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*Case Report*

# Acute Infectious Choleglitis Is Mimicked By Intense Fdg Uptake In The Common Bile Duct During Ercp.

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**Abstract**

The mainstay of therapy for patients with choledocholithiasis-induced obstructive pancreatitis is endoscopic retrograde cholangiopancreatography (ERCP). Cholangitis, or inflammation or infection of the common bile duct caused by ERCP, is an uncommon consequence that has a significant fatality rate in extreme situations. One month after ERCP, we report an uncommon instance of incidental findings of strong FDG uptake in the common bile duct without clinical signs of acute cholangitis, which is suggestive of CBD inflammation linked to or exacerbated by ERCP.

**Keywords** : *cholangitis; [18F] FDG PET; ERCP.*

## INTRODUCTION

Cholangitis caused by endoscopic retrograde cholangiopancreatography (ERCP) is uncommon, occurring at a rate of 1% or less [1,2], although in extreme cases, it may be dangerous. It is believed to be the consequence of endoscopic or radiologic manipulation, or enteric microorganisms entering the biliary tree through the hematogenous pathway. Usually, patients arrive with fever, jaundice, and stomach pain, but in extreme situations, hypotension and changed mental status may occur.Percutaneous endoscopic procedures, stenting of malignant strictures, and unsuccessful biliary access or draiage are significant risk factors in univariate analysis [1–3]. We describe a patient who initially had acute pancreatitis and who had high fluorodeoxyglucose (FDG) uptake in the common bile duct (CBD) one month after ERCP.

## CASE REPORT

A 67-year-old man who had a distant history of colon cancer following cholecystectomy and proctocolectomy reported experiencing back discomfort that had been radiating for 24 hours. He denied having a temperature or chills and felt generally ill. The patient previously had ERCP.

Critically increased lipase and an elevated white blood cell count with low salt were found in the initial laboratory testing. Bilirubin, ALT, AST, and ALP were all within normal ranges. Sepsis or bacteremia were not present. The first ultrasound revealed no gallstones. Although there was no obvious choledocholithiasis, the initial CT scan of the abdomen and pelvis showed peripancreatic fat stranding and a heterogeneous parenchymal look suggestive of acute pancreatitis (Figure 1, red arrowheads). The CBD had a little mural thickness and measured 8 mm. There were no overt indications of choledocholithiasis in the central business district (Figure 1B, yellow arrowhead), however the biliary tree was noticeable with aberrant wall enhancement. Choledocholithiasis and sludge were seen in the CBD on a follow-up biliary ultrasound.

Significant peripancreatic fluid and fat stranding extending to the porta hepatis is seen on the CT abdomen and pelvis with contrast in Figure 1, which is consistent with acute pancreatitis (A,B, red arrowheads). The patient is doing well after having a cholecystectomy. Pneumobilia is present and is probably related to a previous cholecystectomy. With aberrant wall enlargement, the biliary tree is conspicuous. The CBD has dimensions of 5 mm distally and 9 mm proximally. The distal CBD shows no overt indications of choledocholithiasis (B, yellow arrows).

After sludge and stone debris were removed from the CBD, the patient underwent ERCP. With supportive care, the patient's pancreatitis improved within 24 hours post ERCP, and the

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leukocytosis and stomach pain subsided. Two days after ERCP, the patient was released.Approximately one month after ERCP, a [18F] FDG PET was conducted due to incidental CT observations of a left upper lobe pulmonary nodule. There were accidental indications of elevated uptake in the CBD, with an SUVmax of 13.3, suggestive for cholangitis, along with a moderately hypermetabolic left upper lobe pulmonary nodule that was later determined to be a metastasis from colon cancer (Figure 2). Nine days following the [18F] FDG PET, a follow-up magnetic resonance cholangiopancreatography (MRCP) revealed no signs of choledocholithiasis, pancreatitis, or cholangitis.Coronal images show intense 18F-FDG absorption (SUVmax = 13.3) along the CBD (A). PET, (B). CT, (D); PET/CT, (C). PET/CT and CT transaxial images (E). PET/CT, sagittal images, and (F). Maximum intensity projection, believed to be caused by inflammation brought on by ERCP. The comparable low-dose CT pictures show modest fat stranding next to the CBD, but there isn't a clear radiopaque stone in the distal CBD. Strong absorption at the common bile duct is observed on MIP (short arrow). A biopsy revealed that the hypermetabolic lesion in the left lung (long arrow) was a metastasis from colon cancer. The patient is in the post-colectomy with ileostomy stage and has a distant history of colon cancer from 26 years ago. Metformin usage is the primary cause of intense absorption in the intestinal loops.No signs of acute pancreatitis or cholangitis are seen in a follow-up MRCP nine days following the 18F-FDG PET. The major pancreatic duct (arrow) and central business district (arrow head) are visible on coronal T2 weighted MIP imaging (SSTSE, slice thickness 30 mm). No abnormalities or lesions were found in the CBD. The CBD is six millimeters in size.

## DISCUSSION

One month after ERCP, we documented a patient who had significant FDG uptake in the CBD. Bile duct irritation is known as cholangiosis. A bacterial infection of the bile ducts is the most common cause of acute cholangitis, which is characterized by fever, jaundice, and stomach pain (Charcot's triad) and is typically the result of biliary obstruction [4]. Imaging techniques, laboratory testing, and the presence of clinical symptoms are frequently used to make the diagnosis. According to Charcot's and the 2018 Tokyo criteria, there were no clinical signs of acute infectious cholangitis at the time of [18F] FDG PET imaging [5,6]. Additionally, there was no sign of cholangitis in a follow-up MRCP conducted nine days after the [18F] FDG PET.Acute pancreatitis and acute cholangitis may coexist. Charcot's triad was used to diagnose acute cholangitis in 32 (23%) of the patients who presented with both diseases over a ten-year period in a single-center research; most of these patients received ERCP [7]. Since there was no sign of fever, chills, jaundice, or abnormal liver function tests, it is doubtful that the patient had infectious or severe cholangitis, but it is possible that they had acute cholangitis during the acute pancreatitis prior to ERCP. Furthermore, there was no discernible CBD dilatation on CT. Acute cholangitis was not diagnosed throughout the hospital stay.There have been reports of elevated CBD uptake linked to both benign and malignant neoplasms. FDG-adherent conditions include cholangiocarcinoma and invasive intraductal papillary tumor of the bile duct [8–10].Rare cancers such biliary papillomatosis [13], tubular adenoma of the CBD [12], and malignant intraductal papillary mucinous neoplasm of the bile ducts [11] have been shown to uptake FDG in the CBD. Additionally, it has been documented in bile duct thrombosis linked to hepatocellular cancer [15] and CBD tuberculosis [14].[18F] One molecular imaging technique that is frequently suggestive of a number of malignancies is FDG PET. Additionally, it can be used to determine the etiology of fever and inflammation that has no known cause [16–18]. There have been reports of focal FDG uptake as a result of stent insertion [19,20]. High FDG uptake at the biliary stent site was described by Nagasaki et al. [19] in a patient with pancreatic cancer. This is thought to be related to focused inflammation brought on by the metallic stent's placement.
FDG PET is solely used for cancer indications at our facility. There was no need for an FDG PET follow-up in this patient with a single lung lesion who was sent for one with accidental evidence of CBD uptake after ERCP. Based on the available radiographic and FDG PET imaging, as well as clinical follow-up, the cause of the strong FDG uptake is speculative. Although no such data have been reported, the high FDG absorption may be caused by peristaltic spasm of the CBD smooth muscle. Given the patient's absence of symptoms and normal follow-up MRCP, the incidental observations of strong FDG uptake in the CBD in our case may be indicative of a resolving inflammatory condition caused by ERCP or may have been exacerbated by ERCP. This is not the same as the common acute cholangitis brought on by enteric bacteria entering the body through a contaminated endoscope.

## CONCLUSIONS

An inflammatory condition brought on by or exacerbated by ERCP may be the source of increased FDG uptake along the CBD in patients after ERCP. Since the two have different etiologies and clinical presentations, this should be differentiated from acute infectious cholangitis.

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