



The Role of Video Capsule Endoscopy in Overt Gastrointestinal Bleeding

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ABSTRACT

Overt gastrointestinal (GI) bleeding is defined as visible GI bleeding (melena and hematochezia) and can be categorized further as active versus inactive bleeding. Endoscopy is routinely used to find the cause of bleeding, but small bowel has been largely inaccessible by this conventional endoscopy. Video capsule endoscopy (VCE) is one of methods that can reach the small bowel. We report a 45-year old woman with recurrent hematochezia. She had previous hematochezia 4 years ago, but no definite diagnosis was concluded. We performed esophagogastroduodenoscopy (EGD) and colonoscopy. We found gastritis and colonic diverticulosis, but no site of active bleeding. Video capsule endoscopy showed no source of bleeding in the small bowel.

Keywords: Hematochezia, overt gastrointestinal bleeding, video capsule endoscopy

ABSTRAK

Perdarahan saluran cerna yang nyata (*overt*) adalah perdarahan saluran cerna yang dapat dilihat mata telanjang (melena atau hematochezia), dapat merupakan perdarahan aktif atau inaktif. Endoskopi rutin digunakan untuk mencari sumber perdarahan saluran cerna, namun usus halus merupakan bagian yang tidak terjangkau. Video kapsul endoskopi adalah salah satu metode yang mampu menjangkau usus halus. Kami melaporkan kasus wanita 45 tahun hematochezia berulang. Riwayat hematochezia sebelumnya 4 tahun yang lalu namun belum didiagnosis. Pada gastroskopi dan kolonoskopi ditemukan gastritis dan divertikel kolon, namun tidak ditemukan perdarahan aktif. Video kapsul endoskopi tidak menemukan sumber perdarahan dari usus halus. **Dedy Gunawanjati Sudrajat, Florencia Pauliana Wijanarko. Peranan Video Capsule Endoscopy pada Perdarahan Saluran Cerna yang Nyata**

Kata kunci: Hematochezia, perdarahan saluran cerna yang nyata, video kapsulendoskopi

INTRODUCTION

Obscure gastrointestinal (GI) bleeding is defined as occult or overt bleeding of unknown origin that persist or recurs after initial negative endoscopic evaluation including gastroscopy and colonoscopy. Overt GIB is defined as visible GI bleeding (melena and hematochezia) and can be categorized further as active versus inactive bleeding.¹ Hematochezia, bright-red or maroon blood per rectum, can occur in massive upper and lower GI bleeding. Hematochezia requiring hospitalization occurs in only 5-10% of patients and can be life-threatening.²

Esophagogastroduodenoscopy (EGD) and colonoscopy are the commonest diagnostic tools in acute GI bleeding. Their limitation is inaccessibility to visualize entire small bowel mucosa.³ Video capsule endoscopy

(VCE) is a procedure for inspecting the gastrointestinal (GI) tract, principally used for areas that cannot be visualized by esophago-gastroduodenoscopy and colonoscopy. It is the gold standard for obscure gastrointestinal bleeding and iron deficiency anemia.⁴ Limitations of VCE are that therapeutic measures cannot be performed and biopsies cannot be done.⁵

CASE PRESENTATION

A 45-year old woman arrived at the emergency department complaining of 72-hour lasting intense bright-red blood emanating from rectum, mixed with stool, not sticky, no blood clot, more than ten times in a day. She experienced this same complaint four years ago, but stopped spontaneously. She also mentioned loss of appetite, fatigue and headache. She had no fever, abdominal pain,

fullness and abdominal distension.

Physical examination revealed pale conjunctivae. Vital signs were within normal limits. Abdomen and other organs were within normal limits. Abnormal laboratory findings included anemia (Hb 7.5 g/dL and Hct 21.4 vol%), mild neutrophilia (70.2%), blood and occult blood in fecal examination. Hemostasis result was within normal limit. No active bleeding seen while in hospitalization. EGD showed moderate gastritis, no signs of ulcer or malignancy. Colonoscopy revealed diverticulosis of the colon at the sigmoid and caecum area, more prominent at the caecum area. No active bleeding seen. Terminal ileum was normal with no trace of blood.

We considered to follow up through VCE to find other possible source of bleeding beside



diverticulosis, especially in the small intestine that could not be approached with EGD and colonoscopy.

The VCE revealed gastritis with diverticulosis of the caecum, ascending colon, and sigmoid. No source of the bleeding seen in small intestines. Her last hematochezia episode was in the third day of hospitalization. She was discharged after her condition was stable and better.

DISCUSSION

Hematochezia, the passage of bright-red or maroon blood from the rectum, usually originated from lower parts of the gastrointestinal (GI) tract. Based on a prospective study of urgent colonoscopy on 458 consecutive patients admitted through the emergency room for severe hematochezia or who developed severe hematochezia while in the hospitalization, colonic bleeding site was identified in 72.1%, an upper GI source accounted for approximately 18.1%, a small bowel source in 3.9% and no source was found in 15.9%.^{2,5}

Patients presenting with GI bleeding should undergo a directed history and physical examination to look for the bleeding source as well as possible etiology. Considering the fact that 5 - 18.1% hematochezia cases are due to upper GI tract bleeding, an upper endoscopy and colonoscopy should be performed in all patients with significant hematochezia.^{2,5} Obscure bleeding accounts for approximately 5% of all overt GI bleeding cases and the source is commonly from the small bowel,⁴ as a consequence, video capsule endoscopy (VCE) should be performed. In this case, colonoscopy revealed diverticulosis, and EGD showed gastritis; no active bleeding was seen. Because small bowel has largely been inaccessible for direct visualization by a conventional endoscopy, a VCE was ordered.

The aim of using a video capsule is to take as many images as possible along the GI tract; the capsule for the small intestine can take two images per second, producing about 55,000 images during the test.⁴ Video capsule is comprised of a light source, lens, complementary metal-oxide-semiconductor (CMOS) imager, battery and a wireless transmitter.^{6,7} The first capsule, produced by Given Imaging (M2A Given Imaging,

Yokneam, Israel) in the late 1990s, is called Pillcam™. Since 2008, the second generation of the Pillcam capsule, called Pillcam SB2, has become available, with a wider viewing angle of 156°. Another type of CE developed by Olympus® (Tokyo, Japan), called Olympus EndoCapsule, is different in weight, being 3.8 g rather than 3.4 g, and has a wide viewing angle of approximately 145°. Both the PillCam and the EndoCapsule can take two images per second.⁴ It is easily ingested, and propelled by natural peristalsis from mouth to anus. The preparation for VCE suggested by manufacturers consists only of a clear liquid diet, polyethylene glycol or sodium phosphate on the day prior to the exam and an overnight fast (8-12 hours). The battery

is usually sufficient for 8-12 hours of video recording and transmission. Most capsules are naturally expelled within 72 hours and this device is disposable.^{6,7}

The main indications for a small bowel capsule endoscopic examination are occult GI bleeding, suspected Crohn's disease, small-bowel tumor, evaluation of non-responding celiac disease, screening for polyps, NSAID enteropathy, and abnormal small-bowel imaging and small bowel injury.^{4,6,7} Cardiac pacemakers are a contraindication because the telemetry wave of pacemaker interfere the VCE.⁴ Previous abdominal surgery and pregnancy cases are not preferred for VCE because of lumen narrowing risk which

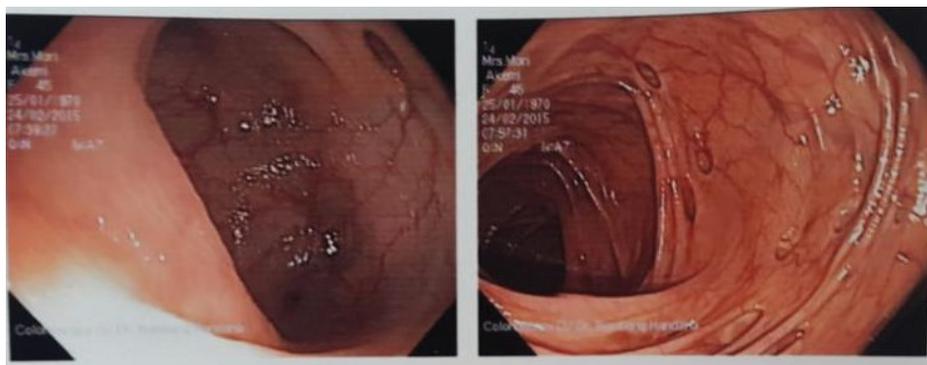


Figure 1. Colonoscopy showed diverticulosis of the colon at the sigmoid and caecum area, no site of active bleeding.

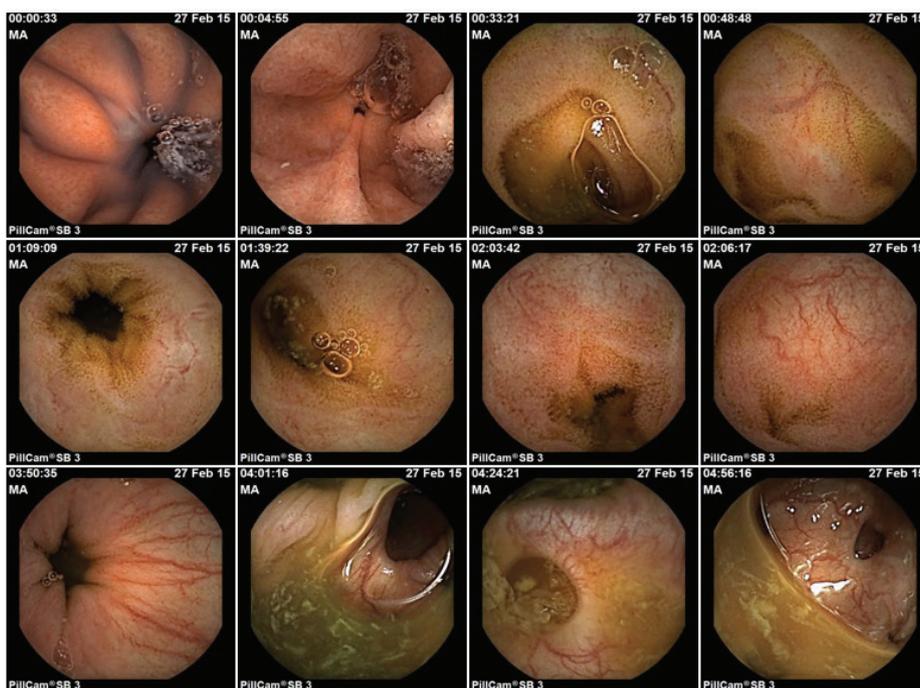


Figure 2. The VCE result showed gastritis and diverticulosis of the caecum, ascending colon, and sigmoid.



increase the risk of capsule retention.^{4,8,9} Patients with swallowing difficulty due to neurological or anatomical reasons may be unable to have VCE. VCE is not suitable for young children and in gastroparesis, pseudo-obstruction or extensive intestinal diverticulosis.⁴

Intraoperative enteroscopy is currently the gold standard for investigating obscure GI bleeding from small bowel.¹⁰ Compared with intraoperative enteroscopy, VCE had a sensitivity of 95% and specificity of 75% in a single-center prospective study of 47

patients to detect a bleeding source.⁷ VCE detection rates and identification of various small bowel diseases do not differ between occult versus overt GI bleeding.¹¹ VCE also have a high diagnostic yield in acute, mild to moderate, active hemorrhage of obscure origin when performed in hospital after a negative standard endoscopic evaluation, and important in guiding medical management.¹² Disadvantages of VCE are that therapeutic measures cannot be performed and biopsies cannot be obtained.¹⁰ Capsule endoscopy is also superior to push enteroscopy in the diagnosis of recurrent bleeding in patients

who had a negative gastroscopy and colonoscopy. It was safe and tolerated.¹²

This patient had a history of overt GI bleeding 4 years ago; gastroscopy and colonoscopy revealed no active bleeding. VCE revealed no site of bleeding in small bowel and supported her colonoscopy result. The diagnosis is diverticular hemorrhage because of a presence of diverticular without stigmata of hemorrhage and no other lesions responsible for bleeding found by gastroscopy, colonoscopy, and VCE.

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