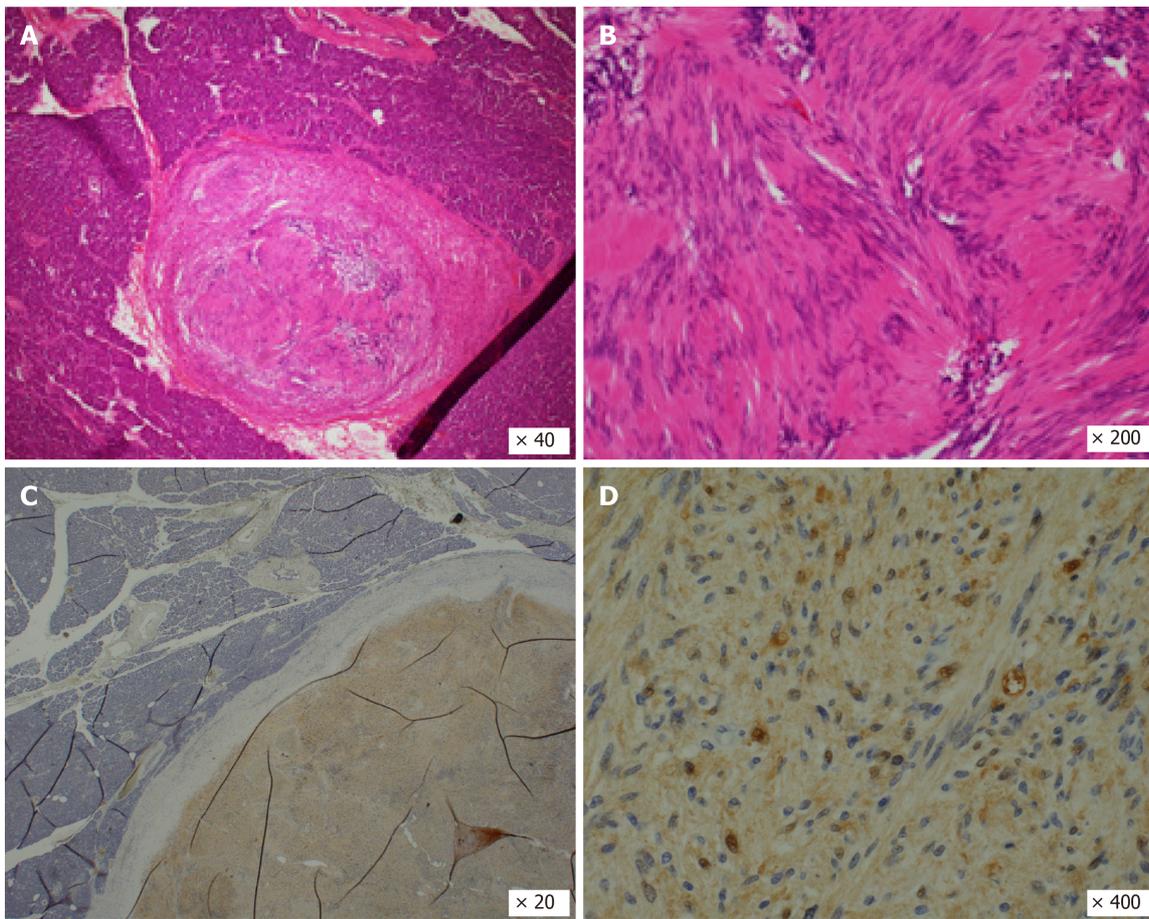


Figure 5 Microscopic histopathological findings. A and B: Hematoxylin and eosin staining showed a proliferation of spindle-shaped cells in a vague fascicular and haphazard pattern, with palisading arrangement; C and D: Immunohistochemical staining of S100 was positive.

carcinoma. We compared the histology of the tumor to leiomyoma and a gastrointestinal stromal tumor. However, immunohistochemical staining of SMA was negative, and S100 was positive. These findings contradicted those tumors.

Most pancreatic schwannomas are benign, however there are some reports that show malignant transformation[4,12]. Some researchers have attempted to correlate the characteristics of the schwannomas on imaging examination with its malignant potential. Ma *et al*[3] suggested that larger tumors correlated with greater malignant potential. The management of schwannomas in pancreas should be decided by location and histological findings. Most pancreatic schwannomas are benign and malignant transformation is extremely rare. As such, enucleation is often the first-line procedure if tumor pathology is confirmed pre-operation. In cases of large tumors expressing malignant behavior, such as malignancy in frozen sections or invasion to major vessels, an oncological resection is recommended.

CONCLUSION

Incidental detection of pancreatic schwannoma is predicted to increase due to the widespread use of CT and MRI. It is important to consider this tumor type in the differential diagnosis of pancreatic tumors. Pancreatic schwannoma is extremely rare, but in centers performing large numbers of pancreatic surgeries, the possibility of this diagnosis is still reasonable.

REFERENCES

- 1 **Pilavaki M,** Chourmouzi D, Kiziridou A, Skordalaki A, Zarampoukas T, Drevlengas A. Imaging of peripheral nerve sheath tumors with pathologic correlation: pictorial review. *Eur J Radiol* 2004; **52**: 229-239 [PMID: 15544900 DOI: 10.1016/j.ejrad.2003.12.001]

- 2 **Ercan M**, Aziret M, Bal A, Şentürk A, Karaman K, Kahyaoğlu Z, Koçer HB, Bostancı B, Akoğlu M. Pancreatic schwannoma: A rare case and a brief literature review. *Int J Surg Case Rep* 2016; **22**: 101-104 [PMID: 27084984 DOI: 10.1016/j.ijscr.2016.03.014]
- 3 **Ma Y**, Shen B, Jia Y, Luo Y, Tian Y, Dong Z, Chen W, Li ZP, Feng ST. Pancreatic schwannoma: a case report and an updated 40-year review of the literature yielding 68 cases. *BMC Cancer* 2017; **17**: 853 [PMID: 29241452 DOI: 10.1186/s12885-017-3856-6]
- 4 **Stojanovic MP**, Radojkovic M, Jeremic LM, Zlatic AV, Stanojevic GZ, Jovanovic MA, Kostov MS, Katic VP. Malignant schwannoma of the pancreas involving transversal colon treated with en-bloc resection. *World J Gastroenterol* 2010; **16**: 119-122 [PMID: 20039458 DOI: 10.3748/wjg.v16.i1.119]
- 5 **Witkowski G**, Kołos M, Nasierowska-Guttmejer A, Durlik M. Neuroma (schwannoma). A rare pancreatic tumor. *Pol Przegl Chir* 2019; **92**: 48-51 [PMID: 32312928 DOI: 10.5604/01.3001.0012.8558]
- 6 **Aggarwal G**, Satsangi B, Shukla S, Lahoti BK, Mathur RK, Maheshwari A. Rare asymptomatic presentations of schwannomas in early adolescence: three cases with review of literature. *Int J Surg* 2010; **8**: 203-206 [PMID: 20167297 DOI: 10.1016/j.ijssu.2010.01.012]
- 7 **Tajiri T**, Hayashi H, Higashi T, Yamao T, Takematsu T, Uemura N, Yamamura K, Imai K, Yamashita YI, Baba H. Coexisting schwannoma of the gallbladder and sarcoidosis: a case report. *Surg Case Rep* 2020; **6**: 76 [PMID: 32307608 DOI: 10.1186/s40792-020-00839-4]
- 8 **Xu SY**, Sun K, Xie HY, Zhou L, Zheng SS, Wang WL. Schwannoma in the hepatoduodenal ligament: A case report and literature review. *World J Gastroenterol* 2016; **22**: 10260-10266 [PMID: 28028376 DOI: 10.3748/wjg.v22.i46.10260]
- 9 **Joshi R**. Learning from eponyms: Jose Verocay and Verocay bodies, Antoni A and B areas, Nils Antoni and Schwannomas. *Indian Dermatol Online J* 2012; **3**: 215-219 [PMID: 23189261 DOI: 10.4103/2229-5178.101826]
- 10 **Rha SE**, Byun JY, Jung SE, Chun HJ, Lee HG, Lee JM. Neurogenic tumors in the abdomen: tumor types and imaging characteristics. *Radiographics* 2003; **23**: 29-43 [PMID: 12533638 DOI: 10.1148/rg.231025050]
- 11 **Crinò SF**, Bernardoni L, Manfrin E, Parisi A, Gabbrielli A. Endoscopic ultrasound features of pancreatic schwannoma. *Endosc Ultrasound* 2016; **5**: 396-398 [PMID: 28000633 DOI: 10.4103/2303-9027.195873]
- 12 **Liegl B**, Bodo K, Martin D, Tsybrovskyy O, Lackner K, Beham A. Microcystic/reticular schwannoma of the pancreas: a potential diagnostic pitfall. *Pathol Int* 2011; **61**: 88-92 [PMID: 21255185 DOI: 10.1111/j.1440-1827.2010.02614.x]



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>

