MECKEL'S DIVERTICULUM PRESENTING AS SEVERE LOWER GASTROINTESTINAL BLEEDING IN THE ELDERLY: A CASE REPORT

M.L. S. Sy, M.A. V. Chu, L. D. Gatchalian, F. L. Domingo Jr., M. C. Naval
Section of Gastroenterology, Department of Internal Medicine
East Avenue Medical Center, East Avenue, Diliman, Quezon City, Philippines

SIGNIFICANCE: Meckel's diverticulum is uncommon and often asymptomatic. Complications are more common in childhood and rarely seen in adults, more so in the elderly. Here, we present an unusual case of bleeding Meckel's diverticulum in an elderly male.

CLINICAL PRESENTATION: A 60-year-old gentleman with no prior illness came in due to severe hematochezia and anemia. Physical examination was unremarkable except for pale palpebral conjunctiva and maroon-colored stool on rectal examination.

MANAGEMENT: Initial upper endoscopy showed antral erosion while colonoscopy only showed a white based 0.5-1cm ulcer at the sigmoid with no active bleeding. Hemoglobin improved to 11.6g/L after blood transfusions however hematochezia recurred and hemoglobin dropped to 7.9g/L. RBC scintigraphy was done but showed no evidence of active bleeding. With recurrent hematochezia, a repeat colonoscopy was done but was not completed due to poor visibility from massive bleed. A decision was made to send the patient for exploratory laparotomy with intra-operative enteroscopy showing diverticulum 60cm from the ileocecal valve with oozing ulcer at the base. Wedge resection of the diverticulum with primary repair was done. Histopathology confirmed the suspicion of Meckel's diverticulum showing intestinal wall with all layers intact; Small nests of pyloric glands. Patient was discharged improved.

RECOMMENDATION: Symptomatic Meckel's diverticulum is an outstanding diagnostic challenge due to its rarity in the elderly. This can be present in the elderly and must be included in our differential diagnosis. Proper use of algorithm in the approach to patients with gastrointestinal bleeding will aid in the accurate diagnosis of complicated cases.

KEY WORDS: Case report, Meckel's diverticulum, lower gastrointestinal bleeding, elderly

Meckel's Diverticulum Presenting as Severe Lower Gastrointestinal Bleeding in the Elderly: A Case Report

Mark Lester S. Sy, MD; Michael Angelo V. Chu, MD; Lovell D. Gatchalian, MD; Felix L. Domingo, Jr., MD; Marichona C. Naval, MD

INTRODUCTION

Severe lower gastrointestinal (GI) bleeding is defined as continued bleeding within the first 24 hours of hospitalization (transfusion of 2 or more units of packed red blood cells and/or hematocrit value drop of 20% or more) and/or recurrent bleeding after 24 hours of stability (need for additional transfusions, further hematocrit value decrease of 20% or more, or readmission to the hospital for lower GI bleed within 1 week of discharge).[1] In most cases, severe hematochezia is from the colon (75%), 17% is from an upper GI source, and only 5% is from a small intestinal source.[3] Visible acute GI bleeding with a non diagnostic upper endoscopy, colonoscopy, and small bowel series defines obscure overt GI bleeding. In patients older than 40 years of age, obscure overt GI bleed are more likely due to angioectasia or an NSAID-induced ulcer.[1] Meckel's diverticulum are uncommon and often clinically silent. But it can cause complications in the form of ulceration, hemorrhage, intussusception, intestinal obstruction, and perforation. It is common to miss the diagnosis of Meckel's diverticulum in adults since complications, especially bleeding, are more common in the pediatric age group.[4] Here, we report an unusual case of severe lower GI bleeding in an elderly patient from a Meckel's diverticulum.

CASE REPORT

A 60-year-old Filipino gentleman was brought to our institution due to hematochezia. History started 2 days prior, when patient had 6 episodes of black soft stool, approximately 120mL in amount per episode. Patient denied any abdominal pain nor weight loss. Consult at a local hospital where CBC done showed a hemoglobin of 12.2 g/L and a hematocrit of 37%. Patient was advised admission but opted to be discharged. He was prescribed with PPI and oral tranexamic acid. One day prior, there were 3 episodes of maroon-colored soft stool accompanied by body weakness and dizziness. He was readmitted at the local hospital where repeat CBC showed a hemoglobin of 7.6 g/L and a hematocrit of 23%. He was transfused with one unit packed RBC and subsequently transferred to our institution for further management. Patient had no prior illnesses, no previous abdominal surgery, no maintenance medications. Furthermore, patient was a non-smoker and not an alcoholic beverage drinker. Family history was also unremarkable. Upon arrival at our institution, physical examination revealed patient to be normotensive with a blood pressure of 100/60 but tachycardic at 110 regular beats per minute. He had pale palpebral conjunctiva. Other physical examination findings including abdominal exam were unremarkable. Digital rectal examination revealed maroon-colored stool on tactating finger. He was admitted as a case of severe upper gastrointestinal bleeding probably secondary to bleeding peptic ulcer disease; to rule out severe lower GI bleeding secondary to bleeding diverticulosis. Patient subsequently underwent upper endoscopy and colonoscopy after stabilization. Upper endoscopy only showed erosions with hyperemic borders at the antrum **(Figure 1)**.

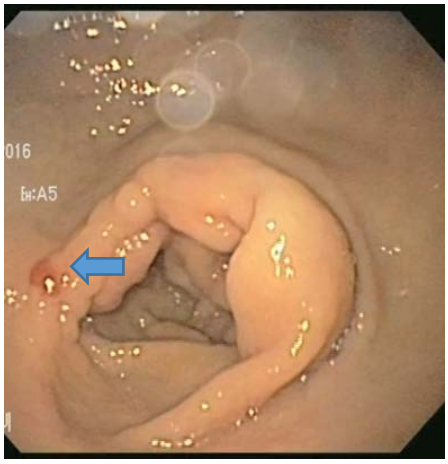

Figure 1. Upper endoscopy. Erosion with hyperemic borders at the antrum (blue arrow).

Colonoscopy with intubation of terminal ileum only showed a white based 0.5-1cm ulcer at the sigmoid 35cm from the anal verge. No active bleeding was noted **(Figure 2)**.

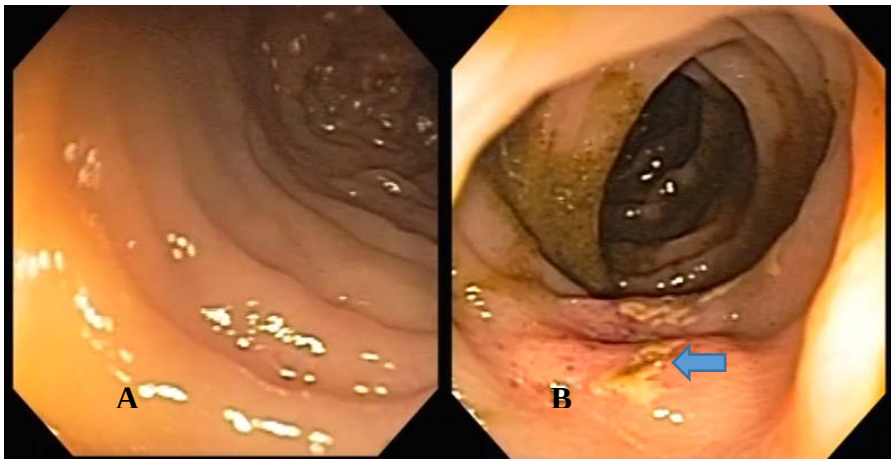

Figure 2. Colonoscopy. **A.** Terminal ileum with no evidence of bleeding. **B.** Sigmoid colon 35cm FAV with white based ulcer (blue arrow).

Multiple blood transfusions were given and CBC improved (hemoglobin 11.6 g/L; hematocrit 36.9%; platelets 290). However, on the 6th hospital day, there was recurrence of hematochezia, with a repeat hemoglobin of 7.9 g/L and hematocrit of 24.6%. RBC scintigraphy using 99mTc was done which showed no evidence of active gastrointestinal bleeding during the 3-hour acquisition period but this was done approximately 16 hours after the last episode of bleed **(Figure 3)**.

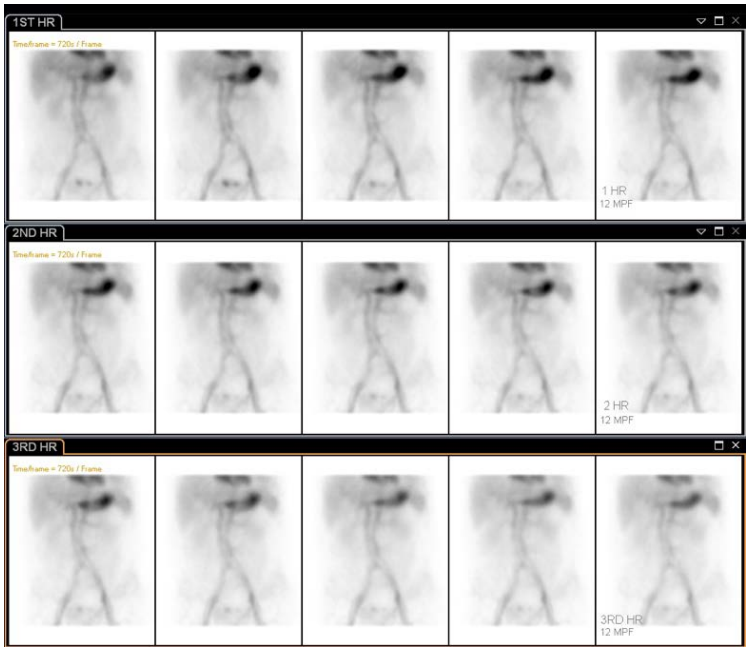

Figure 3. RBC Scintigraphy using 99mTc. No evidence of active bleeding during the 3-hour acquisition period.

Due to recurrent hematochezia, patient then underwent repeat colonoscopy under double set-up, during colonoscopy the endoscopist only reached up to the distal transverse colon due to poor visibility from massive bleed **(Figure 4)**.

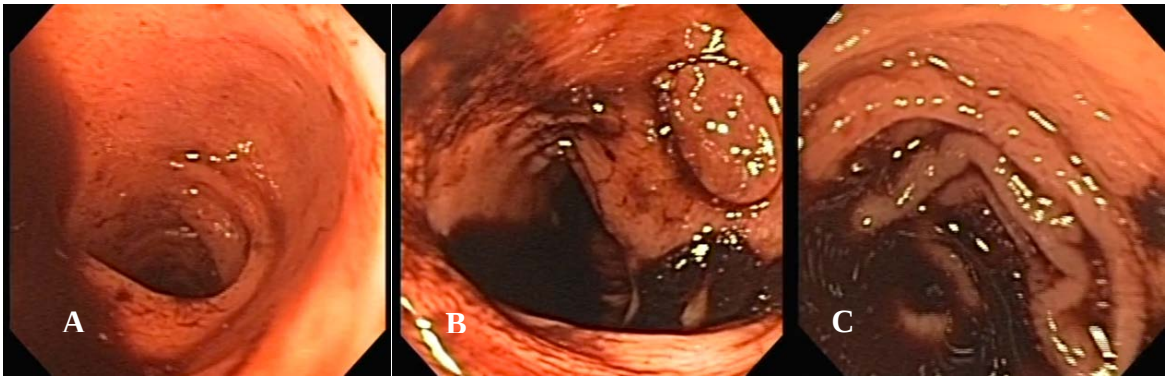

Figure 4. Repeat Colonoscopy. **A.** Sigmoid colon. **B.** Descending colon. **C.** Distal transverse colon

Patient then underwent exploratory laparotomy with intra-operative enteroscopy which showed a 0.5cm ulcer with oozing at the junction of the base of the diverticulum and true ileal lumen 60cm from the ileocecal valve **(Figure 5)**.

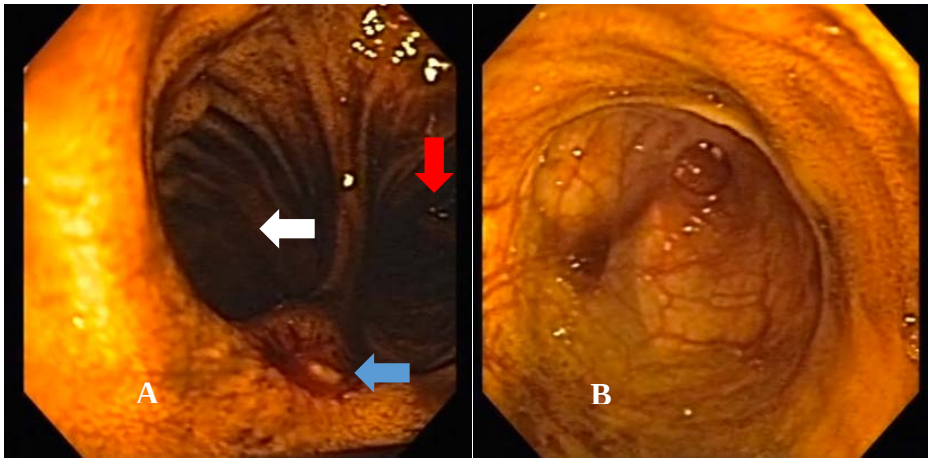

Figure 5. Intra-operative Enteroscopy.
A. 0.5cm ulcer with oozing (blue arrow) at the junction of the base of the diverticulum (white arrow) and true ileal lumen (red arrow). **B.** Roof of the diverticulum.

Assessment was Meckel's diverticulum with ileal ulcer. Wedge resection of the diverticulum with primary repair was subsequently done. Histopathology of the resected specimen showed intestinal wall with all layers intact; Small nests of pyloric glands noted underneath the crypt bases **(Figure 6)**. No malignancy was evident. Officially signed out as Meckel's diverticulum. Patient was discharged improved with a final diagnosis of Severe lower GI bleeding secondary to Meckel's diverticulum and ileal ulcer s/p Exploratory laparotomy with wedge resection and primary repair.

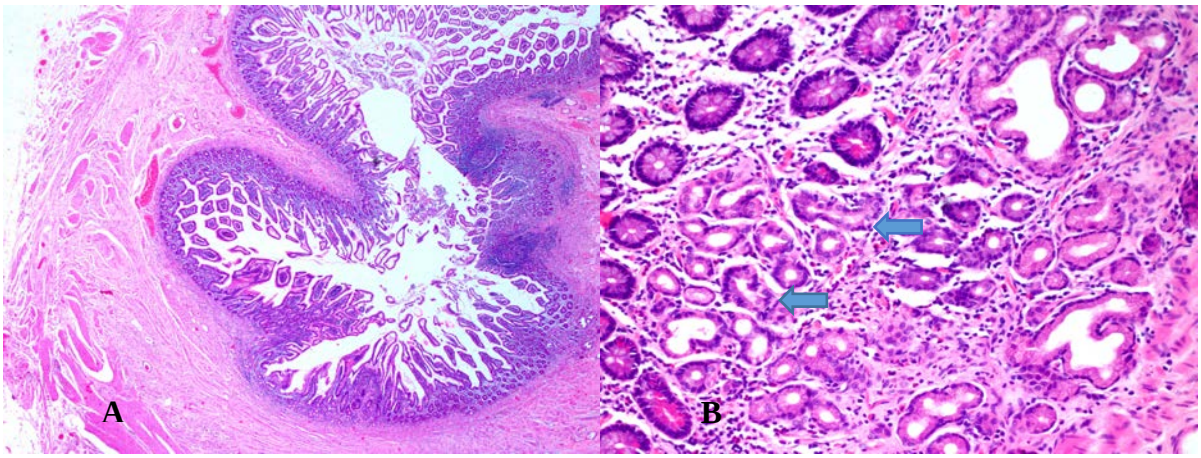

Figure 6. Histopathology of Resected Specimen. **A.** Intestinal wall with all layers of the small bowel. **B.** Small nests of pyloric glands (blue arrows).

DISCUSSION

Gastrointestinal bleeding is a major cause of emergency hospital admission in adults. Nearly 50% of this bleeding in adults are from an upper GI bleed, while 40% are from lower GI bleed.[1] The usual investigations include upper endoscopy and colonoscopy as well as the usual biochemical and hematological investigations. In our patient, upper endoscopy and colonoscopy were both non-diagnostic. With the recurrence of bleeding, we proceeded to do RBC scintigraphy. A number of lesions can cause obscure GI bleeding. In patients younger than 40, bleeding is more likely to be due to a tumor, Meckel's diverticulum, or Crohn's disease. In patients older than 40 years of age, it is more likely due to angioectasia or an NSAID-induced ulcer.[1] As per literature, the most common source of the lower GI bleeding is colon, with less

than 10% of lower GI bleeding coming from the small intestine.[1] Klinvimol et al. reviewed 1489 patients with lower intestinal hemorrhage from 1989 to 1993 and identified 10 cases of bleeding originating from the small bowel (0.7%). Only 4 of them (0.26%) were caused by Meckel's diverticulum.[2]

Meckel's diverticulum is the most common congenital malformation of the gastrointestinal tract, it is uncommon and often clinically silent.[4] But it can cause complications in the form of ulceration, hemorrhage, intussusception, intestinal obstruction, and perforation. Our patient was an elderly 60-year-old gentleman who presented with severe hematochezia, Meckel's diverticulum was not initially considered primarily due to his age. Since between 25 and 50 percent of patients with symptoms present under 10 years of age.[5] It is common to miss the diagnosis of Meckel's diverticulum in adults due to the fact that complications are more common in the pediatric age group. The rule of two's is the classic description of the essential features of Meckel's diverticulum. It states that Meckel's occurs in about 2 percent of the population with a male-to-female ratio of 2:1, is located within two feet from the ileocecal valve, and can be two inches in length, approximately 2 to 4 percent of patients develop a complication over the course of their lives, typically before the age of two, is usually lined by two different types of mucosa: the native intestinal mucosa and a heterotopic mucosa.[6] Clinical features associated with an increased risk of developing symptoms from a Meckel's diverticulum identified on logistic regression in a study of 1476 patients followed over 50 years at a single institution included Age<50years (OR 3.5) and male sex(OR 1.8).[7]

Our patient presented with severe lower GI bleeding, on enteroscopy we noted an oozing ulcer at the base of the diverticulum. Literature review showed that bleeding related to Meckel's diverticulum is caused by ulceration of the small bowel due to acid secretion by ectopic gastric mucosa within the diverticulum. The site of mucosal ulceration and bleeding is adjacent to or just downstream from the diverticulum, not from the mucosa or ectopic tissue within the diverticulum. Case series have found that 12 to 21 percent of patients with Meckel's diverticula have ectopic tissue within the diverticulum.[8] Gastric heterotopia is more common in patients with symptomatic versus asymptomatic Meckel's diverticula.[7] Although the most common ectopic tissue is gastric in origin, pancreatic and duodenal mucosa has also been identified.[9]

The diagnosis of a bleeding Meckel's diverticulum can typically be made using Meckel's scan, however this was not done in our case since Meckel's was not initially considered. Other modalities used for diagnosis includes mesenteric arteriography, double-balloon enteroscopy and capsule endoscopy.[10] If diagnostic testing is unrevealing, or the patient is hemodynamically unstable, abdominal exploration may be necessary to determine whether a Meckel's diverticulum is the source of bleeding, as was done in our case. Meckel's diverticulum can be resected by simple diverticulectomy (excision of the diverticulum at its base) or by segmental small bowel resection and primary anastomosis. In our case with GI bleeding, it is recommended to do segmental bowel resection and primary anastomosis. Segmental resection removes the gastric mucosa within the diverticulum as well as the mucosal ulceration located in the adjacent small bowel.[11] In a systematic review, the perioperative morbidity for resection of symptomatic Meckel's was 12 percent and the cumulative risk of long-term postoperative complications was 7 percent.[5] The most common complications are surgical site infection, prolonged postoperative ileus, and

anastomotic leak, which are essentially the same with any small bowel surgery. Death related specifically to the resection of Meckel's diverticulum is rare with an estimated incidence of only 0.001 percent.[12]

CONCLUSION

The preoperative diagnosis of symptomatic Meckel's diverticulum is still an outstanding diagnostic challenge due to its rarity in the elderly. Although Meckel's diverticulum is often clinically silent and complications are usually seen in the pediatric age group, we must keep in mind that this clinical condition can also be present in the elderly and must include this in our differential diagnosis. Proper use of algorithm in the approach to patients with GI bleeding will aid in the accurate diagnosis of complicated cases.

ACKNOWLEDGEMENT

We are deeply grateful for the assistance of Dr. Glomar Malana for sharing his surgical expertise, as well as the National Kidney and Transplant Institute Department of Pathology and Department of Nuclear Medicine for their assistance in the management of the case.

CONFLICTS OF INTEREST

There are no conflicts of interest.

REFERENCES

1. Feldman M, Friedman L, Brandt L. 2010. Sleisenger and Fordtran's Gastrointestinal and Liver Disease. Vol.1, 10th ed., Elsevier, Philadelphia, U.S.A. 297-334.

2. Klinvimol TI, Ho YH, Parry BR, Goh HS. Small Bowel Causes of Per Rectum Haemorrhage. Ann Acad Med Singapore 1994; 23(6):866-8.

3. Jensen DM, Machicado GA. Diagnosis and Treatment of Severe Hematochezia. The Role of Urgent Colonoscopy After Purge. Gastroenterology 1988; 95:1569-74.

4. Sagar J, Kumar V, Shah DK. Meckel's Diverticulum: A Systematic Review. J R Soc Med 2006; 99:501.

5. Cullen JJ, Kelly KA, Moir CR, et al. Surgical Management of Meckel's Diverticulum. An Epidemiologic, Population-Based Study. Ann Surg 1994; 220:564.

6. Yahchouchy EK, Marano AF, Etienne JC, Fingerhut AL. Meckel's Diverticulum. J Am Coll Surg 2001; 192:658.

7. Park JJ, Wolff BG, Tollefson MK, et al. Meckel Diverticulum: The Mayo Clinic Experience with 1476 Patients (1950- 2002). Ann Surg 2005; 241:529.

8. Stone PA, Hofeldt MJ, Campbell JE, et al. Meckel Diverticulum: Ten-Year Experience in Adults. South Med J 2004; 97:1038.

9. St-Vil D, Brandt ML, Panic S, et al. Meckel's Diverticulum in Children: A 20-year Review. J Pediatr Surg 1991; 26:1289.

10. Francis A, Kantarovich D, Khoshnam N, et al. Pediatric Meckel's Diverticulum: Report of 208 Cases and Review of the Literature. Fetal Pediatr Pathol 2016; 35:199.

11. Arnold JF, Pellicane JV. Meckel's Diverticulum: A Ten-year Experience. Am Surg 1997; 63:354.

12. Zani A, Eaton S, Rees CM, Pierro A. Incidentally Detected Meckel Diverticulum: To Resect or Not to Resect? Ann Surg 2008; 247:276.