A case of adult intussusception: a curious presentation

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It is well established that a diagnosis can be made solely on the basis of a patient’s history in the majority of cases. Physical examination may reveal more clues to the patient’s complaint, diagnostic tests are used to identify, assess, and confirm any physiological basis for disease. However, a thorough history and good clinical acumen contribute most to a medical diagnosis and treatment selection. This daunting idea is also reassuring, in that there is no substitute for a sound diagnostic approach that one can gain from experience. There is, however, always opportunity for a rare occurrence, a peculiar presentation, a proverbial ‘zebra’ to slip past our detection despite our most diligent efforts. Disguised by common or vague symptoms rather than stripes, these ‘zebras’ are a chance to step outside of the usual diagnostic process, summon a protracted differential diagnosis from our training, and regard an unsolved medical problem with new eyes. When the patterns of everyday medicine are broken by such a case, the importance of an astute doctor is starkly illuminated.

The following case was described by Yalamarthi and Smith.1 A 42 year old male with a three day history of melena presented to his general practitioner, who referred the patient for consultation. He had been previously investigated for iron deficiency anemia, with no cause having been identified. At the time of consult, the patient’s haemoglobin was low (86 g/L) and was suggestive of an iron deficiency etiology. The initial investigation that was performed was an upper GI endoscopy, which revealed minimal esophagitis. The absence of significant esophagitis is of interest because iron deficiency has been known to coincide with both hiatal hernias and esophagitis.2 The patient elected for a conservative investigative approach and underwent a normal barium enema.

Since this patient’s initial presenting complaint was an acute history of melena, it may be helpful to review the differential diagnostic thought process that would be triggered by this symptom. Melena refers to black, tarry stool caused by the presence of blood. The tarry appearance is created by the digestion of red blood cells and their contents (specifically the oxidation of iron in hemoglobin) by the activity of the GI tract as it passes through the intestine and colon.3 For the blood to be digested in this way, its source must originate early in the gastrointestinal tract; this fact allows physicians to classify a GI bleed as being an ‘upper GI bleed’ by the presence of melena. About 90% of melena originates proximal to the ligament of Treitz (a structural support connecting the duodenum to the diaphragm), but some cases can originate in the small intestine or proximal colon.4 Conversely, the presence of bright red blood in the stool is indicative of a ‘lower GI bleed’, from the distal colon or rectum. This distinction can be very helpful in pursuing a diagnosis.

Causes of upper GI bleed can vary greatly, and a detailed history is critical to ruling in or ruling out these potential situations. Potential bleeding causes in the upper GI tract include peptic ulcer disease, esophageal varices, portal hypertensive gastropathy, malignancies, angiodysplasia, and aorto-enteric fistula.5 Peptic ulcer disease is a common cause of upper GI bleeding, and is seen in patients with a history of Helicobacter pylori infection. Marginal or anastomotic ulcers can be present in patients with gastroenteric anastomosis. Esophageal varices and portal hypertensive gastropathy can be seen in patients who have a history of alcohol abuse or liver disease. Malignancies can occur in the upper GI tract in patients with a history of smoking, alcohol abuse, or bacterial infections such as Helicobacter pylori. In patients with renal disease, aortic stenosis, or hereditary hemorrhagic telangiectasia, resultant angiodysplasia can lead to bleeding in the upper GI structures. Finally, an aorto-enteric fistula can develop in patients who have a history of aortic aneurysm or an aortic graft. An assessment of medications is also necessary to determine if there may be a pharmacological basis for the upper GI bleed, which can be seen in the following situations: non-steroidal anti-inflammatory drugs leading to peptic ulcer disease, irritation of the esophagus by medications leading to pill esophagitis, anti-coagulants which promote bleeding, and bismuth or iron which can give stool the appearance of melena without causing a bleed.6

The patient was seen again in clinic, and upon this second visit he complained of left upper quadrant pain.1 He was still anemic at this time, with a haemoglobin of 98 g/L, despite being advised to take iron supplements after his first consultation. There were no signs of overt blood loss, and no apparent clues to suggest a hidden source. A barium meal follow through showed distortion of the terminal ileum, which was initially assessed as extrinsic compression of the intestine by the sigmoid colon. Further investigation using computed tomography (CT) showed an abnormally thickened region of the ileum. On the scan, this region had a target-like appearance as well as intra-luminal fat present, a finding consistent with our gastrointestinal ‘zebra’ condition.

Our patient’s first investigations were barium studies. The contents of the GI tract are difficult to discern on an X-Ray, so barium salts, which are non-toxic radio-opaque, are inserted to help with visualization. The first test performed was a barium enema, which investigates the colon. After a patient empties their colon, a well-lubricated enema tube is inserted into the patient’s rectum. The colon can be filled with barium alone – a “single contrast” barium enema - or barium followed by air – a “double-contrast” barium enema.6 X-Ray fluoroscopy reveals details about the intestinal lumen and mucosa, with double-contrast barium enemas providing better information on the lining. Our patient’s lesion was located above the range visible via a barium enema. Upon this second investigation, a barium meal, is a similar process that investigates foregut structures instead of the colon.7 This investigation revealed a compression of the terminal ileum. With CT imaging, hallmark signs of an intussusception were visualized, specifically a target-shaped appearance indicating overlapping bowel walls, and intra-luminal fat, which indicates entrapped mesenteric fat.1
An intussusception is the telescoping of one segment of bowel into an immediately adjacent segment of bowel. It is found far more commonly in pediatric populations (95% of all intussusception cases are in children), and accounts for less than 5% of adult cases of gastrointestinal obstruction. In children, it is almost always benign and idiopathic, and resolves with the barium enema that is used to diagnose it—the hydrostatic pressure of barium fluid—without air—will cause the telescoped bowel to reduce into an anatomical position. Furthermore, children often present with the classic triad of intussusception symptoms: vomiting, rectal bleeding, and abdominal pain. In adults, intussusception often presents with vague abdominal symptoms, which a careful clinician may be able to discern. Abdominal pain associated with intussusception is generally periodic and intermittent, and is sometimes accompanied by blood in vomit and/or stool. Furthermore, intussusceptions in adults are rarely idiopathic, with malignant growths accounting for 6-30% of adult intussusception cases, and majority occurring from benign pathology. Our patient had a traumatic ulcer in a Meckel’s diverticulum that served as the lead point for the telescoping to occur.

Meckel’s diverticulum is a congenital anomaly of the small bowel, occurring in 2% of the population, and more commonly seen in males than females. If it is present in an individual, it is usually found within two feet of the ileocecal valve. This vestigial structure represents an incomplete closure of the omphalomesenteric or vitelline duct, which connects the midgut of the developing embryo to the yolk sac while in utero. A Meckel’s diverticulum is typically asymptomatic, with only 2% of cases actually developing any complications over their lifetime. As was seen in our patient, bleeding from the diverticulum is painless, and can result from mucosal ulceration within ectopic gastric tissue. This ectopic tissue can continue to produce secretions that are characteristic of the tissue’s embryological origin, such as acid and protease-containing digestive fluid. These secretions can gradually break down the mucosal lining of the diverticulum causing ulceration and bleeding.

The finding of melena in this case was curious because the Meckel’s diverticulum was located in the distal ileum. As was previously mentioned, gastro-intestinal bleeding from the lower digestive tract (distal to the ligament of Treitz in the duodenum) would normally present as bright red blood in the stool. The approach presented by Cappell and Friedel for the evaluation of acute upper gastrointestinal bleeding states that some cases of melena can arise from pathology in the distal small bowel and even the proximal colon. With this in mind, this case truly was atypical: an uncommon presentation of an unusual pathology.

There are generally two options in treatment—resection of the involved bowel sections, or reduction—i.e. returning the bowel to anatomical position. Generally, pediatric cases of intussusception will be resolved via reduction of the telescoping regions, with the option to resect the affected region if it is irreparably damaged. In adult patients, due to the high prevalence of malignant tumors and the associated risk of dissemination if reduction is attempted, the preference is for resection. Colo-anal intussusceptions are the notable exception, as reducing could spare the anal sphincter, which is needed to retain bowel continence, as well as post-traumatic and idiopathic intussusceptions in which the risk of malignancy is insignificant.

Our patient underwent a laparoscopic procedure under general anesthetic to resect a section of his small bowel. Depending on the amount of healthy bowel left after resection, the remaining bowel can be reconnected, or an ileostomy can be performed in which remaining bowel is directed through an opening in the abdomen to a drainage bag. Our patient had approximately 1 foot of bowel removed, thus his remaining bowel segments were reattached. He made an uneventful post-operative stay and made a full recovery to normal bowel function.

REFERENCES