

World Journal of *Clinical Cases*

World J Clin Cases 2018 November 26; 6(14): 716-868





REVIEW

- 716 Current status of surgical treatment of colorectal liver metastases
Xu F, Tang B, Jin TQ, Dai CL

MINIREVIEWS

- 735 The assessment of endosonographers in training
Hedenström P, Sadik R
- 745 Necroptosis in inflammatory bowel disease and other intestinal diseases
Li S, Ning LG, Lou XH, Xu GQ

ORIGINAL ARTICLE

Case Control Study

- 753 Benefits of the Seattle biopsy protocol in the diagnosis of Barrett's esophagus in a Chinese population
Lee SW, Lien HC, Chang CS, Lin MX, Chang CH, Ko CW

Retrospective Study

- 759 Modified laparoscopic Sugarbaker repair of parastomal hernia with a three-point anchoring technique
Huang DY, Pan L, Chen QL, Cai XY, Fang J

SYSTEMATIC REVIEWS

- 767 Safety of laparoscopic surgery in digestive diseases with special reference to antithrombotic therapy: A systematic review of the literature
Fujikawa T, Ando K

CASE REPORT

- 776 Epstein-Barr virus-associated hemophagocytic syndrome in a patient with ulcerative colitis during treatment with azathioprine: A case report and review of literature
Miyaguchi K, Yamaoka M, Tsuzuki Y, Ashitani K, Ohgo H, Miyagawa Y, Ishizawa K, Kayano H, Nakamoto H, Imaeda H
- 781 Acquired hemophilia A in solid cancer: Two case reports and review of the literature
Saito M, Ogasawara R, Izumiyama K, Mori A, Kondo T, Tanaka M, Morioka M, Ieko M
- 786 Glutaric acidemia type II patient with thalassemia minor and novel electron transfer flavoprotein-A gene mutations: A case report and review of literature
Saral NY, Aksungar FB, Aktuglu-Zeybek C, Coskun J, Demirelce O, Serteser M

- 791** Meckel's diverticulum diagnosis by video capsule endoscopy: A case report and review of literature
García-Compeán D, Jiménez-Rodríguez AR, Del Cueto-Aguilera ÁN, Herrera-Quñones G, González-González JA, Maldonado-Garza HJ
- 800** Carney complex: Two case reports and review of literature
Li S, Duan L, Wang FD, Lu L, Jin ZY
- 807** Ileal bronchogenic cyst: A case report and review of literature
Chen HY, Fu LY, Wang ZJ
- 811** Application of ultrasound in aggressive angiomyxoma: Eight case reports and review of literature
Zhao CY, Su N, Jiang YX, Yang M
- 820** Solitary rectal ulcer syndrome complicating sessile serrated adenoma/polyps: A case report and review of literature
Sun H, Sheng WQ, Huang D
- 825** Subdural empyema complicated with intracranial hemorrhage in a postradiotherapy nasopharyngeal carcinoma patient: A case report and review of literature
Chen JC, Tan DH, Xue ZB, Yang SY, Li Y, Lai RL
- 830** Giant monostotic osteofibrous dysplasia of the ilium: A case report and review of literature
Liu YB, Zou TM
- 836** Postoperative redislocation of the hip in a patient with congenital insensitivity to pain with anhidrosis: A case report and review of literature
Wang R, Liu Y, Zhou YY, Wang JY, Xu ZJ, Chen SY, Wang QQ, Yuan P
- 842** Open surgical treatment of choledochocoele: A case report and review of literature
Yang J, Xiao GF, Li YX
- 847** Mesenteric heterotopic pancreas in a pediatric patient: A case report and review of literature
Tang XB, Liao MY, Wang WL, Bai YZ
- 854** Intralesional and topical glucocorticoids for pretibial myxedema: A case report and review of literature
Zhang F, Lin XY, Chen J, Peng SQ, Shan ZY, Teng WP, Yu XH



- 862** Octreotide reverses shock due to vasoactive intestinal peptide-secreting adrenal pheochromocytoma: A case report and review of literature

Hu X, Cao W, Zhao M

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Manabu Watanabe, MD, PhD, Full Professor, Division of Gastroenterology and Hepatology, Department of Internal medicine, Toho University Medical Center, Ohashi Hospital, Tokyo 153-8515, Japan

AIM AND SCOPE

World Journal of Clinical Cases (*World J Clin Cases*, *WJCC*, online ISSN 2307-8960, DOI: 10.12998) is a peer-reviewed open access academic journal that aims to guide clinical practice and improve diagnostic and therapeutic skills of clinicians.

The primary task of *WJCC* is to rapidly publish high-quality Autobiography, Case Report, Clinical Case Conference (Clinicopathological Conference), Clinical Management, Diagnostic Advances, Editorial, Field of Vision, Frontier, Medical Ethics, Original Articles, Clinical Practice, Meta-Analysis, Minireviews, Review, Therapeutics Advances, and Topic Highlight, in the fields of allergy, anesthesiology, cardiac medicine, clinical genetics, clinical neurology, critical care, dentistry, dermatology, emergency medicine, endocrinology, family medicine, gastroenterology and hepatology, geriatrics and gerontology, hematology, immunology, infectious diseases, internal medicine, obstetrics and gynecology, oncology, ophthalmology, orthopedics, otolaryngology, pathology, pediatrics, peripheral vascular disease, psychiatry, radiology, rehabilitation, respiratory medicine, rheumatology, surgery, toxicology, transplantation, and urology and nephrology.

INDEXING/ABSTRACTING

World Journal of Clinical Cases (*WJCC*) is now indexed in PubMed, PubMed Central, Science Citation Index Expanded (also known as SciSearch®), and Journal Citation Reports/Science Edition. The 2018 Edition of Journal Citation Reports cites the 2017 impact factor for *WJCC* as 1.931 (5-year impact factor: N/A), ranking *WJCC* as 60 among 154 journals in Medicine, General and Internal (quartile in category Q2).

EDITORS FOR THIS ISSUE

Responsible Assistant Editor: *Xiang Li*
Responsible Electronic Editor: *Han Song*
Proofing Editor-in-Chief: *Lian-Sheng Ma*

Responsible Science Editor: *Fang-Fang Ji*
Proofing Editorial Office Director: *Jin-Lei Wang*

NAME OF JOURNAL
World Journal of Clinical Cases

ISSN
ISSN 2307-8960 (online)

LAUNCH DATE
April 16, 2013

FREQUENCY
Semimonthly

EDITORS-IN-CHIEF
Sandro Vento, MD, Department of Internal Medicine, University of Botswana, Private Bag 00713, Gaborone, Botswana

EDITORIAL BOARD MEMBERS
All editorial board members resources online at <http://www.wjgnet.com/2307-8960/editorialboard.htm>

EDITORIAL OFFICE
Jin-Lei Wang, Director

World Journal of Clinical Cases
Baishideng Publishing Group Inc
7901 Stoneridge Drive, Suite 501, Pleasanton, CA 94588, USA
Telephone: +1-925-2238242
Fax: +1-925-2238243
E-mail: editorialoffice@wjgnet.com
Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

PUBLISHER
Baishideng Publishing Group Inc
7901 Stoneridge Drive, Suite 501, Pleasanton, CA 94588, USA
Telephone: +1-925-2238242
Fax: +1-925-2238243
E-mail: bpgoffice@wjgnet.com
Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

PUBLICATION DATE
November 26, 2018

COPYRIGHT

© 2018 Baishideng Publishing Group Inc. Articles published by this Open Access journal are distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits use, distribution, and reproduction in any medium, provided the original work is properly cited, the use is non commercial and is otherwise in compliance with the license.

SPECIAL STATEMENT

All articles published in journals owned by the Baishideng Publishing Group (BPG) represent the views and opinions of their authors, and not the views, opinions or policies of the BPG, except where otherwise explicitly indicated.

INSTRUCTIONS TO AUTHORS

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

ONLINE SUBMISSION

<http://www.f6publishing.com>

Mesenteric heterotopic pancreas in a pediatric patient: A case report and review of literature

Xiao-Bing Tang, Min-Yi Liao, Wei-Lin Wang, Yu-Zuo Bai

Xiao-Bing Tang, Min-Yi Liao, Wei-Lin Wang, Yu-Zuo Bai, Department of Pediatric Surgery, Shengjing Hospital, China Medical University, Shenyang 110004, Liaoning Province, China

ORCID number: Xiao-Bing Tang (0000-0002-6925-3204); Min-Yi Liao (0000-0001-8327-8064); Wei-Lin Wang (0000-0003-3062-4503); Yu-Zuo Bai (0000-0002-0647-6195).

Author contributions: Bai YZ and Wang WL designed the report; Tang XB and Liao MY wrote the paper; Tang XB and Bai YZ collected the patient's clinical data; Wang WL and Bai YZ revised the manuscript.

Supported by the Outstanding Scientific Fund of Shengjing Hospital, No. m201502.

Informed consent statement: Informed consent to publish was obtained from the parents of the patient.

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).

Open-Access: This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (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

Corresponding author to: Yu-Zuo Bai, MD, PhD, Full Professor, Pediatric Surgeon, Department of Pediatric Surgery, Shengjing Hospital, China Medical University, No. 36, Sanhao Street, Heping District, Shenyang 110004, Liaoning Province, China. baizy@sj-hospital.org

Telephone: +86-24-9661557111

Fax: +86-24-23892617

Received: May 29, 2018

Peer-review started: May 29, 2018

First decision: July 8, 2018

Revised: July 20, 2018

Accepted: October 22, 2018

Article in press: October 22, 2018

Published online: November 26, 2018

Abstract

Heterotopic pancreas (HP) is a congenital anomaly defined as pancreatic tissue that has no contact with the orthotopic pancreas and its own duct system and vascular supply. The most common locations of HP are the upper gastrointestinal tract, specifically, the stomach, duodenum, and proximal jejunum. Involvement of the mesentery is rare. Here, we describe a rare case of mesenteric heterotopic pancreas (MHP) in a 12-year-old girl who presented with acute abdomen. The patient underwent emergency laparotomy, and the mass and adjacent small bowel were resected. Results of the postoperative histopathologic examination confirmed the diagnosis of MHP. Observation of the patient for 12 mo postoperatively showed no evidence of recurrence. Preoperative diagnosis of HP is difficult, even in a symptomatic patient. Increased awareness and understanding of the image characteristics of MHP will aid in correct preoperative diagnosis and appropriate patient management.

Key words: Heterotopic pancreas; Mesenteric; Acute abdomen; Computed tomography; Magnetic resonance imaging; Case report

© **The Author(s) 2018.** Published by Baishideng Publishing Group Inc. All rights reserved.

Core tip: Heterotopic pancreas (HP) is a congenital anomaly defined as pancreatic tissue that has no contact with the orthotopic pancreas and its own duct system and vascular supply. The most common locations of HP are the upper gastrointestinal tract, specifically, the stomach, duodenum, and proximal jejunum. Involvement of the mesentery is rare. Here, we describe a rare case of mesenteric heterotopic pancreas (MHP) in a 12-year-old girl who presented with acute abdomen. MHP should be considered in the differential diagnosis of a mesenteric mass, especially when its morphology and enhancement are similar to those of orthotopic pancreas.

Tang XB, Liao MY, Wang WL, Bai YZ. Mesenteric heterotopic pancreas in a pediatric patient: A case report and review of literature. *World J Clin Cases* 2018; 6(14): 847-853 Available from: URL: <http://www.wjgnet.com/2307-8960/full/v6/i14/847.htm> DOI: <http://dx.doi.org/10.12998/wjcc.v6.i14.847>

INTRODUCTION

Heterotopic pancreas (HP) is most commonly found in the proximal gastrointestinal tract. Although the reported incidence of HP varies, the true incidence is difficult to determine because the patients are usually asymptomatic and the condition is usually found incidentally at autopsy or during laparotomy^[1,2]. Male preponderance is seen among adults, with the incidence of disease peaking during the fourth to sixth decades of life^[3,4]. The most frequent location of heterotopic pancreatic tissue is the stomach (47%), followed by the jejunum (35%), duodenum (11.7%), and ileum (5.8%)^[5]. Involvement of the mesentery is rare. Until now, no more than ten cases of mesenteric heterotopic pancreas (MHP) have been described in the medical literature^[6-13]. Here, we describe a case of MHP in a 12-year-old female patient.

CASE REPORT

A 12-year-old girl with no significant medical history was admitted to our department with intermittent vomiting and abdominal pain for 3 d. Her growth and development were normal. On admission, she was in a good general condition. Her temperature was 36.6 °C, heart rate was 106 beats/min, and the blood pressure was 100/69 mmHg. Her physical examination showed abdominal tenderness with peritoneal irritation. The laboratory results were unremarkable. Abdominal ultrasonography revealed a well-defined, heterogeneous, medially echoic mass located at the margin of the intestinal mesentery in the abdominal cavity that measured approximately 4.9 cm × 2.6 cm. Contrast-enhanced computed tomography (CECT) of

the abdomen showed an enhanced oval, soft-tissue mass (42 mm × 25 mm) in the mesentery at the level of the umbilicus (Figure 1). The clinical diagnosis of a mesenteric mass was made. The differential diagnosis included intestinal duplication cyst, inflamed Meckel's diverticulum, and mesenteric lymphangioma.

Because of peritoneal irritation, the patient underwent emergency laparotomy 12 h after hospitalization. Laparotomy revealed a yellowish, soft-tissue mass measuring 4 cm in diameter that was located in the mesentery of the proximal jejunum and adhered to the serosal surface of the jejunum (Figure 2). The mass and the adjacent jejunum were resected, and an end-to-end anastomosis was performed.

Gross pathology demonstrated a 4 cm × 3 cm mass in the jejunal mesentery that was adhered to the serosa of the jejunum. Postoperative histopathologic examination of the resected specimen revealed ectopic pancreatic tissue consisting of acini, islet cells, and pancreatic ducts, adjacent to the jejunal serosa (Figure 3). There was no evidence of malignant change in the ectopic pancreatic tissue. The pathologic diagnosis was MHP.

The patient's postoperative course was uneventful, and she was discharged on postoperative day 8. Follow-up of the patient by abdominal ultrasonography for 12 mo postoperatively showed no evidence of relapse.

DISCUSSION

HP was first described by Jean Schultz in 1727, which is a congenital anomaly defined as pancreatic tissue that is anatomically separate from the main gland, without vascular or ductal continuity. No more than ten cases of MHP have been described in the medical literature^[6-12]. Including our case, only four cases of pediatric MHP have been reported in the medical literature^[6,7,9], with patients ranging in age from 12 to 15 years.

The embryologic basis of HP is controversial, but the most widely held theory is the misplacement theory (Figure 4), according to which, deposits of pancreatic tissue are "dropped" into the developing gastrointestinal system, in anatomic isolation from the main body of the pancreas^[11,13]. This theory accounts for the fact that heterotopic pancreatic tissue was mostly located in the upper gastrointestinal tract near the pancreas (derivatives of the primitive foregut).

HP is well differentiated and cannot be distinguished histologically from orthotopic pancreas^[1]. Gross specimens always show a firm intramural mass that has a lobular shape and a well-defined interface with surrounding tissues^[14]. Most lesions (80%) are solitary and smaller than 3 cm, but they can range in size from 0.2 cm to 5.0 cm^[14,15]. The first and most common histological type of heterotopic pancreatic tissue is composed of all the elements of the normal pancreas,

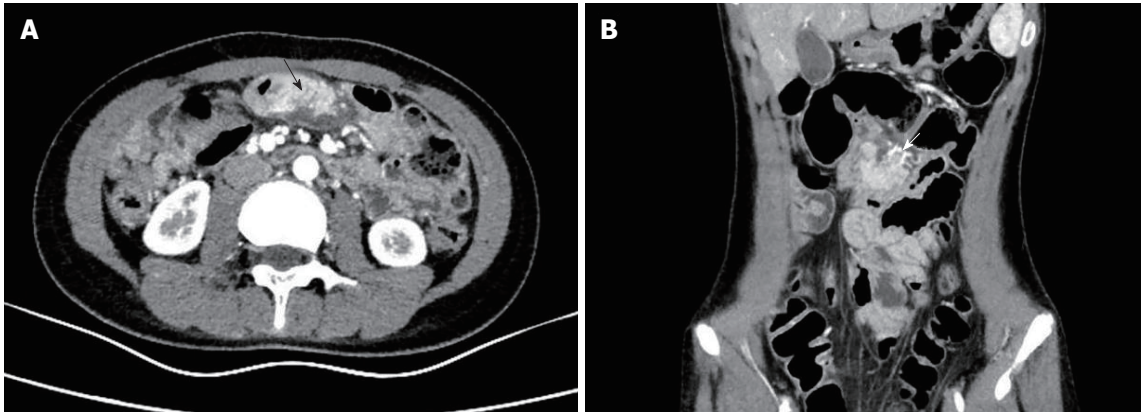


Figure 1 Contrast-enhanced computed tomography images of the abdomen. A: Axial contrast-enhanced computed tomography (CECT) image of the abdomen showing an enhanced oval, soft-tissue mass in the jejunal mesentery at the level of the umbilicus (black arrow); B: Coronal CECT image showing that the mass had its own blood supply (white arrow).



Figure 2 Photograph of the resected mass and the adjacent small bowel. Photograph of the gross specimen demonstrates a 4 cm × 3 cm, yellowish, soft-tissue mass (black arrows) located in the jejunal mesentery and adhered to the serosal surface of the jejunum (white asterisks).

including the acini, ducts, and islet cells^[16]. However, not all three of these components were identified in a single case. The morphologic feature of MHP closely resembles that of the orthotopic pancreas and manifests as a homogeneous, well-enhanced, and elongated mass with pancreas-like clefts or lobulations^[17].

Uncomplicated HP is typically asymptomatic, which is always discovered incidentally during surgery, imaging examination, or autopsy. Any complication that can occur in the orthotopic pancreas can also occur in HP. Associated complications include pancreatitis, pseudocyst formation, abnormal hormone secretion, bowel obstruction, common bile duct obstruction, gastrointestinal bleeding, intussusception, and malignant degeneration^[3,4,18-20]. Depending on its location and size, and involvement of the overlying mucosa, HP can cause symptoms. The most common findings were abdominal pain, abdominal distension, nausea and vomiting, malaise, anorexia, anemia, body weight loss, jaundice, and upper gastrointestinal bleeding according to the

study by Zhang *et al*^[1].

Because of its rarity and nonspecific clinical manifestation, accurate preoperative diagnosis of HP remains difficult^[5,21]. The definitive diagnosis has been always achieved after postoperative pathology. CECT and magnetic resonance imaging (MRI) may demonstrate the lesion that enhances similarly to the orthotopic pancreas^[22-26]. The most common CT manifestation of HP is a small intramural and endoluminal mass with microlobulated margins^[22]. On an MRI scan, HP is iso-intense to the orthotopic pancreas, with characteristic T1-weighted high signal intensity and early avid enhancement after the administration of intravenous contrast material^[17,22], which is particularly helpful for differentiating HP from other lesions. Heterotopic pancreatic tissue has a rudimentary ductal system. The existence of a central duct along the long axis of the mass is another key finding for the diagnosis of HP^[8,17,22]. Sometimes the duct can be confirmed as draining into the fourth portion of the duodenum by magnetic resonance cholangiopancreatography^[8]. Knowledge of the characteristic imaging appearance of MHP is key to confirming the diagnosis preoperatively. First, as with HP in other locations, MHP has morphologic and enhancement characteristics similar to the orthotopic pancreas, named “another pancreas in the mesentery”^[17,22]. Second, the mean long axis diameter/short axis diameter ratio of MHP was much greater than that of gastric HP (3.0 vs 1.4-1.5)^[17]. Third, a duct-like structure paralleling the long axis of MHP is seen more frequently than HP in other locations^[17].

MHP should be considered in the differential diagnosis. A gastrointestinal stromal tumor, carcinoid tumor, lymphoma, and metastasis can manifest as a homogeneous and well-enhanced soft tissue mass located in the mesentery, and the enhancement pattern is unreliable to differentiate from MHP on an enhanced CT scan^[17]. Because of the potential serious complications and malignant change, local excision of MHP is the

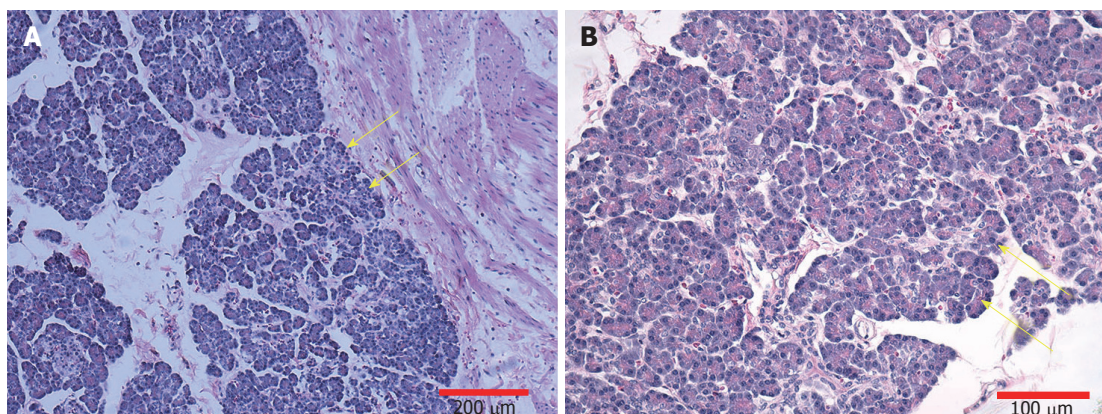


Figure 3 Histopathologic examination of the resected specimen. Microscopic appearance showing that the lesion consisted of heterotopic pancreatic tissue (yellow arrows), including acini, islet cells, and pancreatic ducts, extending to the jejunal serosa (H and E staining; A: Magnification, $\times 100$, scale bar = 200 μm ; B: Magnification, $\times 200$, scale bar = 100 μm).

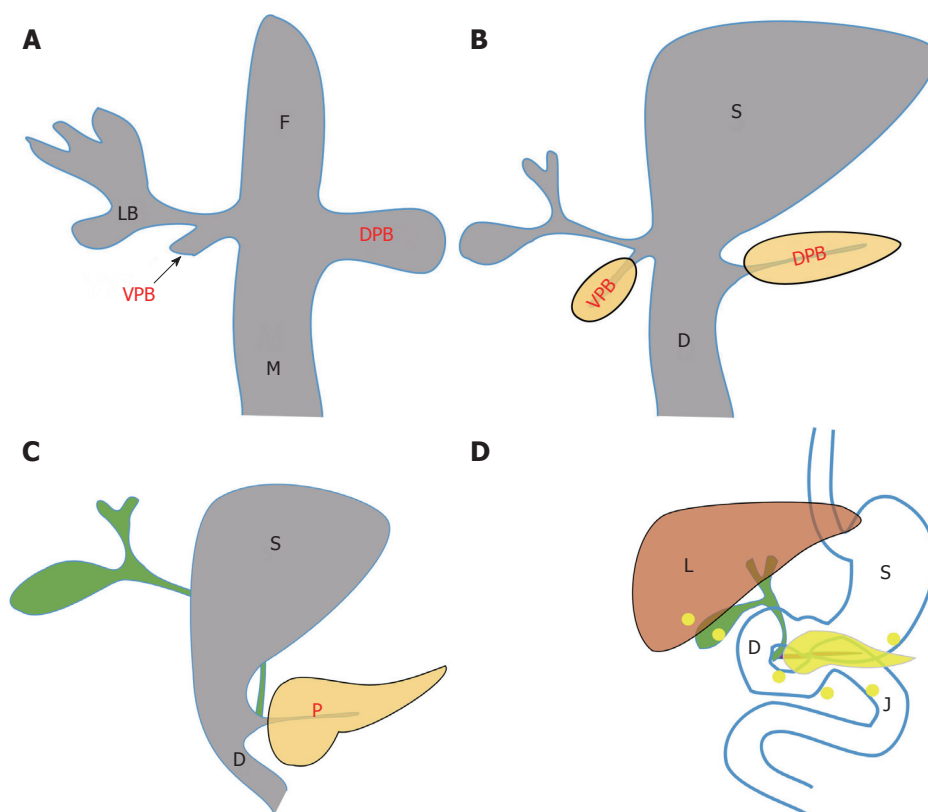


Figure 4 Schematic diagram of the “misplacement theory”. A, B: The pancreas develops from the ventral and dorsal pancreatic buds, which develop at the junction of the foregut and midgut during the 4th week of gestation; C: As the foregut elongates, the developing ventral pancreas, gallbladder, and bile duct rotate clockwise posterior to the duodenum and join the dorsal pancreas in the retroperitoneum. The ventral pancreatic bud rotates clockwise and fuses with the dorsal bud at the 7th week of gestation; D: According to the misplacement theory, deposits of pancreatic tissue are “dropped” into the developing gastrointestinal system during rotation of the foregut when fragments of pancreas become separated and develop into mature elements. Yellow points in D indicate possible locations of heterotopic pancreas. F: Foregut; M: Midgut; VPB: Ventral pancreatic bud; DPB: Dorsal pancreatic bud; LB: Liver bud; S: Stomach; D: Duodenum; P: Pancreas; L: Liver; J: Jejunum.

optimal treatment^[2,26].

We list the cases of MHP in medical literature (Table 1) and found some characteristics of MHP. First, MHP was not seen in children younger than 10 years old. Of the eight cases of MHP, 50% (4/8) were teenagers aged from 12 to 15 years old, 50% (4/8) were adults

aged from 38 to 75 years old. Second, there is a female preponderance (75%, 6/8) of MHP, which is opposite to the male preponderance of HP. Third, the majority of MHP (75%, 6/8) were located in jejunal mesentery. Fourth, CECT and MRCP were the most useful diagnostic method for MHP. These characteristics can be applied in

Table 1 List of cases of mesenteric heterotopic pancreas in medical literature

Ref.	Age (yr)	Sex	Clinical manifestation	Location	Imaging features	Operation
[6]	15	F	Right upper quadrant pain; Diffuse abdominal tenderness, most pronounced in the right upper quadrant and nonspecific guarding	Jejunal mesentery	CECT: A 3.3 cm × 2.3 cm soft tissue mass in the mesentery, with morphology and homogeneous enhancement characteristics similar to the pancreas	A 3 cm mass in the jejunal mesentery, adjacent to the transverse colon and omentum The mass and the adjacent small bowel were resected
[7]	12	M	Periumbilical abdominal pain, nausea and vomiting; Temperature of 100 °F A rigid abdomen with absence of bowel sounds	Jejunal mesentery	No imaging examination	A purulent node (1.5 cm × 1 cm × 0.7 cm) with fibrinous exudate at the base of the midjejunal mesentery This node was excised
[8]	57	F	Pain in the right side of the back, nausea, a similar episode of pain approximately 1 mo before Mild, generalized abdominal tenderness and nonspecific guarding	Small bowel mesentery	CECT: A 3.7 cm × 1.7 cm soft tissue mass in the mesentery, enhancement similar to the pancreas MRCP: A duct within the mesenteric mass, draining into the fourth portion of the duodenum	Treated conservatively
[9]	15	F	Abdominal pain of recent onset and abdominal distention of several years of duration A large tumor filling the left hypochondrium	Mesocolon	CT: A hypodense, intraperitoneal, circumscribed mass displacing the spleen and left kidney	A spherical, encapsulated tumor mass (210 mm in the largest diameter) in the mesocolon Resection of the mass with a segment of transverse colon
[10]	75	F	Acute periumbilical pain, nausea and vomiting	Jejunal mesentery	US: Cholelithiasis and gallbladder wall thickening	An inflammatory mass in the mesentery, 15 cm × 8 cm × 5 cm
[11]	38	M	Acute abdomen with peritoneal irritation findings One episode of syncope, 2-d history of melena The heart rate was 96 beats/min; no abdominal tenderness	Jejunal mesentery	US before the surgery: An abdominal tumoral mass, pseudokidney image, originating from the intestine or mesentery CECT: An elongated soft tissue mass in the jejunal mesentery, attenuation similar to orthotopic pancreas and extended to the periduodenal fat plane	A great portion of the inflammatory mass was excised, and cholecystectomy A soft-tissue mass 20 cm in diameter in the jejunal mesentery, infiltrating the adjacent jejunal wall The lesion was excised with part of the adjacent jejunum
[12]	67	F	Postprandial epigastric stabbing pain, nausea and vomiting. Similar episodes had recurred over the past 30 yr Past medical history: A laparoscopic cholecystectomy; Tenderness of epigastrium	Jejunal mesentery	CECT: A mass in the mesentery. A small ductal structure in the mass, communicating with the adjacent jejunal loop MRCP: A mass in the mesentery isointense to the native pancreas, with a small duct draining into a proximal jejunal loop	A mass (6.5 cm × 2.5 cm × 1.6 cm indurated teardrop-shaped) mass in the jejunal mesentery The mass with the overlying adherent jejunum was resected
This study	12	F	Intermittent vomiting and abdominal pain Abdominal tenderness with peritoneal irritation	Jejunal mesentery	US: A well-defined, heterogeneous, medially echoic, 4.9 cm × 2.6 cm mass at the margin of the mesentery CECT: An enhanced oval, soft tissue mass (42 cm × 25 mm) in the mesentery	A yellowish, soft-tissue mass 4 cm in diameter in the mesentery, adhered to the serosa of the jejunum The mass and the adjacent small bowel were resected

CECT: Contrast-enhanced computed tomography; CT: Computed tomography; MRCP: Magnetic resonance cholangiopancreatography; US: Ultrasonography.

clinical diagnosis of MHP.

In conclusion, MHP is very rare and an unusual cause of acute abdomen in patients older than 12 years. Preoperative diagnosis of MHP is difficult, even in a symptomatic patient. When a mesenteric mass has morphology and enhancement similar to the orthotopic pancreas, MHP should be considered in the differential

diagnosis. Increased awareness and understanding of the imaging characteristics of MHP will aid in correct preoperative diagnosis and appropriate patient management.

ARTICLE HIGHLIGHTS

Case characteristic

A 12-year-old girl with intermittent vomiting and abdominal pain for 3 d.

Clinical diagnosis

Mesenteric mass.

Differential diagnosis

Intestinal duplication cyst, inflamed Meckel's diverticulum, and mesenteric lymphangioma were considered.

Laboratory diagnosis

The laboratory results were unremarkable.

Imaging diagnosis

Contrast-enhanced computed tomography (CECT) of the abdomen showed an enhanced oval, soft-tissue mass (42 mm × 25 mm) in the mesentery at the level of the umbilicus.

Pathological diagnosis

Mesenteric heterotopic pancreas (MHP).

Treatment

Resection of the mass and adjacent small bowel.

Related reports

Two cases of pediatric MHP have been reported in the medical literature from the University of Chicago Medical Center and Boston City Hospital.

Term explanation

Heterotopic pancreas of the mesentery.

Experiences and lessons

This case will contribute to increasing clinicians' awareness and understanding of the imaging features of MHP in order to help in making correct preoperative diagnosis and giving appropriate treatment.

REFERENCES

- Zhang Y, Sun X, Gold JS, Sun Q, Lv Y, Li Q, Huang Q. Heterotopic pancreas: a clinicopathological study of 184 cases from a single high-volume medical center in China. *Hum Pathol* 2016; **55**: 135-142 [PMID: 27195908 DOI: 10.1016/j.humpath.2016.05.004]
- Lai EC, Tompkins RK. Heterotopic pancreas. Review of a 26 year experience. *Am J Surg* 1986; **151**: 697-700 [PMID: 3717502 DOI: 10.1016/0002-9610(86)90045-0]
- Tanaka K, Tsunoda T, Eto T, Yamada M, Tajima Y, Shimogama H, Yamaguchi T, Matsuo S, Izawa K. Diagnosis and management of heterotopic pancreas. *Int Surg* 1993; **78**: 32-35 [PMID: 8473080]
- Pang LC. Pancreatic heterotopia: a reappraisal and clinicopathologic analysis of 32 cases. *South Med J* 1988; **81**: 1264-1275 [PMID: 3051429 DOI: 10.1097/00007611-198810000-00016]
- Hsia CY, Wu CW, Lui WY. Heterotopic pancreas: a difficult diagnosis. *J Clin Gastroenterol* 1999; **28**: 144-147 [PMID: 10078823 DOI: 10.1097/00004836-199903000-00012]
- Ginsburg M, Ahmed O, Rana KA, Boumendjel R, Dachman AH, Zaritzky M. Ectopic pancreas presenting with pancreatitis and a mesenteric mass. *J Pediatr Surg* 2013; **48**: e29-e32 [PMID: 23331836 DOI: 10.1016/j.jpedsurg.2012.10.062]
- Fam S, O'Brian DS, Borger JA. Ectopic pancreas with acute inflammation. *J Pediatr Surg* 1982; **17**: 86-87 [PMID: 7077488 DOI: 10.1016/S0022-3468(82)80338-2]
- Silva AC, Charles JC, Kimery BD, Wood JP, Liu PT. MR Cholangiopancreatography in the detection of symptomatic ectopic pancreatitis in the small-bowel mesentery. *AJR Am J Roentgenol* 2006; **187**: W195-W197 [PMID: 16861511 DOI: 10.2214/AJR.04.1756]
- Tornóczy T, Kálmán E, Jáksó P, Méhes G, Pajor L, Kajtár GG, Battyány I, Davidovics S, Sohail M, Krausz T. Solid and papillary epithelial neoplasm arising in heterotopic pancreatic tissue of the mesocolon. *J Clin Pathol* 2001; **54**: 241-245 [PMID: 11253140 DOI: 10.1136/jcp.54.3.241]
- Canbaz H, Colak T, Düşmez Apa D, Sezgin O, Aydin S. An unusual cause of acute abdomen: mesenteric heterotopic pancreatitis causing confusion in clinical diagnosis. *Turk J Gastroenterol* 2009; **20**: 142-145 [PMID: 19530049]
- Shin SS, Jeong YY, Kang HK. Giant heterotopic pancreas in the jejunal mesentery. *AJR Am J Roentgenol* 2007; **189**: W262-W263 [PMID: 17954622 DOI: 10.2214/AJR.05.1142]
- Wong JC, Robinson C, Jones EC, Harris A, Zwirowich C, Wakefield R, Simons RK, Yoshida EM. Recurrent ectopic pancreatitis of the jejunum and mesentery over a 30-year period. *Hepatobiliary Pancreat Dis Int* 2011; **10**: 218-220 [PMID: 21459732 DOI: 10.1016/S1499-3872(11)60036-2]
- Kim DW, Kim JH, Park SH, Lee JS, Hong SM, Kim M, Ha HK. Heterotopic pancreas of the jejunum: associations between CT and pathology features. *Abdom Imaging* 2015; **40**: 38-45 [PMID: 24934475 DOI: 10.1007/s00261-014-0177-y]
- Park SH, Han JK, Choi BI, Kim M, Kim YI, Yeon KM, Han MC. Heterotopic pancreas of the stomach: CT findings correlated with pathologic findings in six patients. *Abdom Imaging* 2000; **25**: 119-123 [PMID: 10675449 DOI: 10.1007/s002619910028]
- Mortelé KJ, Rocha TC, Streeter JL, Taylor AJ. Multimodality imaging of pancreatic and biliary congenital anomalies. *Radiographics* 2006; **26**: 715-731 [PMID: 16702450 DOI: 10.1148/rg.263055164]
- Trifan A, Târcoveanu E, Danciu M, Huțanașu C, Cojocariu C, Stanciu C. Gastric heterotopic pancreas: an unusual case and review of the literature. *J Gastrointest Liver Dis* 2012; **21**: 209-212 [PMID: 22720312]
- Seo N, Kim JH. Characteristic CT features of heterotopic pancreas of the mesentery: "another pancreas" in the mesentery. *Clin Imaging* 2014; **38**: 27-30 [PMID: 24176484 DOI: 10.1016/j.clinimag.2013.09.008]
- Makhlouf HR, Almeida JL, Sobin LH. Carcinoma in jejunal pancreatic heterotopia. *Arch Pathol Lab Med* 1999; **123**: 707-711 [PMID: 10420228 DOI: 10.1043/0003-9985(1999)123<0707:CIJPH>2.0.CO;2]
- Halkic N, Nordback P. Soft-tissue images. Malignant degeneration of heterotopic pancreas. *Can J Surg* 2001; **44**: 407 [PMID: 11764870]
- Riccardo G, Valeria B, Giulia C, Alessia C, Luisa F, Elisabetta T, Alessandro M, Isabella M, Jürgen S. Heterotopic pancreas in Meckel's diverticulum in a 7-year-old child with intussusception and recurrent gastrointestinal bleeding: case report and literature review focusing on diagnostic controversies. *Afr J Paediatr Surg* 2014; **11**: 354-358 [PMID: 25323189 DOI: 10.4103/0189-6725.143172]
- Ogata H, Oshio T, Ishibashi H, Takano S, Yagi M. Heterotopic pancreas in children: review of the literature and report of 12 cases. *Pediatr Surg Int* 2008; **24**: 271-275 [PMID: 18183407 DOI: 10.1007/s00383-007-2098-0]
- Rezvani M, Menias C, Sandrasegaran K, Olpin JD, Elsayes KM, Shaaban AM. Heterotopic Pancreas: Histopathologic Features,

- Imaging Findings, and Complications. *Radiographics* 2017; **37**: 484-499 [PMID: 28287935 DOI: 10.1148/rg.2017160091]
- 23 **Cho JS**, Shin KS, Kwon ST, Kim JW, Song CJ, Noh SM, Kang DY, Kim HY, Kang HK. Heterotopic pancreas in the stomach: CT findings. *Radiology* 2000; **217**: 139-144 [PMID: 11012436 DOI: 10.1148/radiology.217.1.r00oc09139]
- 24 **Megibow AJ**, Balthazar EJ, Cho KC, Medwid SW, Birnbaum BA, Noz ME. Bowel obstruction: evaluation with CT. *Radiology* 1991; **180**: 313-318 [PMID: 2068291 DOI: 10.1148/radiology.180.2.2068291]
- 25 **Wang C**, Kuo Y, Yeung K, Wu C, Liu G. CT appearance of ectopic pancreas: a case report. *Abdom Imaging* 1998; **23**: 332-333 [PMID: 9569308 DOI: 10.1007/s002619900351]
- 26 **Biswas A**, Husain EA, Feakins RM, Abraham AT. Heterotopic pancreas mimicking cholangiocarcinoma. Case report and literature review. *JOP* 2007; **8**: 28-34 [PMID: 17228130]

P- Reviewer: Amornyotin S, Nobile S, Pandey A, Sergi CM, Shaaban OM, Uwaezuoke SN **S- Editor:** Ji FF
L- Editor: Wang TQ **E- Editor:** Song H





Published by **Baishideng Publishing Group Inc**
7901 Stoneridge Drive, Suite 501, Pleasanton, CA 94588, USA
Telephone: +1-925-223-8242
Fax: +1-925-223-8243
E-mail: bpgoffice@wjgnet.com
Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

