

Co-presentation of obstructive jaundice and primary hyperparathyroidism leading to diagnosis of cholangiocarcinoma

Abstract

Background: Cholangiocarcinomas are difficult to diagnose as their symptoms usually present late when disease has locally advanced. These tumors tend to invade surrounding vessels and nerves. Most patients have unresectable disease at diagnosis and poor survival. A clear and strong association between choledocholithiasis and cholangiocarcinoma has been described in various studies; other major risk factors identified include primary sclerosing cholangitis, inflammatory bowel disease, thorotrast, fibropolycystic liver disease, choledochal cysts, Caroli's disease. Some genetic conditions such as Lynch syndrome and biliary papillomatosis also increase the risk for cholangiocarcinoma. No association has been described between increase parathyroid hormone (PTH) levels and cholangiocarcinoma.

Methods: Case study of a patient diagnosed with cholangiocarcinoma who presented with jaundice, hypercalcemia and primary hyperparathyroidism (PHPT). Our study is based on a case observation in which we found excessive parathyroid hormone (PTH) levels in a patient with cholangiocarcinoma. We have sought answer to this observation in the available literature.

Results and conclusion: We describe a case study of co-presentation of cholangiocarcinoma and primary hyperparathyroidism. We conclude that PHPT is likely an incidental finding and cholangiocarcinoma is secondary to longstanding choledocholithiasis. No strong association between increased PTH levels and cholangiocarcinoma has been described.

Keywords: hyperparathyroidism, cholangiocarcinoma, jaundice, gastrointestinal malignancies, caroli's disease

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Abbreviations: PHPT, primary hyperparathyroidism; PTH, parathyroid hormone; EUS, endoscopic ultrasound; ERCP, endoscopic retrograde cholangiopancreatography; CBD, common bile duct dilatation; IV, intravenous; RUQ, right upper quadrant; GB, gall bladder

Introduction

Cholangiocarcinomas account for approximately three percent of all gastrointestinal malignancies. Although these cancers are rare in the United States, their frequency is increasing globally. These cancers are highly lethal because most are locally advanced at presentation and unresectable. Various studies have shown association between choledocholithiasis and cholangiocarcinoma.^{1,2} Other major risk factors identified include primary sclerosing cholangitis, inflammatory bowel disease, thorotrast, fibropolycystic liver disease, choledochal cysts, Caroli's disease. Some genetic conditions such as Lynch syndrome and biliary papillomatosis also increase the risk for cholangiocarcinoma.^{3,4} Our case describes interesting finding of co-presentation of primary hyperparathyroidism (PHPT) along with cholangiocarcinoma. This makes the case intriguing as patient presented with symptoms of hypercalcemia, obstructive jaundice and pancreatitis initially thought to be secondary to PHPT. Later, diagnosis of cholangiocarcinoma makes PHPT just an incidental finding rather than cause of choledocholithiasis and subsequent cholangiocarcinoma. Although PHPT can rarely present as pancreatitis due to biliary tract

stones,^{5,6} no causal association has been described between PHPT and cholangiocarcinoma.

Case description

An 86 year old female with history significant for hypertension, osteoarthritis, polymyalgia rheumatica, PHPT status post bilateral inferior parathyroidectomy presented with abdominal pain and jaundice. She described history of anorexia and weight loss for the past couple of months. She noted skin yellowing for one week with onset of right upper quadrant (RUQ) pain and radiation to the epigastrium and back 6 hours before presentation to the emergency department. On examination she had prominent scleral icterus, yellow skin, RUQ pain and mild confusion. Lab work was significant for calcium level of 13.9mg/dl, bilirubin 9.6mg/dl, alkaline phosphatase 438U/L, alanine amino transferase 171U/L, aspartate amino transferase 158U/L, amylase 198U/L, and lipase 1880U/L. CT abdomen showed common bile duct dilatation (CBD) up to 10mm, pneumobilia (Figure 1) and a suspicious mass around the head of pancreas (Figure2).

She was started on treatment for hypercalcemia and pancreatitis with aggressive Intravenous (IV) hydration, nothing per mouth, calcitonin and zoledronic acid. The following day significant lab values included PTH 187pg/ml, PTH-related protein 0.3pmol/L, CA 19-9 249U/ml, 24 hour Urinary calcium 748mg and threefold increase in her liver transaminases with developing cholangitis. IV antibiotics were started and she underwent endoscopic ultrasound

(EUS) and endoscopic retrograde cholangiopancreatography (ERCP). EUS showed dilated intrahepatic and CBD. Pancreatic duct and pancreas appeared normal. Two stones were noted in CBD, with CBD narrowing within inflamed heterogeneous pancreatic tissue without clear defined mass. ERCP initially failed because of CBD stricture. ERCP was again performed during a rendezvous procedure with sphincterotomy, stone removal and stent placement. Air was found in the gallbladder (GB) during procedure, most likely due to a fistula between GB and distal small bowel. EUS was performed again to get biopsies from hypodense lesion surrounding the CBD. Biopsies results demonstrated adenocarcinoma consistent with extrahepatic cholangiocarcinoma. Positron emission tomography did not show distant metastatic disease. Patient subsequently did not wish to be treated aggressively with surgery. She underwent palliative treatment with radiation and chemotherapy.

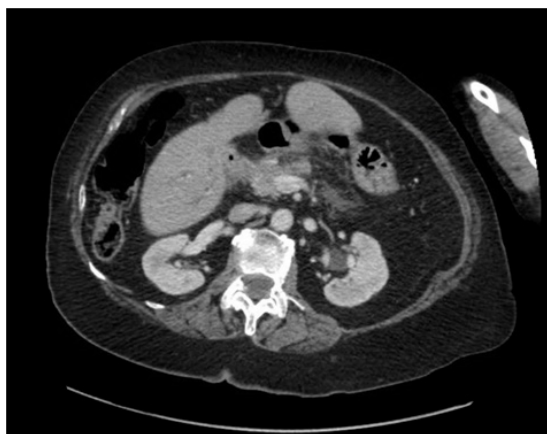


Figure 1 Figure showing gas in bladder.

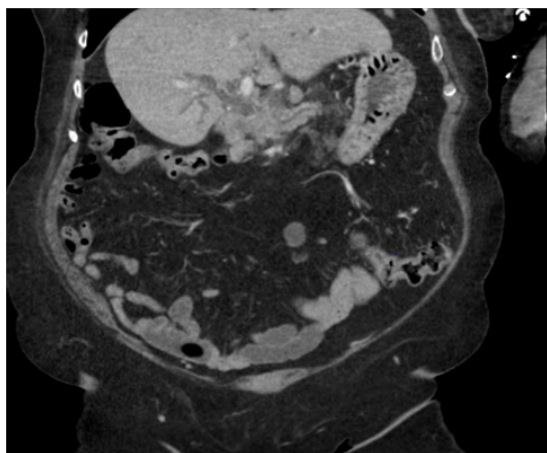


Figure 2 Figure showing peripancreatic inflammation.

Discussion

Our case raised an interesting question of possible association between PHPT and cholangiocarcinoma. We did extensive review of available literature on the topic to answer this question. The exact role of PHPT in the pathogenesis of cholangiocarcinoma remains unclear. PHPT is a generalized disorder of calcium metabolism resulting from abnormally high level of serum calcium and increased level of PTH. PHPT may remain asymptomatic or present with symptoms of hypercalcemia, bone disease, kidney manifestations and gastrointestinal symptom. Common gastrointestinal manifestations include abdominal

pain, nausea, vomiting, and constipation.⁴ Rarely, it can present as gall stone pancreatitis. This case is intriguing as the patient initially presented as obstructive jaundice with possible pancreatic mass seen on CT imaging. This led to the initial diagnosis of pancreatic cancer presenting as obstructive jaundice and hypercalcemia of malignancy. Further laboratory and interventional findings revealed the case as PHPT, choledocholithiasis and extrahepatic cholangiocarcinoma. There are studies which have suggested a weak association between excessive PTH activity in carcinogenesis. Two studies are found which showed a possible association between colorectal cancer and high PTH levels.^{7,8} Another study showed its possible role in oral squamous cell cancer.⁹ These were observational studies with conflicting results. McCarty¹⁰ has proposed that PTH may have direct and indirect cancer promotional activity. PTH might function indirectly by increasing hepatic production of the tumor growth factor IGF-I. PTH may also act as a comitogen in preneoplastic lesions expressing PTH receptors. Although, these hypothesis can be considered but no scientific studies has shown direct association of PTH in carcinogenesis.

Results

The role of parathyroid hormone in carcinogenesis is not fully understood. On review of literature, there is not enough data supporting the role of increased PTH levels in carcinogenesis. Therefore, we conclude that increased PTH levels were an incidental finding in this case. Association between cholangiocarcinoma and choledocholithiasis has been well described in literature.

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Conflict of interest

The author declares no conflict of interest.

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