Journal of Community Hospital Internal Medicine Perspectives

Volume 14 | Issue 4 Article 22

2024

Sump Syndrome: The Forgotten Cause of Painless Jaundice in the Elderly

Mark Ayoub
1Internal Medicine Resident, Charleston Area Medical Center – West Virginia University Charleston Division, Internal Medicine Department, mark.ayoub@camc.org

Amna Anees
Assistant Professor, Program Directory, Program Director Internal Medicine residency, OPCC Medical Director, CAMC/WVU-Charleston division, amna.anees@vandaliahealth.org

CASE REPORT

Sump Syndrome: The Forgotten Cause of Painless Jaundice in the Elderly

Mark Ayoub [a,*], Amna Anees [b]

[a] Charleston Area Medical Center – West Virginia University Charleston Division, Internal Medicine Department, 3200 MacCorkle Ave SE, Charleston, WV 25304, USA
[b] CAMC/WVU-Charleston Division, 3200 MacCorkle Ave SE, Charleston, WV 25304, USA

Abstract

Painless jaundice is a common presentation of abdominal malignancy seen in elderly patients. While malignancy may be a common cause of obstructive jaundice in that population group, anchor bias should always be avoided. We present a case of an elderly woman who presented with painless jaundice and weight loss. She had a very remote history of cholecystitis. She was found to have Sump syndrome due to a stricture at the Choledochoduodenostomy (CDD) site. She underwent endoscopic retrograde cholangiopancreatography (ERCP) with stent placement which shortly led to resolution of her jaundice. Biopsy from the stricture site came back negative for malignancy.

Keywords: Sump syndrome, Painless jaundice, Choledochoduodenostomy, Cancer, Biliary stenting, ERCP

1. Introduction

Painless jaundice in the elderly can be a manifestation of multiple causes. While malignancy is a common cause, it is important to consider other causes as well to avoid premature closure and anchor bias.

Sump syndrome is a rare long-term complication of choledochoduodenostomy (CDD) which was a common surgical procedure prior to the introduction of endoscopic retrograde cholangiopancreatography (ERCP).[1] One of the variants of CDD is side-by-side CDD. In this variant, the common bile duct (CBD) between the anastomosis and the ampulla of Vater, acts as a recess serving as a drain, hence the naming Sump Syndrome.[2–5] Debris, stones, and sludges may accumulate in this drain and act as a nidus for bacterial growth, causing subsequent cholangitis, pancreatitis, or other signs of biliary obstruction.[6] ERCP is usually diagnostic and therapeutic.

2. Case description

A 76-year-old female with past medical history of hypertension who presented with painless jaundice. She also has a surgical history of choledochoduodenostomy (CDD) in the 1980s. On presentation, she endorsed unintentional weight loss on review of systems. She had no other complaints at that time. She denied any history of smoking or alcohol use. She was unaware of any family history of gastrointestinal cancers.

On physical exam, she was afebrile, normotensive and hemodynamically stable. She appeared frail. She had scleral icterus and jaundice. There were no spider angiomas, ascites, or palmar erythema. Her abdomen was soft, non-tender, non-distended, with positive bowel sounds.

Labs were significant for total bilirubin of 7.5 mg/dL with a direct component of 4.44 mg/dL. She also had elevated liver enzymes as shown in the table below. Her lipase was normal at 16 U/L and her viral hepatitis panel was negative. Her autoimmune workup was also negative. A list of her hospital labs is shown in Table 1.

Initial right upper quadrant (RUQ) ultrasound was limited and was unable to identify any abnormality. However, a CT of her abdomen and pelvis showed intra- and extra-hepatic biliary duct dilation with pneumobilia without focal obstruction.

Received 8 January 2024; revised 8 April 2024; accepted 15 April 2024.
Available online 2 July 2024

* Corresponding author.
E-mail addresses: Mark.ayoub@camc.org (M. Ayoub), Amna.anees@vandaliahealth.org, Amna.anees@hsc.wvu.edu (A. Anees).

https://doi.org/10.55729/2000-9666.1354

Table 1. Hospital labs.

	Lab values on admission	Lab values after ERCP and stent placement
Total bilirubin	7.5 mg/dL	4.9 mg/dL
ALP	585 u/L	344 u/L
ALT	63 u/L	38 u/L
AST	67 u/L	45 u/L
Direct bilirubin	4.44 mg/dL	2.75 mg/dL

ERCP: endoscopic retrograde cholangiopancreatography; ALP: alkaline phosphatase; ALT: alanine transaminase; AST: aspartate aminotransferase.

Subsequently, Endoscopic retrograde cholangiopancreatography (ERCP) was done which again confirmed the presence of dilated intra-hepatic ducts with possible stricture at the site of CDD anastomosis site. Debris and stones were noted within the common bile duct (CBD) as highlighted in Fig. 1. Hurricane balloon dilation was performed with placement of a biliary stent. Her bilirubin and transaminitis started down trending. Her jaundice started resolving shortly after the procedure. Biopsy from the site of stricture came back negative for malignancy. She was discharged home with home health services. She underwent repeat ERCP in 6 weeks with removal of stents and was discharged with a seven-day course of antibiotics.

3. Discussion

Painless jaundice is a common presentation of abdominal malignancy seen in elderly patients.[7] While malignancy may be a common cause of obstructive jaundice in that population group, anchor bias should always be avoided. Jaundice can be prehepatic, hepatocellular, or cholestatic.[8] The differential of each subset is wide and can overlap. Prehepatic jaundice is caused by increased bilirubin production, impaired bilirubin conjugation, or hemolysis. Hepatocellular jaundice is caused by impaired hepatocyte function. Cholestatic jaundice is caused by obstruction of the biliary system.[9] The patients' presentation and lab values help guide the correct identification of the etiology. A table highlighting some of the most common causes of jaundice is shown below in Table 2.

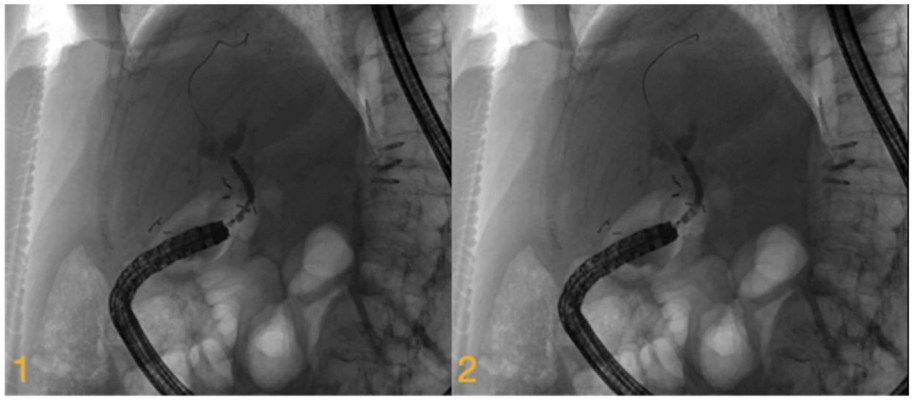

Fig. 1. ERCP of Sump Syndrome: showing debris and filling defects within the biliary tree.

Table 2. Differential diagnosis of jaundice.

Jaundice		
Prehepatic	Hepatocellular	Cholestatic
RBC membrane defects (e.g. hereditary spherocytosis)	Viral hepatitis	Cholelithiasis, choledocholithiasis, cholecystitis, and cholangitis
Enzyme deficiencies (e.g G6PD, PK)	Malignancy	CBD stricture
Drugs	Autoimmune hepatitis, PBC	Iatrogenic (drug-induced or surgical i.e. ERCP or CCY)
Infections (e.g CMV, EBV, toxoplasmosis)	Wilson disease, hemochromatosis, alpha-1 antitrypsin	Choledochal cysts
Autoimmune hemolytic anemia	Acute liver failure or decompensated cirrhosis	Cancer
	HELLP syndrome	
	DILI or alcohol	

RBC: Red blood cell; G6PD: glucose-6-phosphate dehydrogenase; PK: pyruvate kinase; CMV: cytomegalovirus; EBV: Epstien-Barr virus; PBC: primary biliary cirrhosis; HELLP: hemolysis, elevated liver enzymes, and low platelets; DILI: drug-induced liver injury; CBD: common bile duct; ERCP: endoscopic retrograde cholangiopancreatography; CCY: cholecystectomy.

In our patient, with her presentation of obstructive jaundice with bile duct dilatation, ERCP was done showing a stricture at the site of CDD along with debris and stones within CBD. This is a long-term complication of CDD known as Sump syndrome. CDD was a common surgical procedure done to improve biliary drainage prior to the introduction of ERCP. After CDD, the CBD between the anastomosis and ampulla of Vater becomes a reservoir drain for bile. This can serve as a nidus for bacterial growth leading to various complications. Hawes D et al. in the American Journal of Roentgenology envisioned the syndrome with an illustration in his paper.[6] They also showcased the radiologic findings in the different presentations of Sump syndrome.

Sump syndrome was first described in 1976 with a rate of up to 15.7% after CDD in one study.[10–12] Another study of long-term complications of CDD in 225 patients showed prevalence of 0.8% of anastomotic stricture which our patient also had.[13] Diagnosing Sump syndrome is quite challenging and requires a high degree of suspicion. It can present with recurrent symptoms several decades after initial CDD.[14] Often patients are unaware of the initial procedure and the lack of medical records adds to this challenge. Imaging may show pneumobilia, duct dilatation, biliary stones, cholangitis changes, pancreatitis, or liver abscess.[11,15] In our literature review, the most recently reported case of CDD-related Sump syndrome was in 2017. That patient presented with cholangitis and was treated in a similar fashion to our patient. They received ERCP with stent placement and antibiotics on discharge.[16]

Management of Sump syndrome goes back as early as 1976 with the introduction of ERCP. A retrospective analysis of 30 cases of Sump syndrome showed that the most common etiologies were food-debris (67%) and calculi (40%).[4] In our patient, the etiology of Sump syndrome was likely her biliary stricture, which caused an upstream stasis, causing her symptoms.

In elderly patients, painless jaundice often raises suspicion for malignancy. However, we should always consider their surgical history and surgical complications on the differential. With the introduction of ERCP, CDD is becoming much less common. With this case, we want to highlight not only what Sump syndrome is, but also the fact that every attempt should be made to avoid anchor bias and premature closure bias to reach the correct diagnosis.[17,18] In the case of our patient, anchoring on her initial presentation would have led to different outcomes. However, thorough medical and surgical history and radiologic evidence, allowed us to reach an accurate diagnosis and treatment.

4. Conclusion

Anchoring bias and premature closure bias can lead to inaccurate conclusions. While painless jaundice in the elderly is alarming for malignancy, thorough medical and surgical history as well as diagnostic evaluation lead to the accurate diagnosis. Although Sump syndrome is a complication of an almost obsolete procedure, it can present decades after the procedure. Following evidence-based medicine helps reach accurate diagnosis and treatment.

Disclaimer

The authors report that this article is original and has not been submitted to other publications or presented at a conference or a meeting.

Conflict of interest

Authors declare that they do not have any conflict of interest.

References

1. Zeuge U, Fehr M, Meyenberger C, Sulz MC. Mind the sump! - diagnostic challenge of a rare complication of choledochoduodenostomy. *Case Rep Gastroenterol*. Apr. 2014;8(3):358–363. https://doi.org/10.1159/000369298.
2. Malieckal A, Changela MK, Myint Z, Anand S. Sump syndrome: endoscopic management of biliary stent induced choledochoduodenal fistula. *Int J Case Rep Imag*. 2015;6:62–64. https://doi.org/10.5348/ijcri-201503-CL-10058. researchgate.net.
3. Mecklenburg I, Scheubel R, Messmann H. Sump syndrome and biliary adenocarcinoma 40 years after surgical choledochoduodenal fistula. *Endoscopy*. 2007;39(Suppl 1). https://doi.org/10.1055/S-2007-966402.
4. Caroli-Bosc FXDemarquay JF, Peten EP, et al. Endoscopic management of sump syndrome after choledochoduodenostomy: retrospective analysis of 30 cases. *Gastrointest Endosc*. 2000;51(2):180–183. https://doi.org/10.1016/S0016-5107(00)70415-9.
5. Nauta RJ, Hile C, Nauta AC. Choledochojejunostomy revision performed by using the laparoscopic linear cutter. *Am J Surg*. Jan. 2008;195(1):119–121. https://doi.org/10.1016/J.AMJSURG.2006.12.045.
6. Hawes DR, Pelsang RE, Janda RC, Lu CC. Imaging of the biliary sump syndrome. *Am J Roentgenol*. 1992;158(2):315–319. https://doi.org/10.2214/AJR.158.2.1729790.
7. Huggett MT, Pereira SP. Diagnosing and managing pancreatic cancer. *Practitioner*. Jul. 2011;255(1742):21 [Online]. Available:/pmc/articles/PMC3234307/ . Accessed December 9, 2023.
8. Painless Jaundice – Sinai EM. [Online]. Available: https://sinaiem.org/foam/painless-jaundice/ (Accessed: 24. March. 2024).
9. Coucke EM, Akbar H, Kahloon A, Lopez PP. Biliary obstruction. *South Med J*. Nov. 2022;17(9):692–696. https://doi.org/10.1097/00007611-192409000-00013.

10. Demirel BT, Kekilli M, Onal IK, et al. ERCP experience in patients with choledochoduodenostomy: diagnostic findings and therapeutic management. *Surg Endosc*. 2011;25(4):1043−1047. https://doi.org/10.1007/S00464-010-1313-6.
11. Leppard WMI, Shary TM, Adams DB, Morgan KA. Choledochoduodenostomy: is it really so bad? *J Gastrointest Surg*. May 2011;15(5):754−757. https://doi.org/10.1007/S11605-011-1465-2.
12. Baker AR, Neoptolemos JP, Carr-Locke DL, Fossard DP. Sump syndrome following choledochoduodenostomy and its endoscopic treatment. *Br J Surg*. 1985;72(6):433−435. https://doi.org/10.1002/BJS.1800720606.
13. Choledochoduodenostomy, transduodenal sphincteroplasty and sphincterotomy for calculi of the common bile duct - PubMed. [Online]. Available: https://pubmed.ncbi.nlm.nih.gov/3824113/ (Accessed: 9. December. 2023).
14. Stefanini P, Carboni M, Patrassi N, De Bernardinis G, Negro P, Loriga P. Transduodenal sphincteroplasty: its use in the treatment of lithiasis and benign obstruction of the common duct. *Am J Surg*. 1974;128(5):672−677. https://doi.org/10.1016/S0002-9610(74)80028-0.
15. Marbet UA, Stalder GA, Faust H, Harder F, Gyr K. Endoscopic sphincterotomy and surgical approaches in the treatment of the 'sump syndrome. *Gut*. 1987;28(2):142−145. https://doi.org/10.1136/GUT.28.2.142.
16. Abraham H, Thomas S, Srivastava A. Sump syndrome: a rare long-term complication of choledochoduodenostomy. *Case Rep Gastroenterol*. Aug. 2017;11(2):428−433. https://doi.org/10.1159/000477335.
17. Berg SA, Moss JH. Anchoring and judgment bias: disregarding under uncertainty. *Psychol Rep*. 2022;125(5). https://doi.org/10.1177/00332941211016750.
18. Kumar B, Kanna B, Kumar S. Learning from errors: the pitfalls of premature closure: clinical decision-making in a case of aortic dissection. *BMJ Case Rep*. 2011;2011. https://doi.org/10.1136/BCR.08.2011.4594.