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Case Report

Inflammatory hilar biliary stricture: two case reports with literature review

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Abstract: In this paper, we reported two cases of obstructive jaundice that were preoperatively suspected as hilar cholangiocarcinoma; however, both definitive diagnoses were confirmed as inflammatory hilar biliary strictures. After surgical operation, both patients recovered well. The two cases represent a broad spectrum of benign disease. It poses a challenge to accurately differentiate benign from malignant biliary strictures before operation. For rare cases with benign billiary strictures, it necessary to make requires further studies on its mechanisms and diagnostic approaches. In view of the lack of a reliable method for preoperative diagnosis. Resection remains the most reliable way to rule out biliary malignancy until now.

Keywords: Hilar bile ducts, strictures, benign

Introduction

Most hilar obstruction result from malignant tumor, but up to 15% of the diseases in the world are benign lesions [1]. The presence of a stricture at the hepatic hilus is known to be pathognomonic of hilar cholangiocarcinoma (HCCA). Overdiagnosis of this condition is increasing. Nontraumatic inflammatory hilar strictures are uncommon. Here we reported two patients with inflammatory hilar strictures, who were suspected of HCCA before surgery.

Case presentation

Case 1

A 52-year-old male came to our hospital, in January 2016, with complaints of yellow urine and chills for one week. Upon admittance, he was afebrile, positive of jaundice and emaciation. He had a history of surgical treatment for acute necrotizing pancreatitis five years ago, and had suffered from diabetes for two years. The biochemical tests showed the serum levels of alanine aminotransferase, aspartate aminotransferase, total bilirubin and direct bilirubin increased slightly. The levels of circulating tumor markers, including carcinoembryonic antigen (CEA), alpha fetal protein (AFP), and carbohydrate antigen 19-9 (CA 19-9) were in normal limits. Given these clinical presentation and laboratory findings, both ultrasonography (US) and magnetic resonance imaging (MRI) revealed abnormal signals around the hilar bile duct region (**Figure 1A**, **1B**). It seemed that the previous surgical therapy might have been the cause of the bile duct stricture. However, we did not deny the presence of malignancy because the bile duct stricture had caused jaundice and irregular nodule shadow. After discussion, reoperation was performed. During operation, the duct was incised, and a choledochoscope was inserted. We found the bile duct wall was smooth and the nodule in hilar duct was approximately 15 mm × 25 mm in diameter in choledochoscope. The stenosis degree of hilar duct was set to 70%, which prevented the choledochoscope from passing through. Subsequently, both of subsegment IVb segment and extrahepatic bile were resected, and Rou-en-Y cholangiojejunostomy were performed. Histopathological examination revealed extensive acute and chronic inflammatory cell infiltration in hilar bile duct (**Figure 1C**). The patient's postoperative course was normal.

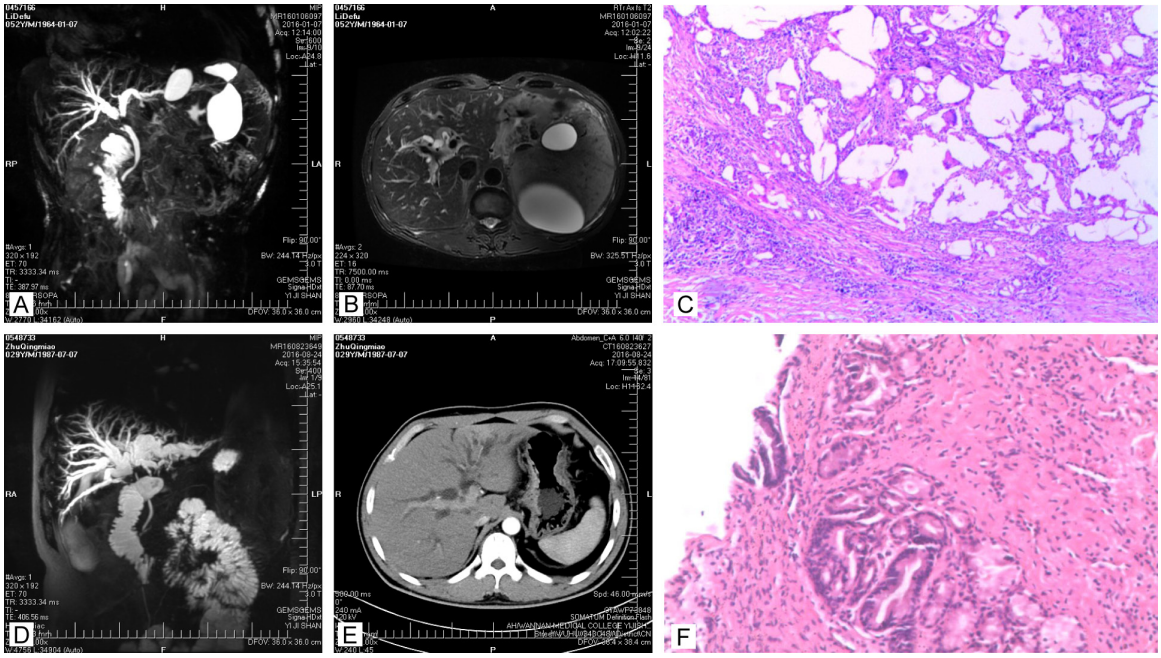

Figure 1. A and D. Magnetic resonance cholangiopancreatography (MRCP) imaging showing lesions at hepatic hilum. B and E. Magnetic resonance imaging (MRI) and computed tomography (CT) revealing up stream dilatation, respectively. C and F. The strictures at hilar were histologically graded as inflammatory strictures. hematoxylineosin, (× 100).

Case 2

A 29-year-old male presented to our hospital, in August 2016, due to progressive jaundice for five days. Computed tomography (CT) revealed a stenosis of the hiar bile and expansion of the intrahepatic bile duct (**Figure 1E**). On admission, the patient presented afebrile, jaundice, complained of pruritus, diarrhoea and emaciation. He had a history of alcohol and smoking abuse but denied any history of surgery, radiation or trauma. The serum levels of circulating tumor markers including CEA, AFP, and CA 19-9 were within normal limits. Moreover, viral markers HBsAg, HBsAb, and anti-HCV were negative. In addition, the hemolytic reaction was negative. In addition to these clinical presentation and laboratory findings, magnetic resonance cholangiopancreatography (MRCP) further revealed a small nodule at the hepatic hilum (**Figure 1D**). Above all, we did not deny the presence of a malignancy. At laparotomy, mild liver cholestasis and several enlarged lymph nodes in the hepatoduodenal ligaments were found, and metal probe can not pass through the strictured duct. The extrahepatic bile duct resection and biliary-enteric anastomosis were performed. Surgical specimens included extrahepatic bile duct and one lymph node. Intraoperative frozen section examination revealed hepatic portal inflammation with hilar biliary stricture that was the same as the final pathology (**Figure 1F**). After surgical excision, the patient recovered well, and the jaundice disappeared completely in two weeks. No obvious abnormality was found in follow-ups until now.

Discussion

The management of hilar obstruction has been a cliniacl challenge for the surgeon. Although up to 92% of patients with proximal bile duct strictures are ultimately proven to have HCCA, during the last 3 decades, it is now well established that approximately 8% to 15% of those patients will be found to have benign disease [1-3]. To the best of our knowledge, benign inflammatory strictures extremely rare. Thus, little is known about its pathogenesis (**Table 1**) [1, 4]. Over the past 30 years, much work has been done to differential diagnosis of inflammatory stricture from malignant disease.

CA19-9 plays a vital role in the diagnosis of hepatobiliary and pancreatic malignancies.

Table 1. Inflammatory strictures of the included studies

Author and year	Study location	Cases/Subjects	Study Period	Ratio	M/F
Krukowski, 1989	UK	12/12	1975-1986	-	5/7
Nakayama, 1999	Japan	14/178	1990-1997	7.87%	12/2
Gerhards, 2001	Netherlands	15/132	1983-1997	11.36%	NR
Binkley, 2002	USA	4/4	1991-2000	-	2/2
Corvera, 2005	USA	8/275	1992-2003	2.91%	NR
Jung, 2007	Korea	14/177	2000-2005	7.91%	12/2
Juntermanns, 2011	Germany	20/238	1998-2008	8.40%	NR
Scheuermann, 2016	Germany	8/250	1997-2011	3.20%	NR

M; Male, F: Female. NR: None reported.

Several studies have revealed that CA19-9 was the better predictor in malignant biliary stenosis than others [3, 5, 6]. Although Saluja et al. [5] found the CA19-9 levels in patients with benign was less than those malignant proximal bile duct stenosis, Juntermanns et al. [6] considered CA19-9 was not a reliable parameter because 9 patients suffering from benign lesions (2 patients with chronic inflammatory bile stenosis) expressed evaluated tumor markers. Recently, CA19-9 has been a routine examination for these patients for suspected malignant biliary lesions. The serum levels of CA19-9 in our cases were in normal limits. Though determination CA19-9 can't significantly different in distinguishing between benign or malignant dignity, it may give the clinician a hint towards the tumor's dignity [6].

Proximal bile duct stenosis is usually accompanied by intrahepatic bile ductal dilatation. US is a sensitive tool for detecting in upstream dilatation and thus generally becomes the first choice screening test for the evaluation of biliary obstruction [7]. However, it is well known that US is lower accuracy in detection of underlying cause. MRCP is an excellent imaging procedure that HCCA appears as a moderately irregular thickening of the bile duct wall (≥5 mm) with symmetric upstream dilation on MRCP images [8]. MRCP may be used to substitute endoscopic retrograde cholangiopan creatography (ERCP) [8, 9]. In our study, US and MRCP have been used in diagnosis. Both suggested hilar malignancy in two patients.

Multiphase contrast-enhanced CT also has a very highly sensitivity for the diagnosis of HCCA, and its typical imaging includes: biliary hyperenhancement, irregular asymmetric wall thickening with shouldered margins, and long segment strictures. In contrast, the imaging showed smooth, regular, short-segmental narrowing tend to be benign lesions [3]. Altman et al. found that the presence of tumour masses in MRI or CT showed statistically reliable differences between malignant and benign hilar biliary strictures from the entire study population [3]. However, the presence of tumor masses in imaging could not exclude a benign dignity in all cases. In our second case, CT revealed hilar malignancy.

Recent research has shown that the techniques of PET scanning can be recommended for routine use to differentiate between benign and malignant hilar stricture because cholangiocarcinoma is a fluorodeoxyglucose avid malignancy [4]. However, the accuracy of PET scanning in distinguishing those benign and malignant lesions remains controversial [4, 10, 11]. A large amount of evidence-based studies are needed.

Percutaneous transhepatic cholangioscopy (PTCS) is an endoscopic modality that has been very useful for removal of biliary stones and diagnosis of intrahepatic masses. Beyond these points, the advantages of PTCS for diagnosis in patients with hilar stricture have been reported [9, 12]. In addition, Jung et al. found PTCS biopsy combined with cholangiography observation was useful for differential diagnosis of hilar strictures and its sensitivity of the tumor vessel was 88.4% [9]. However, it is dangerous to excessively rely on cholangiographic or endoscopic biopsy results, because a potentially curative tumor can be ignored. Despite there is no reliable clinical method to distinguish inflammatory strictures from malignant lesions, clinical presentations and multiple examinations might offer some supports for clinicians.

The treatment of proximal bile ducts stricture represents a particularly technical challenge for the surgeon. Management of benign biliary strictures should aim at maximizing patency of

the bile duct and preserving that patency in order to minimize any short- or long-term complications [13]. The first treatment option for benign biliary strictures is endoscopic dilation and stenting. However, hilar biliary stricture where operative management is necessary [3]. The process of operative management can be divided into following steps: stricture resection, bile duct reshaping or/and biliary tract reconstruction. There are several biliary tract reconstruction options that have been used in the past and are still currently used, such as neoconfluence, double-barrel anastomosis and portoenterostomy. It must be shaped and selected according to the individual characteristics of a given patient [14]. Among of those choices, neoconfluence was a better choice than the others. In our study, neoconfluence and Roux-en-Y hepaticojejunostomy are adopted to cure the disease. Both of them recovered well after discharge. Sometimes, partial liver resection is necessary in order to improve exposure of lesion and save subsequent operation time if the stenosis is above confluence of hepatic ducts. The subsegment IVb of liver and extrahepatic bile duct were both resected in case 1. In addition, theses tissue specimens including swollen lymph nodes can also be used for pathological examination to rule out cancer when necessary.

Because of relative inexperience with benign lesions at proximal bile duct, and lack of reliable preoperative diagnostic methods, the likelihood of undertreating or overtreating these patients in considerable [15]. However, the decision of surgical intervention remains mandatory when suspecting hilar strictures, and should not to be considered as therapeutical error. Malignant biliary stenosis can not be excluded if the lesion is not completely resected.

Taken together, in the vast majority of cases, hilar obstruction is seen to be malignant; inflammatory biliary stricture in final histology is rare and probably represents a broad spectrum of benign disease. No reliable clinical method can help the surgeon distinguish inflammatory stricture from malignant, multiple examinations might offer some information for clinicians. Operation may still be the most effective treatment strategies in dealing with this disease.

Disclosure of conflict of interest

None.

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