Selective embolization for massive upper gastrointestinal bleeding deriving from gastric angiodysplasia

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ABSTRACT

Transcatheter arterial embolization is a valuable, minimally invasive method, used as treatment for upper gastrointestinal bleeding, after failed primary endoscopic approach. It is a safe and effective procedure, but it’s use is limited because of relatively high rates of rebleeding and mortality.

The aim of this paper is to present a case of severe, massive upper gastrointestinal bleeding deriving from gastric angiodysplasia, which was treated successfully with superselective embolization. The patient recovered from the haemorrhagic shock and avoided emergency surgical intervention.

INTRODUCTION

Massive upper gastrointestinal bleeding still remains a serious, life threatening condition. Gastric angiodysplasia is one of the causes of upper gastrointestinal bleeding and is an acquired degenerative artero-venous pathology. Above all, it affects elderly patients with cardiovascular and pulmonary diseases (especially aortic stenosis) and patients with chronic renal failure, but also is reported in patients with other diseases such as von Willebrand’s disease and primary biliary cirrhosis (1-4).

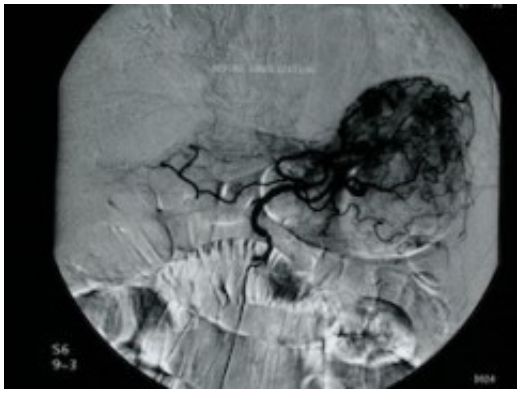
We describe a case of gastric angiodysplasia presenting with life threatening haemorrhage and haemorrhagic shock. The condition was treated successfully by means of interventional radiology.

CASE REPORT

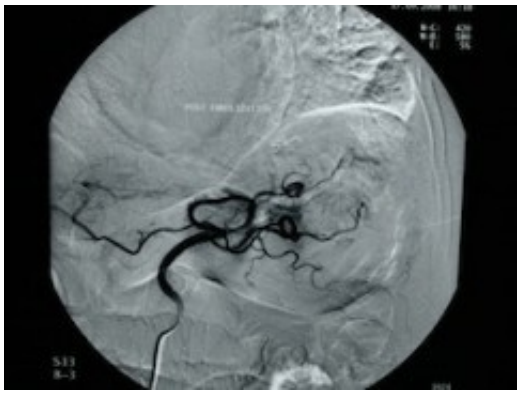
We report the case of a 72-year old female who presented in our hospital's Emergency Department with massive haematemesis. This was the fourth episode of upper gastrointestinal bleeding.

Laboratory tests indicated iron deficiency anemia (Ht: 25.6%), hypoalbuminemia (2.5 g/dL), and increased levels of blood urea nitrogen (42 mg/dL), white blood cell counts (13.800 /?L) and C-Reactive Protein (1.8 mg/dL). While staying in hospital, the patient became

haemodynamically unstable (120bpm, 80/40mmHg).



The patient was subjected to emergency oesophago-gastroduodenoscopy, which revealed extensive angiodysplasia of the gastric body. At first, conservative management was attempted with intravenous fluids and transfusions. After initial stabilization of the patient (Ht: 32.5%, 90bpm, 110/50mmHg), rebleeding was encountered within 48 hours and therefore decision for interventional radiology, embolization of the angiodysplasia, was made. Urgent angiography of the left gastric artery revealed extravasation of contrast material from the gastric body (Figure 1). Following that, successful arterial coil embolization, using super selective catheterization was achieved in the distal and proximal parts of the ruptured vessel (Figure 2). Consequently the patient recovered from the hemorrhagic shock.



The haematocrit fall (Ht:21.4%) necessitated five transfusions of packed red blood cells and fresh frozen plasma before the patient was discharged. The bleeding was entirely controlled and the patient discharged home after 3 days of uneventful hospitalization.

After two-year follow up, the patient has had no further incidents of upper gastrointestinal bleeding.

DISCUSSION

Severe upper gastrointestinal bleeding remains a common medical emergency. Peptic ulcer stubbornly remains the leading cause of upper gastrointestinal bleeding (9-53%), whereas duodenal ulcers are the reason for every fourth bleeding case. Angiodysplasia accounts for 5% of all cases. Linear relation between lower social-financial status, age, co-morbidity and higher incidence of upper gastrointestinal bleeding, has been reported in a various of studies.

Besides, the use of non-steroidal anti-inflammatory agents, as well as of antiplatelet drugs are correlated with increased risk of rebleeding (5).

In acute non-variceal gastrointestinal hemorrhage, recent developments in the field of endoscopic hemostatic therapies have been considered to be the main reason for a substantial decline in urgent surgery and mortality. On the other hand, some circumstances such as solid bleeding arising from large vessels along with significant drop in morphology, large diameter of ulcer niche, bleeding source located on posterior wall of pyloric cap or in upper part of lesser curvature of stomach, indicate efficiency limits of endoscopical techniques. In published literature about 10% of patients with an upper gastrointestinal bleeding, as well as 20-25% of these with bleeding recurrence, treated with endoscopic methods still require urgent surgery. In another 10%, urgent endoscopy is severely impaired by excessive blood and clots in the gastroduodenal tract, that hampers diagnosis (6).

Despite improvements in diagnostic and therapeutic measures, acute gastrointestinal bleeding of arterial origin still has a mortality rate of about 10% (7). The outcome of surgery in acute gastrointestinal bleeding is determined by the knowledge of the bleeding point, the type of operation and the general condition of the patient. If the bleeding source is unclear or if the patient is a poor surgical candidate, the use of visceral arteriography has been advocated to identify intraluminal leakage of contrast medium or vascular disease and, at the same time, to provide control of the gastrointestinal bleeding with embolization or selective infusion of vasopressin (8).

With the introduction of transarterial catheter embolization, angiography has become a means of guiding the interventional radiologist in introducing catheters to the appropriate location, in order to introduce the agent for embolization. New catheter and guidewire designs have made superselective catheterization of the vessels technically feasible and embolotherapy safe without the risk of affecting collateral blood supply. In addition, materials with lower resistance prevent damage and spasm to the small calibre vessels, thereby making the procedure safer. This has been shown in numerous recent studies on superselective transarterial catheter embolization, which have reported ischaemic complication rates between 0% and 22% (9).

Angiographic embolization is the best alternative option in poor surgical candidates with endoscopically unmanageable gastrointestinal bleeding; mainly after two unsuccessful endoscopic attempts. However, 10 to 20% of patients undergoing hemostatic embolization rebleed within 72 hours, probably due to recanalization or re-filling through the extensive collaterals (10). However, it still remains critical to never be late in making the decision for surgical treatment in patients with unmanageable haemorrhage. The advances in microcatheter design and embolization agents have made superselective transarterial catheter embolization a safe and efficacious modality in the acute management of upper gastrointestinal haemorrhage. It is associated with an acceptable rebleeding rate and can be considered a definitive treatment option without the need for further surgical resection in most patients. Further studies are required before embolization can be proposed as the routine first approach for endoscopically unmanageable non-variceal upper gastrointestinal bleeding.

In conclusion, superselective embolization can be considered as an alternative to surgery for upper gastrointestinal haemorrhage due to angiodysplasia, in cases of unsuccessful endoscopic management.

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