ADVANCES IN ENDOSCOPY

Current Developments in Diagnostic and Therapeutic Endoscopy

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Hemobilia

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G&H What is hemobilia?

JB Hemobilia is bleeding from the biliary tree. It is a rare cause of upper gastrointestinal bleeding. If the diagnosis of hemobilia is not considered, it may be missed. However, the clue to diagnosing this condition is that it often follows medical procedures.

G&H What are the causes of this condition?

JB Approximately two thirds of hemobilia cases result from medical interventions (ie, the cases are iatrogenic). Percutaneous liver biopsy and transhepatic cholangiography are the most common causes of injury to the liver vasculature resulting in hemobilia. However, endoscopic interventions—such as probing of the bile duct with guidewires and deployment of self-expanding metal mesh biliary stents during endoscopic retrograde cholangiopancreatography (ERCP)—can also result in immediate or delayed bleeding.

In addition, blunt or penetrating trauma to the liver can cause hemobilia. Indeed, the first description of hemobilia in the medical literature dates back to the middle of the 17th century when Francis Glisson found that a liver laceration sustained by a young man during a sword fight caused fatal biliary bleeding. However, the term "hemobilia" was not coined until 1948.

Other causes of hemobilia include gallbladder and bile duct stones, biliary varices, biliary parasites (eg, *Ascaris lumbricoides*), benign and malignant tumors involving the biliary tree, liver surgery (including transplantation), congenital or acquired vascular aneurysms, pancreatitis, and hepatitis (drug-induced or autoimmune).

G&H How does hemobilia present?

JB Typically, hemobilia causes melena or acute upper gastrointestinal bleeding of significant volume, which causes hemodynamic instability. A patient with hemobilia may experience acute biliary pain from distension of the bile ducts. In the past, it was thought that hemobilia rarely caused biliary obstruction; however, I have managed a number of cases in which jaundice developed and was only relieved by endoscopic clearance of blood clots from the biliary tree. If a percutaneous biliary drain is present, the diagnosis of hemobilia may become clear when blood accumulates in the external drainage bag.

G&H How common is hemobilia?

JB Hemobilia is an uncommon condition, but its exact incidence is unknown because minor degrees of hemobilia probably go unrecognized or unreported. Life-threatening hemobilia is fortunately rare, but mortality as high as 25% has been reported in a large retrospective series.

G&H What investigations should be performed to diagnose this condition?

JB Perhaps surprisingly, computed tomography (CT) scanning of the abdomen is not a particularly sensitive way to identify biliary bleeding. However, a CT scan may identify a filling defect within the bile duct, representing a blood clot. Magnetic resonance cholangiography or transabdominal ultrasound may be more sensitive in this regard. A radionuclide "tagged" red cell scan will be

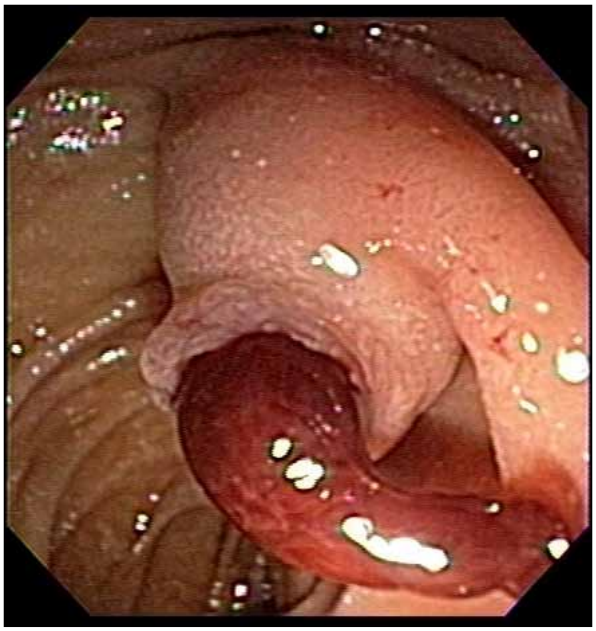

Figure 1. Endoscopic view of the main duodenal papilla showing a large blood clot exiting the orifice. This confirms the diagnosis of hemobilia (or hemosuccus).

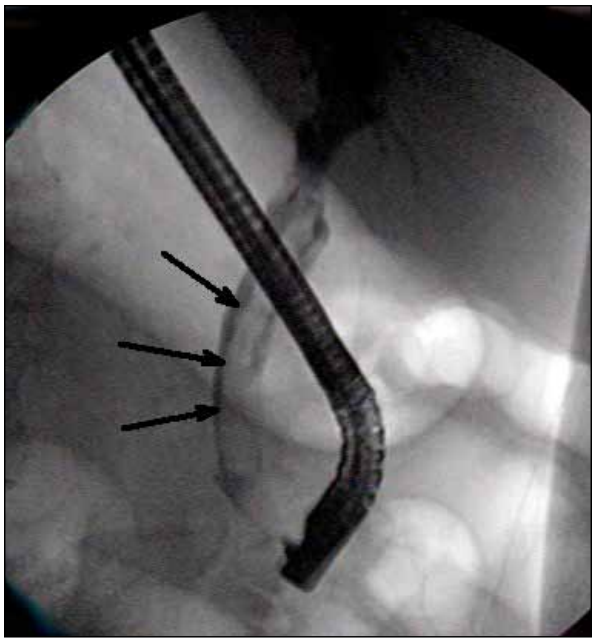

Figure 2. A retrograde cholangiogram showing the bile duct occluded by a filling defect, which is a blood clot (arrows).

positive for a biliary source if the hemorrhage is brisk. However, bleeding scans typically entail a delay of several hours, which is problematic when the patient is unstable. Direct visualization of the duodenal papilla may reveal blood and/or clot exiting into the duodenum, which confirms the diagnosis of hemobilia (Figure 1). ERCP is rarely helpful in localizing the source of the bleeding, although biliary sphincterotomy with clearance of the clot using basket catheter sweeps may be helpful if the patient has biliary obstruction (Figure 2). Placing a biliary stent is generally not helpful, as the stent will quickly become occluded with the clot. Several investigators have reported success with direct (peroral endoscopic) cholangioscopy for diagnosing hemobilia.

G&H How is hemobilia treated?

JB The priority in management of hemobilia is to localize the bleeding site and stop the bleeding. This goal is usually achieved via interventional radiology, during which the arterial and venous anatomy of the liver is outlined. Arterial sources of bleeding are more common than venous sources and are typically managed via embolization of the offending vessel; this may be a branch of the hepatic artery. If radiologic intervention fails, surgery is occasionally required to stop the bleeding (eg, when the source is a large liver laceration). There have been a few anecdotal reports of endoscopic or percutaneous infusion of thrombolytic agents into the biliary tree to dissolve the clot, with apparent success. The placement of a nasobiliary catheter has also been recommended by some experts as a way to flush out the bile duct after biliary sphincterotomy.

G&H Are there any other causes of bleeding from the duodenal papilla?

JB Yes. Bleeding from the duodenal papilla can result from bleeding into the main pancreatic duct. This condition is called hemosuccus pancreaticus and is most often associated with chronic pancreatitis, pancreatic pseudocysts, or pancreatic tumors. The source of bleeding is usually apparent from the clinical context. Interventional radiology to identify the fistula between the pancreatic duct and the bleeding source, with therapeutic embolism, is the mainstay of treatment. Hemosuccus resulting from a bleeding arterial pseudoaneurysm can be life-threatening. An urgent abdominal CT scan with intravenous contrast can usually identify such pseudoaneurysms and help direct radiologic intervention.

G&H Are there prophylactic measures that can be taken to prevent or reduce the risk of hemobilia?

JB Performing interventional biliary procedures and liver biopsies under radiologic guidance helps avoid

trauma to the hepatic vasculature. Blunt and penetrating liver injuries are indiscriminate and often result in vascular damage, although bleeding into the peritoneal cavity is more common than bleeding into the biliary tree (ie, hemobilia). Appropriate training, experience, and good technique by those performing invasive procedures, such as percutaneous transhepatic cholangiography and ERCP, help to minimize the risk of vascular injuries that can cause hemobilia.

G&H What are the next steps in research in this area?

JB Clinical research into hemobilia has been limited by the rarity of this condition. Even large centers see only sporadic cases. The development of less traumatic guidewires and catheters for percutaneous and endoscopic biliary access over the last decade has likely reduced the frequency of iatrogenic hemobilia.

Suggested Reading

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