Acute gastrointestinal bleeding: A slowly changing paradigm

Gastrointestinal bleeding is classically defined according to the location of its cause. Accordingly, upper gastrointestinal bleeding originates from a cause located between the oral cavity and the angle of Treitz whereas lower gastrointestinal bleeding arises from the segment between the angle of Treitz and the anus [1]. Recently, it has been suggested to classify gastrointestinal bleedings into three categories: upper, middle and lower, with the middle one originating from the small bowel only [2]. Mortality from acute overt gastrointestinal bleeding (AOGIB) has been estimated to 10% and dramatically rises up to 21—40% in patients with massive AOGIB [3—5]. Consequently, prompt diagnosis of AOGIB and identification of the cause and location is mandatory to avoid delay in appropriate management. Several studies have investigated the performances of computed tomography (CT) in the diagnosis of gastrointestinal bleeding [6—11]. CT is used as the first line diagnostic modality at many institutions in patients with acute overt gastrointestinal bleeding [12—16] although guidelines from gastrointestinal societies still consider that endoscopy should be performed first [17,18]. In the same time, appropriate management of acute gastrointestinal bleeding has been subjected to dramatic changes. Surgery has been considered as the reference treatment for many years [19], but percutaneous arterial embolization, when possible, is now considered as the first line treatment at many facilities, even in hemodynamically unstable patients [20].

CT can depict active contrast extravasation in patients with life-threatening AOGIB. Diagnostic performance has been improved by the use of multiplanar and maximum intensity projection (MIP) reformations from submillimeter isotropic voxels [12]. In a meta-analysis, Garcia-Blazquez et al., found an overall sensitivity of CT angiography for depicting active gastrointestinal bleeding of 85.2% (95% CI 75.5% to 91.5%) and a specificity of 92.1% (95% CI 76.7% to 97.7%) [6]. Marti et al. reported a correct identification of the causative lesion in 39/47 patients (83%) [7]. It is now well established that CT is superior to nuclear red blood cell scan for the evaluation of lower gastrointestinal bleeding [17]. CT decreases scanning time, allows accurate acquisition of CT images obtained during the arterial time and demonstrates contrast material extravasation into any portion of the gastrointestinal tract. CT has therefore replaced the nuclear red blood cell scan in many centers [17].

KEYWORDS
Acute gastrointestinal bleeding; Interventional Imaging; Arterial embolization
Percutaneous arterial embolization is a well-established technique for the treatment of acute bleeding in a variety of locations [21–24]. More specifically, percutaneous arterial embolization has demonstrated clinical efficacy ranging from 71% to 100% in the management of acute lower gastrointestinal bleeding [25,26]. The technical success ranges between 73% and 100% depending on the presence of arterial vasospasm, atheromatous lesions, vessel tortuosity on the bleeding arteries [25,26]. In embolized patients, immediate hemostasis is achieved in 95% of them [25]. The rate of recurrence may reach up to 21% [25,26], the site of recurrence can be either the embolization site in 45%, a distinct site in 16% or an undetectable site in 39% of patients [25].

In this issue of Diagnostic & Interventional Imaging, Bua-Ngam et al. have reported the results of a study that was aimed at assessing the safety and efficacy of percutaneous arterial embolization in the treatment of acute lower gastrointestinal bleeding (LGB) and to determine the potential factors that influence treatment outcome [27]. Thirty-eight patients with acute LGB who were treated by percutaneous arterial embolization were retrospectively included [27]. Technical success of percutaneous arterial embolization was obtained in 35/38 patients (92%) whereas technical failure was observed in 3/38 patients (8%). Technical failure was due to vessel tortuosity and vasospasm [27]. The clinical success rate following percutaneous arterial embolization was 63% [27]. Of interest, among the 10 patients with clinical failure, 9 received gelatin sponge as embolic material, thus questioning the use of this embolic agent in acute LGB by comparison with glue and metallic coils [28,29]. In the study by Bua-Ngam et al., bowel ischemia following percutaneous arterial embolization occurred in 5/38 patients (13%); mild ischemia without sequelae was observed in three patients and severe ischemia with bowel perforation requiring surgery in two patients [27]. These results are consistent with those of prior studies [30–32]. Of interest, Bua-Ngam et al. used gelatin sponge in 4 out 5 patients with ischemic complications. In their study, Bua-Ngam et al. did not identify variables that were significantly predictive for a failed percutaneous arterial embolization, although a trend toward an association was found between technical failure of percutaneous arterial embolization and comorbidities (OR, 0.12) and international normalized ratio > 1.3 (OR, 7.04) and a trend toward an association between clinical failure of percutaneous arterial embolization and hypovolemic shock (OR, 5.00) [27].

The study by Bua-Ngam et al., reinforces the general assumption that percutaneous arterial embolization has a high efficacy in the treatment of acute LGB with an acceptable rate of complications. However, several questions remain unanswered, especially regarding the best embolic agent in this situation and the identification of predictive variables of failed percutaneous arterial embolization. These important questions should stimulate further prospective, multicenter and large-scale studies.

Disclosure of interest

The authors declare that they have no competing interest.

References


P. Soyer (MD, PhD)⁎, A. Fohlen (MD)⁎, A. Dohan (MD, PhD)⁎

⁎ Université Diderot-Paris-7, AP — HP, Paris, France

⁎ Department of diagnostic Imaging and interventional radiology, centre hospitalier universitaire de Caen, Caen, France

⁎ Department of diagnostic radiology, royal victoria hospital, McGill university health centre, Montreal, QC, Canada

⁎ Corresponding author.

E-mail address: philippe.soyer@lrb.aphp.fr

(P. Soyer)