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## Uncommon biliary strictures: diagnostic insights into candidiasis

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Abbreviation list: CT (computed tomography), EUS (endoscopic ultrasonography)

Dear Editor,

We present a case of biliary candidiasis incidentally identified in a 71-year-old male who has the medical history of laparoscopic cholecystectomy performed 4 years ago. Laboratory examination revealed elevated biliary and liver enzyme levels. Abdominal contrast-enhanced computed tomography and endoscopic ultrasonography (EUS) revealed thickening of the common bile duct wall (Figure 1a, d). EUS detected an intraluminal low-echo lesion without acoustic shadowing; consistent with a nonvascular mass, no enhancement was observed on perfluorobutane-enhanced EUS (Figure 1c). Accordingly, endoscopic retrograde cholangiopancreatography was

performed, revealing strictures and floating debris in the bile duct lumen (Figure 1b). Direct cholangioscopy revealed white-to-brown fibrous tissue bundles near the bile duct junction (Figure 2a). Cytological analysis of bile aspirates showed yeast-like fungi and budding pseudohyphae, indicating the presence of *Candida albicans* (Figure 2b). Fungal hyphae invading the bile duct epithelium was observed in bile duct biopsy samples, further confirming these findings (Figure 2c). No malignant cells were detected on cytological or histopathological examination. Magnetic resonance cholangiopancreatography showed significant resolution of the common bile duct strictures (Figure 3a, 3b) after following antifungal treatment. This case underscores the importance of considering biliary candidiasis in patients presenting with biliary strictures, especially those with a history of biliary interventions (1-3).

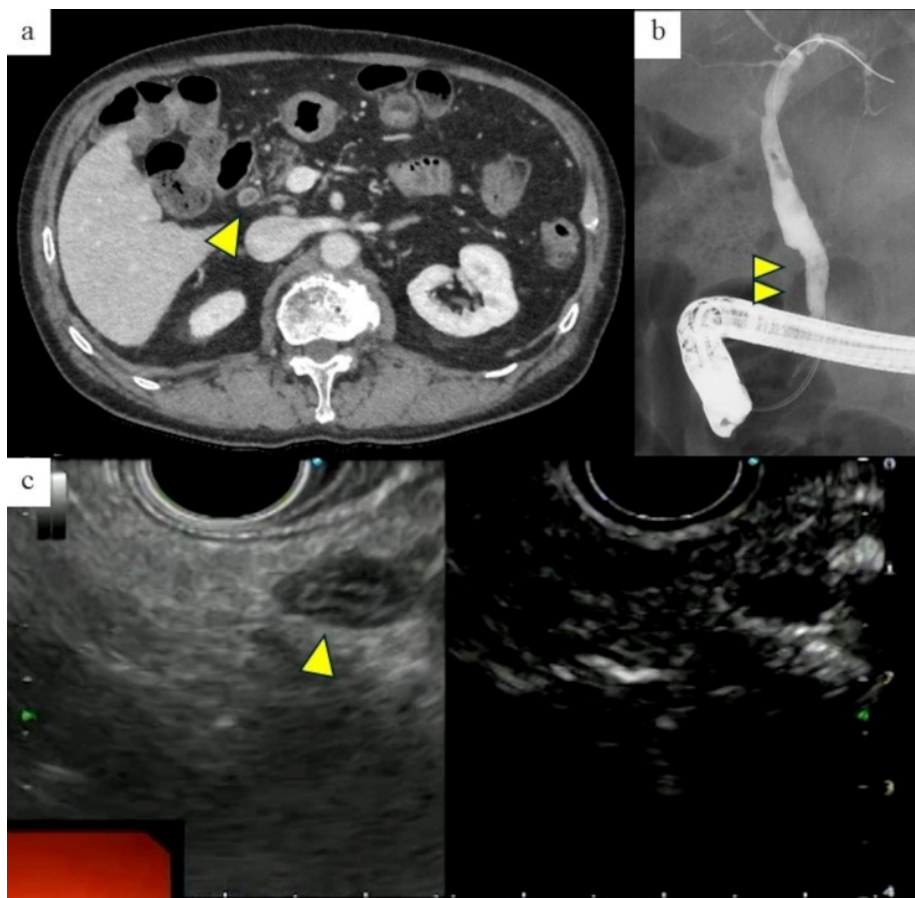
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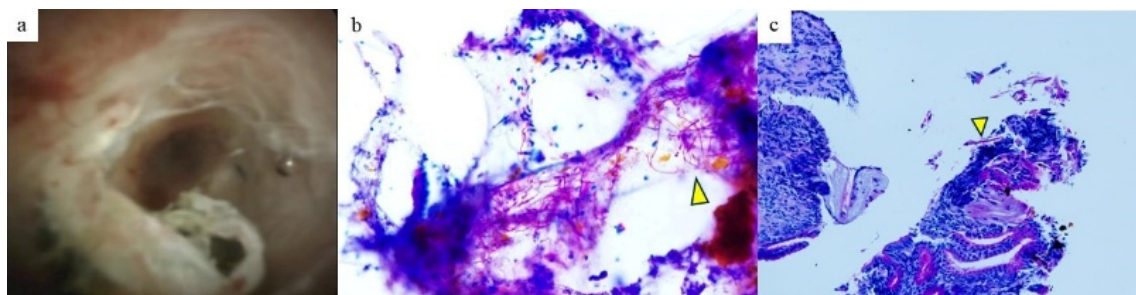


**Figure 1**

**a:** Abdominal computed tomography shows thickening of the common bile duct wall.

**b:** Endoscopic retrograde cholangiopancreatography reveals strictures in the bile duct lumen and floating debris within the bile (arrowheads), indicative of a possible fungal infection.

**c:** Endoscopic ultrasonography using perfluorobutane as the contrast agent reveals thickening of the common bile duct wall with a low-echo intraluminal lesion (arrowhead) and no contrast enhancement.

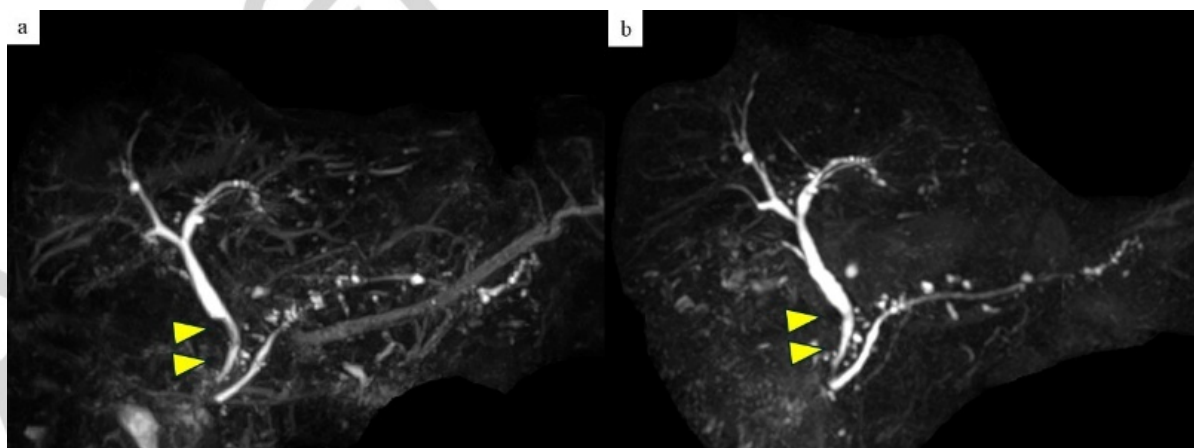


**Figure 2**

**a:** Cholangioscopy reveals white-to-brown fibrous tissue bundles near the bile duct junction, suggesting fungal overgrowth.

**b:** Microscopic cytological examination of bile samples shows yeast-like fungi and budding pseudohyphae (arrowhead), consistent with the presence of *Candida albicans* (periodic acid-Schiff staining  $\times 20$ ).

**c:** Histological examination of a bile duct biopsy sample reveals fungal hyphae invading the epithelial lining (arrowhead), indicating the presence of *Candida albicans* (periodic acid-Schiff staining,  $\times 20$ ).



**Figure 3**

**a:** As the baseline for the assessment of the effectiveness of antifungal treatment, magnetic resonance cholangiopancreatography shows the common bile duct strictures before treatment.

**b:** Follow-up magnetic resonance cholangiopancreatography 4 weeks after treatment (fluconazole) initiation shows marked resolution of the bile duct strictures.

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