

Small-Bowel Angiectasia as Detected by Capsule Endoscopy and Treated at Balloon Enteroscopy



J Masseli and JG Albert, Johann Wolfgang Goethe University Hospital, Frankfurt/Main, Germany

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Abstract

In this article, the video demonstrated is an example of a 76-year-old male patient who presented with recurrent intestinal bleeding of unknown origin at the university hospital. Previously performed upper and lower gastrointestinal tract endoscopy did not reveal a bleeding lesion. Capsule endoscopy revealed small-bowel angiectasia that were treated by argon plasma coagulation at subsequent balloon enteroscopy. This article is part of an expert video encyclopedia.

Keywords

Angiectasia; Angiodysplasia; Capsule endoscopy; Enteroscopy; Small bowel; Thalidomide; Video.

Video Related to this Article

Video available to view or download at doi:10.1016/S2212-0971(13)70120-1

Techniques

Capsule endoscopy (CE) performed after bowel cleansing with 1–2 l of a polyethylene glycol electrolyte solution. The dosage is split into two doses ingested the evening before and the morning of the examination. Simethicone (approximately 80–120 mg) is offered before capsule ingestion.

Trans-anal balloon enteroscopy mandates a complete bowel cleansing before conventional ileocolonoscopy.

Materials

- Capsule endoscope (PillCam™ SB2; Given Imaging EMEA, Hamburg, Germany).
- Double-balloon enteroscope (working channel: 2.8 mm, working length: 2300 mm, DBE EN-450T5; Fujinon/Fuji-film, Willich, Germany).
- APC catheter (ERBE, Tübingen, Germany).
- Erbe VIO 200D (ERBE, Tübingen, Germany), APC Precise mode 2–4 or pulsed APC, effect 2 (20–25 W).

Endoscopic Procedures

A 76-year-old male patient was presented with recurrent intestinal bleeding of unknown origin at the university hospital. Previously performed upper and lower gastrointestinal tract endoscopy did not reveal an active bleeding lesion.

Concomitant medical condition comprised ischemic heart disease, chronic obstructive pulmonary disease, and compensated renal insufficiency. At esophago-gastro-duodenoscopy, angiectasias (AEs) had been detected at the referring hospital and were endoscopically treated with APC, but bleeding recurred a few days later. CE was performed and multiple AE in the stomach and the small bowel were demonstrated. The lesions were treated by APC at subsequent balloon enteroscopy.

AEs is the most frequent reason for small-bowel bleeding in Europe and the USA. Although the terms angiodysplasia, AE, or arteriovenous/vascular malformation are used synonymously, telangiectasia is commonly used for systemic or congenital diseases. All share a similar morphology of ectatic and thin-walled vessels that may feature an arteriovenous communication due to an insufficiency of the precapillary sphincter. In contrast to sporadic AE, hereditary hemorrhagic telangiectasia (Rendu–Osler–Weber syndrome) is a rare autosomal dominant vascular disorder that is accompanied by an alteration of the angiogenetic transforming growth factor- β resulting in arteriovenous malformations of skin, mucosa, and viscera (lung, liver, and brain).

The etiology of sporadic AE remains unclear. Possibly, pathogenetic factors contributing to the formation of AE are vascular endothelial growth factor (VEGF)-related disorders of angiogenesis, age-related vessel degeneration, and high intestinal wall tension (e.g., caused by chronic constipation) causing chronic obstruction of submucosal veins with consecutive precapillary dilatation. Risk factors for gastrointestinal bleeding from AE have been identified, namely autoimmune disorders, liver cirrhosis, renal failure, ischemic heart disease, aortic stenosis, and treatment with anticoagulants. The association of aortic stenosis and gastrointestinal hemorrhage from AE (Heyde's syndrome) is most likely due to an acquired deficiency of the 'von Willebrand' factor (vWF) caused by a mechanical disruption of the vWF monomer at its turbulent passage through the obstructed aortic valve.

Detection of gastric AE has a high prevalence (approximately two-third of patients) of concomitant small bowel

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affection, and colonic AE comes along with small bowel lesions in approximately 50% of cases. Therefore, CE should be considered in all patients with symptomatic lesions of the upper or lower gastrointestinal tract.

Treatment options include endoscopic techniques (APC, injection therapy: suprarenin, fibrin glue, and through-the-scope clip application) and surgery. Thalidomide is an inhibitor of angiogenesis by suppressing VEGF expression and is an effective medical therapeutic option for recurrent gastrointestinal bleedings from vascular malformations.

Despite application of optimal treatment there is a high risk of recurrent bleeding during long-term follow up.

Key Learning Points/Tips and Tricks

- AE is the most important source of small bowel bleeding.
- Endoscopy is the reference standard to detect AE.
- CE is most often used for diagnosis of small bowel bleeding, and balloon enteroscopy is the first choice in treating AE (e.g., APC).

Complications and Risk Factors

- Capsule retention rate is very low (less than 1%) in diagnostic investigations of small-bowel bleeding. Risk factors for capsule retention are Crohn's disease, prolonged use of non steroidal anti inflammatory drugs, and prior abdominal surgery.
- Therapeutic balloon enteroscopy harbors a low risk of perforation.

Alternatives

- Computed tomography (CT) and CT angiography may clearly delineate active bleeding from the small bowel and offer embolization, but is rarely diagnostic in small-bowel lesions that had previously bled.
- Surgical resection of AE that are restricted to a circumscribed bowel segment is a therapeutic option in the second line.

Scripted Voiceover

Time (min:sec)	Voiceover text
0:00	This is a 76-year-old male patient who presented with recurrent intestinal bleeding of unknown origin.
0:10	A small angiectasia is demarcated at capsule endoscopy in the gastric antrum.
0:23	There are multiple angiectasias of the small bowel detected by capsule endoscopy. Therefore, balloon enteroscopy was scheduled to treat the lesions.

0:56	Double balloon enteroscopy identifies the small bowel angiectasias; the lesion may be a flat red spot of only a few millimeters or it may measure up to 1 or 2 cm.
1:24	With use of a specific probe, argon plasma coagulation can easily be applied at the lesion. A stable position of the endoscope is crucial for targeted treatment. The use of low energy outputs at argon plasma coagulation (APC) also helps to minimize the risk of perforation in thin-walled intestinal areas such as the small bowel.
2:09	With increase of size, angiectasias are suspected to harbor a high potential of bleeding, and elevated lesions are often said to be exceptionally prone to bleed.
2:36	At some positions of the balloon enteroscope or the lesion it might be difficult to adjust the optimal distance of the APC probe from the bowel mucosa for the argon beam to trigger firing. The mode 'Precise APC' offers distance independent application of APC.
2:59	Beside devices that offer an axial argon plasma beam, there are APC probes available featuring side-firing. This might help in some endoscopic positions to improve targeting the lesion. Flexible APC probes for endoscopic use are available as reusable or disposable devices.
3:25	To improve stability of the position, intravenous application of butylscopolamine or glucagon, might be of some help by significantly reducing bowel motility. Studies have demonstrated that bleeding from angiectasias in the small bowel can be effectively treated with APC using balloon enteroscopy, and long-term follow-up data show an increase in hemoglobin levels and reduced blood transfusion requirements after endoscopic therapy. Nevertheless recurrent bleeding might be an issue in some patients in whom endoscopic treatment needs to be repeated. Prospective data indicate that medical treatment with thalidomide might be an additional option for recurrently bleeding patients.

Further Reading

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