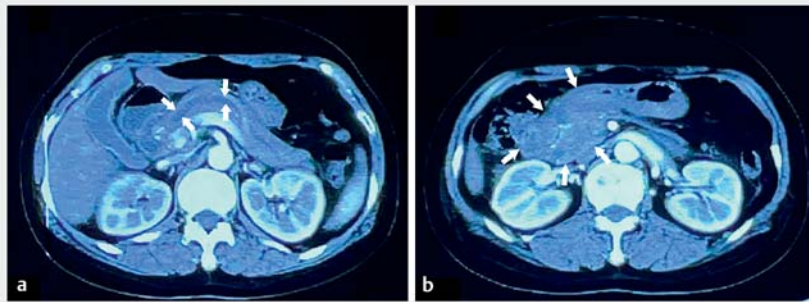
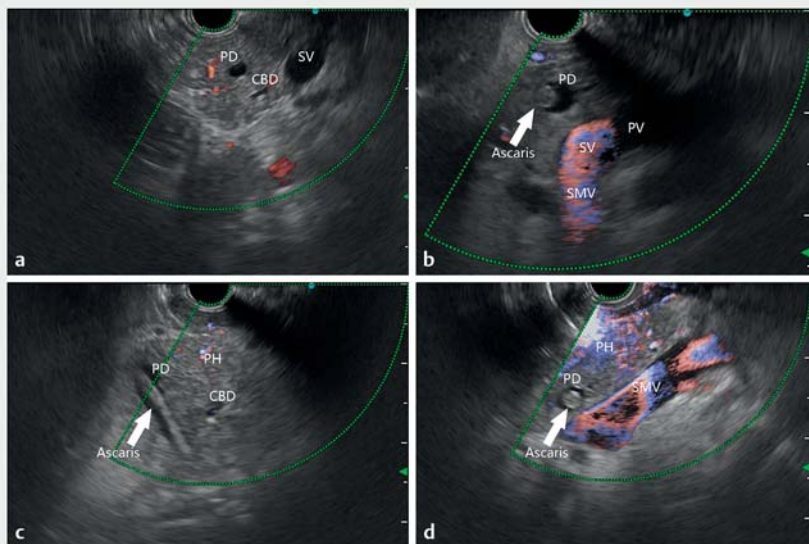


Pancreatic duct dilatation and pancreatic head mass caused by the rare finding of a whole *Ascaris* within the pancreatic duct

OPEN
ACCESS



► **Fig. 1** Computed tomography scan images showing: **a** pancreatic duct dilatation; **b** enlargement of the pancreatic head, meaning a pancreatic head mass could not be ruled out.



► **Fig. 2** Endoscopic ultrasonography images showing: **a** pancreatic duct (PD) dilatation in the body and tail of the pancreas; **b** a solid round hyperechoic area without acoustic shadowing in the PD within the pancreatic neck; **c** the linear hyperechoic area without central hypoechoic rim (“innertube” sign) in the PD within the pancreatic head; **d** on scanning of the pancreatic head from the descending duodenum, a solid round hyperechoic area in the PD again.

A 56-year-old woman was transferred from an outside hospital owing to concern about pancreatic duct (PD) obstruction and a pancreatic head mass. The patient had been admitted 1 week prior to the transfer with abdominal pain radiating to the waist and back, accompanied

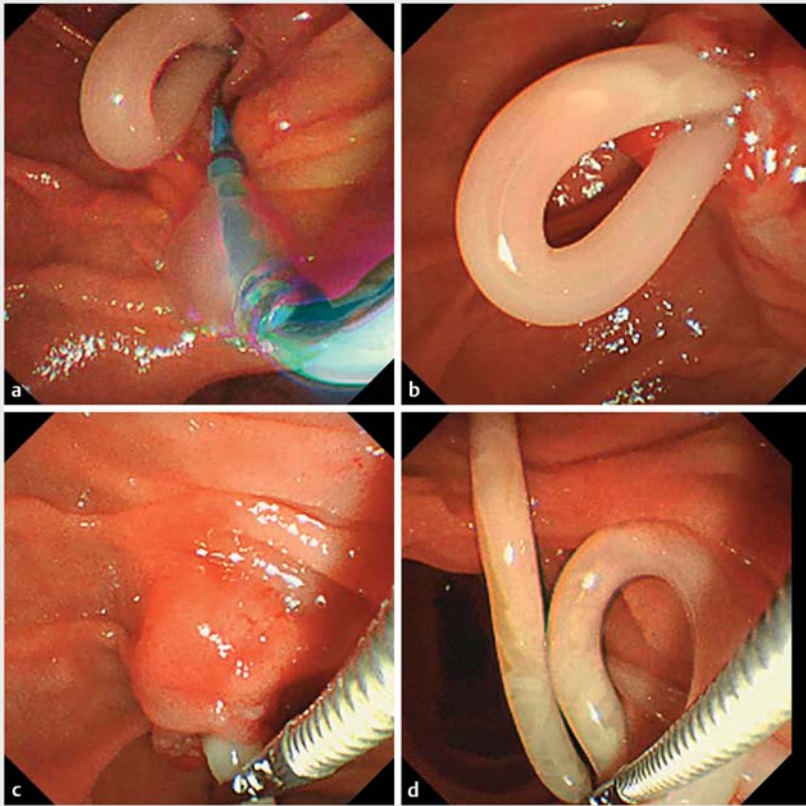
by nausea and vomiting. Her symptoms had since resolved with supportive measures, including anti-inflammatories and analgesics. Physical examination on admission did not reveal a jaundiced complexion and her abdomen was soft without tenderness. Outpatient laboratory



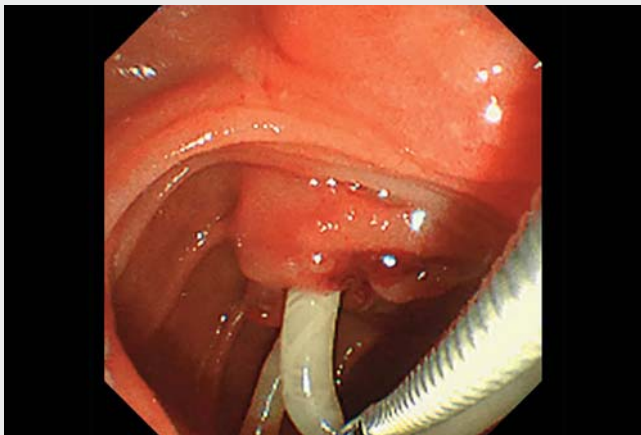
► **Fig. 3** Radiographic image during endoscopic retrograde cholangiopancreatography showing pancreatic duct (PD) dilatation and a stripe-like filling defect in the PD.

results demonstrated a mildly elevated cancer antigen 199 (CA199) at 41.02 U/mL, but liver function panel, and serum and urinary amylase were within the normal ranges. Abdominal computed tomography (CT) at the previous hospital had shown PD dilatation and pancreatic head enlargement (► **Fig. 1**).

After admission, the patient underwent endoscopic ultrasonography (EUS). EUS from the stomach showed the PD dilatation in the body and tail of the pancreas (► **Fig. 2a**). The scan of the neck of the pancreas revealed a solid round hyperechoic lesion without acoustic shadowing in the PD (► **Fig. 2b**), so PD stones were ruled out. A linear hyperechoic area was seen in the PD within the pancreatic head during scanning from the duodenal bulb, but there was no central hypoechoic rim (“innertube” sign) (► **Fig. 2c**). Side-viewing endoscopy showed the shape and size of the duodenal papilla were normal and no worms were noticed within the intestines. EUS from ampulla demonstrated the PD and bile duct openings were normal. A repeat pancreatic head scan from the descending duodenum



► **Fig. 4** Endoscopic views showing: **a** a stone extraction balloon being used for foreign body removal after the papillary sphincter had been dilated to 4 mm with balloon dilation catheters; **b** a moving, white round worm being discharged from the papilla in a folded shape; **c, d** the worm being extracted using foreign body forceps.



► **Video 1** Endoscopic ultrasonography showed the linear hyperecho in pancreatic duct (PD), pancreatography showed PD dilation and a stripe-like filling defect in PD. An endoscopic sphincterotomy was then performed. A moving white round worm was discharged from the papilla by a stone extraction balloon after papillary sphincter dilated to 4 mm and successfully extracted by foreign body forceps.

was performed, and a solid round hyperechoic area without acoustic shadowing was again seen in the PD (► **Fig. 2 d**).

A diagnosis of an *Ascaris* in the PD was considered. Accordingly, an endoscopic retrograde cholangiopancreatography (ERCP) was performed. After successful intubation, pancreatography showed that the PD was dilated. A stripe-like filling defect was seen in the PD (► **Fig. 3**). An endoscopic sphincterotomy was then performed and the papillary sphincter was dilated to 4 mm with balloon dilation catheters. Another stone extraction balloon was used for foreign body removal. A moving, white round worm was discharged from the papilla in a folded shape (► **Fig. 4**; ► **Video 1**). The *Ascaris* was extracted with foreign body forceps and taken out from the mouth (► **Fig. 5**). Subsequently, a PD stent was placed to complete the procedure. The patient recovered well and was treated with anthelmintic agents.

Unlike in the more common cases of pancreatic ascariasis that are associated with either a large worm burden in the duodenum, part of the worm being visible through the duodenal papilla [1], or accompanying biliary ascariasis [2], which is easy to diagnose, in this case there was only a single worm that had completely entered the PD, meaning it could be easily misdiagnosed as pancreatic head cancer. The risk of misdiagnosis is due to the following aspects: (i) an *Ascaris* has no characteristic manifestation on CT or magnetic resonance imaging, but appears as a long curved and transparent shadow, meaning intraductal ascariasis could be easily mistaken for a dilated PD; (ii) pancreatitis caused by *Ascaris* is commonly mild [3] and the clinical symptoms could completely disappear before the patient sees a doctor, meaning the subsequent pancreatic head enlargement caused by pancreatitis could be easily misdiagnosed as a pancreatic head mass; (iii) the level of cancer antigens, such as CA199, frequently increase in cases of pancreatic ascariasis; however, such increases are mild and reversible.

It is therefore important to keep PD ascariasis in the differential diagnosis when one encounters an unexplained pancreatic head mass and PD dilatation, espe-



► **Fig. 5** Photograph showing the *Ascaris* (about 20 cm in length) after its removal.

cially in patients with upper abdominal pain at the time of onset. EUS and ERCP are effective methods for the diagnosis and management of this condition.

Endoscopy_UCTN_Code_TTT_1AR_2AH

Competing interests

The authors declare that they have no conflict of interest.

The authors

Wei Liu, Chun Liu, Fang Lyu, Pengfei Li, Yao Ning, Chao He

Department of General Surgery, The Second Xiangya Hospital, Central South University, Changsha, Hunan, China

Corresponding author

Chao He, MD

Department of General Surgery, The Second Xiangya Hospital, Central South University, 139 Renmin Middle Road, Furong District, Changsha, Hunan 410011, China
chaohe@csu.edu.cn

References

- [1] Khan N, Wu C, Hu B. Acute pancreatitis: ascaris in the pancreatic duct. *Endoscopy* 2018; 50: E119–E120
- [2] Sharma M, Somani P, Prasad R et al. A rare etiology of idiopathic recurrent acute pancreatitis. *Endoscopy* 2017; 49: E143–E144
- [3] Khuroo MS, Rather AA, Khuroo NS et al. Hepatobiliary and pancreatic ascariasis. *World J Gastroenterol* 2016; 22: 7507–7517

Bibliography

Endoscopy 2022; 54: E853–E855

DOI 10.1055/a-1838-4671

ISSN 0013-726X

published online 25.5.2022

© 2022. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany



ENDOSCOPY E-VIDEOS

<https://eref.thieme.de/e-videos>



Endoscopy E-Videos is an open access online section, reporting on interesting cases

and new techniques in gastroenterological endoscopy. All papers include a high quality video and all contributions are freely accessible online. Processing charges apply (currently EUR 375), discounts and waivers acc. to HINARI are available.

This section has its own submission website at

<https://mc.manuscriptcentral.com/e-videos>