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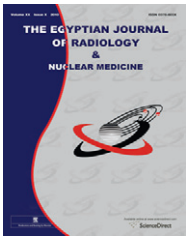

Gastrointestinal bleeding caused by angiodysplasia; one stop angiographic diagnosis and endovascular treatment by super selective embolization with polyvinyl alcohol particles

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KEYWORDS

Angiodysplasia;
GIT;
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Polyvinyl alcohol particles

Abstract *Background and aims:* Angiodysplasia is the most common vascular abnormality of the gastrointestinal tract GIT. Angiography, like colonoscopy, serves as both a diagnostic and a therapeutic modality for gastrointestinal bleeding. Since the development of microcatheters and new embolic materials, the role of embolization has grown as primary therapy for gastrointestinal bleeding with fewer complications reported. Microcatheters allow more selective catheterization, often enabling embolization of the offending artery at the bowel wall.

The current study aims to assess the role of trans arterial embolization in treatment of GIT bleeding secondary to angiodysplasia of the gastrointestinal tract using super selective embolization with polyvinyl alcohol particles.

Methods: This study was carried out at the Radiology Department, Assiut University Hospitals, in the period from July 2007 to November 2009. The study included 12 consecutive patients (1 patient

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with upper and 11 patients with lower GI bleeding); referred from Surgical Department Assiut University and Tropical Medicine Department, Minia University, in whom active hemorrhage caused by angiodysplasia of gastrointestinal tract as shown on arteriograms underwent superselective transcatheter arterial embolization by polyvinyl alcohol particles 250–350 μm in diameter.

Results: The study included 12 consecutive patients (3 females and 9 males); (1 patient with upper and 11 patients with lower GI bleeding); in whom active hemorrhage due to angiodysplasia of gastrointestinal tract as shown on arteriograms underwent superselective transcatheter arterial embolization by polyvinyl alcohol particles 250–350 μm particles to stop the hemorrhage. Bleeding was found in the distribution of the right gastroepiploic artery in one patient, in the distribution of the superior mesenteric artery, jejunal branch in three patients, in the distribution of the inferior mesenteric artery in eight patients, sigmoidal branch ($n = 2$), ileocolic/anterior cecal branch ($n = 3$), and superior rectal branch ($n = 3$). One patient had a lesion in the greater curvature of the stomach. Three patients have lesions in the small intestine; all at the jejunum, eight patients had large-bowel lesions in the following distribution: cecum and proximal part of ascending colon ($n = 3$), sigmoid colon ($n = 2$), and rectum ($n = 3$). The cause for bleeding was angiodysplasia in all cases. Three patients had recurrent lower GI bleeding 1–24 days (mean 9 days) after initial embolization. Two of these patients had surgery, while one had a successful second embolization.

Conclusion: Superselective embolization using 250–350 μm polyvinyl alcohol particles is effectively used as the transcatheter therapy for treatment of both upper and lower gastrointestinal tract bleeding.

1. Introduction and aim of the work

Angiodysplasia is the most common vascular abnormality of the gastrointestinal tract. After diverticulosis, it is the second leading cause of lower GI bleeding in patients older than 60 years. Angiodysplasia may account for approximately 6% of cases of lower GI bleeding. The prevalence for upper GI lesions is approximately 1–2% (1,2) Seventy-seven percent of angiodysplasias are located in the cecum and ascending colon, 15% are located in the jejunum and ileum, and the remainder is distributed throughout the alimentary tract (3,4).

Angiography plays an important role both as a diagnostic and a therapeutic modality for gastrointestinal bleeding. On angiograms, hemorrhage is detected if there is contrast material extravasation into the lumen of the bowel, which can be free or pooling, and it persists during or even after the injection. The angiodysplasia has been described to have characteristic appearance; a vascular tuft, along with an early and persistent draining vein (2,5).

The role of embolization has grown as primary therapy for gastrointestinal bleeding since the development of microcatheters and new embolic materials with minimal complications allowing more selective catheterization.

Microcatheters, enable embolization of the offending artery at the bowel wall and successful superselective embolization resulting in prompt cessation of bleeding and minimize the amount of bowel at risk (2,4,5).

The current study aims to assess the role of trans arterial embolization in the treatment of GIT bleeding secondary to angiodysplasia of the gastrointestinal tract using super selective embolization with polyvinyl alcohol particles.

2. Patients and methods

2.1. Patients

A retrospective study for patients who underwent angiography studies for gastrointestinal hemorrhage at Assiut University Hospital during the period from July 2007 and November 2009, out of them we included 12 patients who presented with GIT hemorrhage (upper and lower) and confirmed by angiography to be angiodysplasia of gastrointestinal tract as shown on arteriograms, excluding other causes of GI hemorrhage, such as persistent coagulopathy, hemophilia, variceal, neoplastic, ruptured splanchnic artery anuerysms, or post traumatic GIT bleeding. All the patients were treated by superselective transcatheter arterial embolization by polyvinyl alcohol particles (PVA) 250–350 μm in diameter to stop the hemorrhage. Angiographic embolizations were done for all patients after failure of conservative medical treatment.

Patients were referred from Surgical Department; Assiut University and Tropical Medicine Department; Minia University after being diagnosed as upper or lower gastro intestinal bleeding following upper or lower GIT endoscopy and initially diagnosed either as angiodysplasia or bleeding of obscure origin in the period from July 2007 to November 2009. The study included 12 consecutive patients (1 patient with upper and 11 patients with lower GI bleeding); in whom active hemorrhage caused by angiodysplasia of gastrointestinal tract as shown on arteriograms underwent superselective transcatheter arterial embolization by PVA 250–350 μm in diameter to stop the hemorrhage. Angiographic embolization was done for all patients after failure of conservative medical treatment.

Physical examination was done for all patients including chest and heart examination, blood pressure and heart rate. Routine laboratory studies were also done for all patients, including hemoglobin level, coagulation profile, blood urea nitrogen, and creatinine before the procedures. Patients' characteristics are summarized in Table 1.

2.2. Procedures and techniques

2.2.1. Diagnostic angiography

Angiographic procedures were performed for all patients with standard percutaneous transfemoral catheterization using a 5- or 6-French sheath. In the case with upper GI bleeding;