Hemobilia: Transcatheter Occlusive Therapy and Long-term Follow-up

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Abstract. Eight patients with life-threatening hemobilia were treated by percutaneous transcatheter occlusive therapy. The bleeding was caused by a traumatic pseudoaneurysm of the hepatic artery in 6 cases (auto accident in 4, surgery in 1, biliary drainage in 1) and a true aneurysm of the hepatic artery in 2 (unknown etiology in 1 and mycotic in 1). Arterial catheterization was used in all cases except for one in which a direct percutaneous puncture was performed. Gelfoam alone was used as embolic material in 3 patients. In 1 patient each, the material used was gelfoam plus coils, coils alone, blood clot, n-butyl-cyanoacrylate and an occluding balloon catheter. In all cases the bleeding stopped and did not recur during the follow-up period which ranged from 9 months to 14 years. This experience indicates that transcatheter occlusive therapy is an effective method for the treatment of severe hemobilia.

Key words: Hemobilia—Aneurysm, traumatic—Arteries, hepatic—Arteries, therapeutic blockade—Bile ducts, hemorrhage—Liver, hemorrhage

Patients and Methods

Eight patients, 6 men and 2 women ranging in age from 14 to 72 years (mean 36 years), had life-threatening hemobilia. The bleeding was due to a pseudoaneurysm of the hepatic artery following blunt liver trauma in 4 cases. One patient had a pseudoaneurysm of the hepatic artery caused by surgical trauma (cholecystectomy), another occurred after transhepatic biliary drainage. One other patient had a true aneurysm due to infection (mycotic aneurysm related to cardiac valve replacement). The fourth patient bled from a true aneurysm (unknown etiology) of the right hepatic artery.

All patients presented repeated acute gastrointestinal bleeding and right upper quadrant pain. Upper gastrointestinal endoscopy performed in 5 of the 8 patients showed that 2 had blood coming from the papilla of Vater. T-tube cholangiography and a retrograde endoscopic cholangiogram showed blood clots inside the biliary tree in 2 additional patients (Fig. 1). All 8 patients had angiograms which included celiac arterial injections and selective hepatic artery catheterizations. The superior mesenteric artery was injected in only 3 of the 8 patients because hepatic arteriography showed the vascular lesion in the hepatic arteries to have normal origin, i.e., from the celiac artery. The portal vein was patent in 7 patients. In 1 patient, the portal vein could not be evaluated (patient 3).

The transcatheter occlusive therapy used superselective catheterization in 5 patients. Gelfoam pledgets (Upjohn Co., Kalamazoo, MI) alone were used in 3 patients, coils (Cook, Inc., Bloomington, IN) alone in 1 patient, and Gelfoam in 1, blood clots in 1, and Histoacryl (n-butylcyanoacrylate) (B. Braun, Messinger, W. Germany) in the most recent patient. Lipiodol was mixed with Histoacryl (1:1) to provide radiopacity and to delay polymerization time. A coaxial occlusion balloon catheter was used for prolonged occlusion of the bleeding artery (12 h) in patient number 4. This patient was lost to follow-up after 1 year. Direct percutaneous puncture of the aneurysm guided by fluoroscopy was used in one of the patients (patient 2) after superselective catheterization was unsuccessful because of intimal dissection of the hepatic artery (Fig. 2). In 1 patient, a coaxial microcatheter with a 2.2 F distal shaft and a steerable guidewire [28, 31] (Target Therapeutics Inc., Los Angeles, CA) were used for superselective embolization with Histoacryl (Fig. 1). In one of the patients (patient 6) a previous surgical hepatic artery ligation was performed but hemobilia recurred and the proximal...
artery stump and collaterals were embolized with coils and Gelfoam pledgets. In the patient with bleeding resulting from percutaneous biliary drainage, occluding balloon catheters were positioned within the drainage catheter tract to reduce bleeding while embolization was prepared (patient 3). Diffuse hepatic embolization was performed with Gelfoam, and hemobilia was controlled. Limited angiographic occlusion by means of superselective embolization to achieve maximum hepatic parenchymal preservation was attempted in all, but was successful in only 5 of the 8 patients (Fig. 1). Total hepatic artery blockade was produced in patient 3. In patient 6, only partial occlusion was achieved due to previous surgical ligation of the hepatic artery, and only the collaterals and remaining arterial stump were embolized. In the additional patient (patient 2), the complication led to the direct transhepatic needle approach using Gelfoam particles for embolization.