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## Case Report

# Biliary Metastases from Colon Cancer: A Rare Differential Diagnosis for Obstructive Jaundice

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### ABSTRACT

Metastatic infiltration of the biliary tree is a rare manifestation of colorectal cancer. Currently, there is limited evidence to inform the management of such cases and the prognosis is poor. Herein, we report a case of biliary colorectal metastases with extensive multifocal involvement and discuss the challenges of the diagnosis and treatment.

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## Introduction

Biliary metastases from colorectal cancer are rarely encountered. Since the first description in 1946, only a limited number of cases have been reported [1-6]. Adenocarcinomas of the colon usually spread locally by proliferation along epithelial surfaces. However, infiltration along ductal walls and intra-biliary growth is uncommon [7]. From the known cases, presentations vary from malignant biliary strictures to discrete endoluminal lesions. We report a case of extensive multifocal disease in a patient who had undergone systemic and targeted therapy for the treatment of cecal adenocarcinoma. This case contributes to the scarce literature on this rare manifestation of colorectal metastases, highlighting the diagnostic and therapeutic challenges. Generally, metastatic infiltration of the biliary tree from a colonic primary tumor has a poor prognosis and there is limited evidence to inform management.

## Case Report

A 59-year-old female with a history of caecal adenocarcinoma with synchronous hepatic and pulmonary metastases presented with fevers,

right upper quadrant pain, and jaundice. Previously, she had a right hemicolectomy and six months of adjuvant therapy (FOLFOX with Bevacizumab). The patient was on maintenance chemotherapy at the time of her presentation and interval imaging demonstrated macroscopic resolution of her metastases.

Routine serology demonstrated cholestatic liver function derangement (Table 1). Initial evaluation with computer tomography (CT) scan and ultrasound (US) showed a collapsed gallbladder with marked intramural thickening, up to 13mm, associated with pericholecystic fluid and dilated intrahepatic ducts. Comparison with previous imaging from an admission two months prior suggested chronic acalculous cholecystitis.

Magnetic resonance cholangiopancreatography (MRCP) revealed extensive multifocal strictures involving the common hepatic duct (CHD), and central and peripheral intrahepatic ducts (Figure 1). These were most prominent in the left ductal system, involving a 2.8cm segment just proximal to the CHD (Figure 1A). On further evaluation with a dedicated multiphase CT scan, no liver metastases or pathological lymphadenopathy were identified.

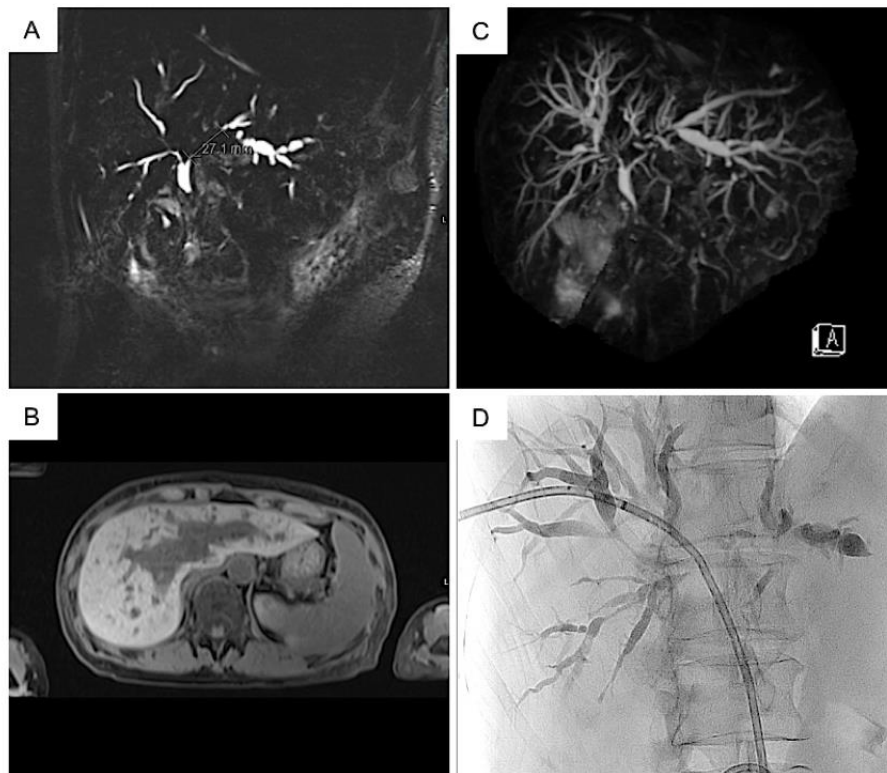
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**Table 1:** Liver function tests on admission.

| Liver Function Test        | Admission Day | Normal Range   |
|----------------------------|---------------|----------------|
| Bilirubin                  | 259 umol/L    | < 20 umol/L    |
| Alkaline phosphatase       | 558 unit/L    | 30 -110 unit/L |
| Gamma-glutamyltransferase  | 183 unit/L    | 5 - 25 unit/L  |
| Alanine aminotransferase   | 70 unit/L     | 10 - 35 unit/L |
| Aspartate aminotransferase | 90 unit/L     | 10 - 35 unit/L |

The patient underwent a diagnostic percutaneous transhepatic cholangiogram (PTC) via the right hepatic duct with brushings for histopathological analysis and placement of an internal-external biliary drain (Figure 1D). Despite this, the serum bilirubin levels remained

elevated and progress imaging demonstrated persistent intrahepatic biliary dilatation. The patient underwent a repeat PTC, with metallic stent insertion to the right and left main bile ducts.



**Figure 1:** MRCP (A) Coronal, (B) Axial, (C) 3D sequence) demonstrating multiple focal areas of luminal stenosis involving the intra hepatic bile ducts, most prominent in the left hepatic duct. No filling defects were noted to suggest choledocholithiasis. (D) Percutaneous transhepatic cholangiography following placement of biliary drain.

Cytology from the ductal brushings was consistent with a poorly differentiated adenocarcinoma. Unfortunately, with an inadequate tissue sample, immunohistochemistry was inconclusive in distinguishing epithelium from colonic origin. There were several features that supported the diagnosis of colorectal metastases infiltrating the biliary tree rather than a primary bile duct carcinoma, including the patient's clinical history and extensive multifocal biliary tree involvement. Furthermore, an autoimmune screen did not support a diagnosis of primary sclerosing cholangitis. Given the poor prognosis and limited options for systemic therapy, the patient opted for palliation only.

## Discussion

Metastatic infiltration of the biliary tree is a rare manifestation of colorectal cancer. The diagnosis can be challenging, as highlighted by

this case. Previous studies have shown that where biopsy samples can be obtained, the use of immunohistochemistry may facilitate diagnosis. In particular expression of low-molecular-weight cytokeratins has been used to determine the origins of metastatic disease [8, 9]. However, in the absence of a mass lesion, the diagnosis is often based on cytological brushings combined with clinical correlation. Obstructive jaundice with signs of acalculous cholecystitis and no obvious mass lesions in a patient with a history of colorectal cancer should therefore raise concerns about intrahepatic micrometastases.

The literature in relation to colorectal biliary metastases describes various presentations, ranging from malignant biliary strictures to discrete endoluminal lesions [1-6]. Here, we report a case that demonstrates a mixed morphology and extent of disease not previously described. Systemic adjuvant therapy may have contributed to the

atypical presentation, specifically anti-Vascular Endothelial Growth Factor agents such as bevacizumab have been reported to induce secondary sclerosing cholangitis [10, 11].

Distinguishing biliary colorectal metastases from a locally advanced bile duct primary tumor is essential as implications for management and prognosis are drastically different. For locally advanced cholangiocarcinoma, systemic therapies are the mainstay of treatment. For colorectal metastases, several local and systemic treatment options are available. Of described cases of biliary colorectal metastases, the median overall survival after surgical intervention is only two years, and there have been no long-term survivors [12]. In the present case, the multifocal involvement of central and peripheral ducts, in addition to the significant stenosis of the left main duct, posed a diagnostic and therapeutic challenge.

Given the multifocal bilobar nature of the disease, endoscopic stent placement or surgical resection was not feasible. Radiologically guided PTC, drainage and stenting were attempted but were problematic. Despite well-placed stents decompressing the left and right bile ducts, extensive involvement of smaller, peripheral ducts resulted in ongoing cholestasis and hyperbilirubinemia. Furthermore, the need for adequate liver function and a targetable lesion precluded locoregional therapy, including selective internal radiotherapy or transarterial chemoembolisation. Currently, there is limited evidence to inform the management of such cases which are rare and difficult to study given the poor survival outcomes and diverse presentations.

### Conclusion

While extremely rare, biliary metastases is a differential for patients presenting with obstructive jaundice, no mass lesions, and a history of colonic malignancy. Currently, metastatic infiltration of the biliary tree from a colonic primary confers a poor prognosis and further study is warranted to better inform management.

### Declaration

The first author is not a surgeon in training. All authors agree with the content of the manuscript.

### Conflicts of Interest

None.

### Informed Consent

Informed consent for inclusion in this study was obtained from the patient.

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