Interventional therapy for acute hemorrhage in gastrointestinal tract

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INTRODUCTION
Great achievements have been made in interventional therapy in China since 1980s. The method of diagnosis and therapy for hemorrhage in gastrointestinal tract have made great progress. Transcutaneous catheter embolization is widely used in the treatment of acute massive hemorrhage in gastrointestinal tract. Selective angiography can confirm the bleeding site in gastrointestinal tract. We carried out selective or superselective embolotherapy to achieve quick hemostasis. Selective angiography is the most effective measure to detect hemorrhage.

MATERIALS AND METHODS
Patients
Twenty-five patients with hemorrhage in the gastrointestinal tract admitted between April 2002 and September 2004 were treated with interventional therapy. Fifteen patients were men and ten patients were women. There were 10 cases of gastric hemorrhage, 1 case of duodenal hemorrhage, 9 cases of small intestinal hemorrhage, 3 cases of colonic hemorrhage, and 2 cases of liver disruption. The major clinical manifestation was substantive bloody stools. Some cases had hematemesis. Hemorrhagic shock occurred in five cases. All patients received treatment but hemorrhage could not be controlled. The diastolic blood pressure was lower than 40 mmHg in four patients.

Equipment and materials
AngioStar Plus-type DSA machine was purchased from Siemens Company. Catheter 4F and RADISITE® SP catheter 3 F were purchased from Cook Company. The contrast medium ultravist® 370 was obtained from Schering Company. PVA particles and coils were bought from Cook Company. All patients received celiac arteriography as well as superior and inferior mesenteric arteriography to identify the bleeding artery.

Methods
The patients underwent celiac arteriography as well as superior and inferior mesenteric arteriography. Eight patients received superselective catheterization to get access to the corresponding site of feeding artery and then embolotherapy was carried out with the corresponding materials.

RESULTS
A total of 25 patients underwent angiography for...
Acute gastrointestinal bleeding. There were 15 men (60%) and 10 women (40%) (mean age 54 years, range 34-74 years). Among the 25 patients, 3 were accompanied with hematemesis, 3 had shock, 15 had bleeding from mesenteric superior artery confirmed by angiography, 2 had hemorrhage from intestineum rectum, 6 had gastric hemorrhage, and 2 had liver arteriorrhesis. Eighteen cases underwent embolism with PVA particles or PVA particles plus gelfoam and seven cases underwent coil embolism. Angiographic embolization was successful in 25 patients with gastrointestinal bleeding, and the success rate was 100%. There were no intestinal parva necrosis and other severe complications in this group (Figure 1 and 2).

**DISCUSSION**

Acute massive hemorrhage in gastrointestinal tract is one of the most acute abdomen[9]. The mortality of emergency surgery is about 10%[14]. It is difficult to identify the bleeding site and cause of hemorrhage. The treatment of hemorrhage in gastrointestinal tract includes non-operative treatment, exploratory laparotomy and interventional embolotherapy[10].

Though endoscopy has been used universally, it still has some limitations in diagnosis[7]. Antishock and hemostasis can decrease hemorrhage but cannot achieve permanent hemostasis.

Intervention embolotherapy for gastrointestinal hemorrhage is a convenient and efficient microinvasive therapy[9]. When acute hemorrhage in gastrointestinal tract occurs, hemorrhage is often massive[10,11]. According to the leakage location of the contrast medium, we performed superselective catheterization for feeding artery embolism, which achieved hemostasis immediately, suggesting that it is a practical and effective method for old and weak patients and those who cannot tolerate operation. Embolotherapy for lower digestive tract hemorrhage is a choice of treatment[12]. We proved that it could prevent intestinal tract ischemia.

Examination of DSA has the most important clinical value and can prevent other tissue overlapping and dynamically observe the status of artery ramification, capillaries and refluxing veins, particularly for intestinal parva as well as ascending, transverse, and descending colon. The major cause of hemorrhage is tumor and vascular malformation. Our study proved DSA could show tumor blood vessel malformation and precise image for further embolotherapy and exairesis.

Gelfoam is safer and PVA particles may be better for vascular malformation because they can achieve permanent embolism. With regard to the magnitude of PVA particles and coils, we prefer to use larger particles instead of the smaller ones.

When gastrointestinal tract hemorrhage occurs, the body constitution of patients is possibly weak and the patients usually have hemorrhagic shock[13]. Angiography can find out the source of hemorrhage and is an important treatment modality[14,15].

In conclusion, angiography with embolization can successfully control acute massive gastrointestinal bleeding. Embolotherapy can stop acute bleeding and prolong the life of patients.

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