

# Image Diagnosis: Worm-Induced Biliary Obstruction

Andrew W Phillips, MD, MEd; Joanna Ready, MD; Gus M Garmel, MD, FACEP, FAAEM

Perm J 2016 Spring;20(2):82-83

<http://dx.doi.org/10.7812/TPP/15-137>

## CASE REPORT

A 57-year-old woman born in the Philippines presented to the Emergency Department with 6 hours of epigastric and right upper quadrant abdominal pain radiating to her back. She denied fever, nausea, and vomiting. She described her pain as similar to pain before her cholecystectomy 46 years previously, at age 11. An ultrasound demonstrated a hyperechoic linear structure in the common bile duct and diffuse biliary duct dilation (Figure 1) that were initially read as consistent with a nonfunctioning stent, which the patient denied having. The computed tomography scan of the abdomen and pelvis that was ordered to better characterize the “stent” demonstrated only biliary dilation in the common bile duct without a radiopaque structure (Figure 2). Laboratory test results for the patient’s complete blood count, comprehensive metabolic panel, and lipase were normal.

Because biliary stents were not available in 1958 when the patient underwent her cholecystectomy, and because the ultrasound abnormality was hyperechoic without radiopaque characteristics, we considered the possibility of a biliary worm.<sup>1</sup> An endoscopic retrograde cholangiopancreatography (ERCP) showed the presence of a worm, extending from the ampulla into the bowel lumen. During attempted retrieval of the worm, it retracted into the bile duct, and only a large, transected portion was removed. Our patient tolerated the procedure well and was later released from the hospital.

## DISCUSSION

Biliary helminthiasis results from liver flukes, which are parasitic worms endemic in Southeast Asia.<sup>2</sup> Some flukes, such as *Clonorchis sinensis*, *Opisthorchis viverrini*, *Opisthorchis felineus*, and *Fasciola hepatica*, reside primarily in the biliary tree. In contrast, *Ascaris lumbricoides* resides in the intestines and occasionally migrates into the bile ducts.<sup>3</sup> Prevalence worldwide of the most common biliary helminth, *Ascaris lumbricoides*, is high, at approximately 1.2 billion.<sup>4</sup>

Biliary helminthiasis can present as biliary obstruction, pyogenic cholangitis, acute pancreatitis, liver cysts, and abscesses.<sup>1,3,5</sup> Patients typically have abdominal pain and may have jaundice or fever.<sup>2,4</sup> Diagnosis is made by imaging (ultrasound or magnetic retrograde cholangiopancreatography), with antigen serum tests, or by direct visualization

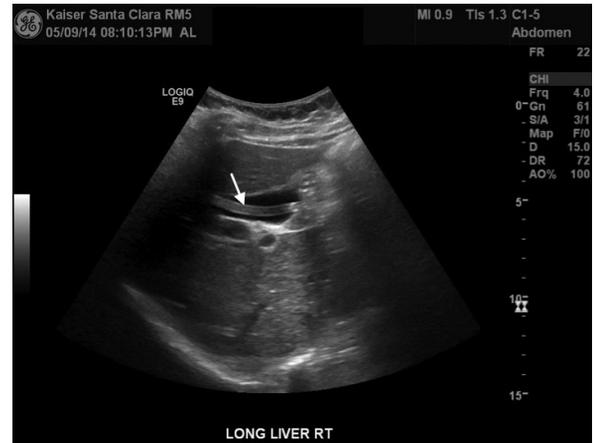


Figure 1. Ultrasound of the abdomen with the white arrow indicating a hyperechoic tubular structure in a significantly dilated common bile duct.



Figure 2. Computed tomography scan of the abdomen and pelvis with the white arrow showing biliary dilation in the common bile duct of 17.9 mm without any radiopaque biliary structures.

during ERCP. Computed tomography scans tend to only demonstrate biliary dilation, and are therefore less helpful in securing the diagnosis.<sup>3</sup> Urgency of diagnosis and hospitalization are determined by severity of symptoms, findings

Andrew W Phillips, MD, MEd, is a Fellow in the Division of Critical Care at Stanford University in Stanford, CA. E-mail: [warejko@stanford.edu](mailto:warejko@stanford.edu). Joanna Ready, MD, is the Chief of Gastroenterology at the Santa Clara Medical Center in CA. E-mail: [joanna.ready@kp.org](mailto:joanna.ready@kp.org). Gus M Garmel, MD, FACEP, FAAEM, is a Senior Emergency Physician at the Santa Clara Medical Center, Former Co-Program Director of the Stanford/Kaiser Emergency Medicine Residency Program, and Clinical Professor (Affiliate) of Emergency Medicine at Stanford University in CA. He is also a Senior Editor for *The Permanente Journal*. E-mail: [gus.garmel@kp.org](mailto:gus.garmel@kp.org).

of biliary obstruction, or infection, including sepsis.<sup>4</sup> Drug treatment choice depends on the type of parasite.<sup>4</sup>

Our patient was started empirically on mebendazole as an outpatient. The Pathology Department was unable to identify the worm from the pieces obtained during ERCP retrieval. Our patient passed the remainder of the worm five days later in her stool, which is common after a worm dies. She reported that the worm appeared “like a tiny spaghetti without its head.” Analysis of this portion of the worm was not performed because the patient discarded it. Repeat ERCP one month later showed neither retained worm nor gallstones. ❖

#### Disclosure Statement

*The author(s) have no conflicts of interest to disclose.*

#### References

1. Leung JW. History of bile duct stenting: rigid prostheses. In: Kozarek R, Baron T, Song HY, editors. *Self-expandable stents in the gastrointestinal tract*. New York, NY: Springer; 2013. p 15-31. DOI: [http://dx.doi.org/10.1007/978-1-4614-3746-8\\_2](http://dx.doi.org/10.1007/978-1-4614-3746-8_2).
2. Yellin AE, Donovan AJ. Biliary lithiasis and helminthiasis. *Am J Surg* 1981 Jul;142(1):128-36. DOI: [http://dx.doi.org/10.1016/S0002-9610\(81\)80022-0](http://dx.doi.org/10.1016/S0002-9610(81)80022-0).
3. Lim JH, Kim SY, Park CM. Parasitic diseases of the biliary tract. *AJR Am J Roentgenol* 2007 Jun;188(6):1596-603. DOI: <http://dx.doi.org/10.2214/AJR.06.1172>.
4. Khandelwal N, Shaw J, Jain MK. Biliary parasites: diagnostic and therapeutic strategies. *Curr Treat Options Gastroenterol* 2008 Apr;11(2):85-95. DOI: <http://dx.doi.org/10.1007/s11938-008-0020-z>.
5. Schulman A. Non-western patterns of biliary stones and the role of ascariasis. *Radiology* 1987 Feb;162(2):425-30. DOI: <http://dx.doi.org/10.1148/radiology.162.2.3541030>.

## Invisible Living Corpuscula

That this living effluvia is composed of invisible living corpuscula, is obvious from the innumerable worms which abound in such bodies, some of which grow large enough to be visible, while others remain of a size which is invisible. ... Clothing and household goods infected ... when carried somewhere else, in a short time produce tragic catastrophes; indeed not only whole cities are attacked by the sudden and unexpected contagion but also provinces and entire kingdoms.

— Athanasius Kircher, SJ, 1602-1680, 17th century German Jesuit scholar and polymath