

Kittitrakul C
Klaikaew N
Suramethakul A
Ratanachu-ek T
Nimitrvanich C
Chalermpanyakorn P
Rerknimitr R

CASE 1

A 37-year-old male patient, presented with chronic diarrhea for 1 month. He also had a 5 kgs weight loss. A colonoscopy was done as figures.

Endoscopic findings:

- Terminal ileum: patchy subepithelial hemorrhage with multiple small nodules distribute diffusely in the terminal ileum (Figure 1-2).

Diagnosis:

Ileitis with lymphoid hyperplasia (reactive Payer's patch).

Pathology report:

- Terminal ileum biopsy: non-specific ileitis with lymphoid hyperplasia. No organism was detected.

Discussion:

Chronic diarrhea is a frequently problem that all gastroenterologists have to encounter. Many investigations can be performed to identify the cause of chronic diarrhea and colonoscopy is often used to evaluate colonic lesion. Retrograde ileoscopy is a useful procedure in chronic nonbloody diarrhea because of its ability to detect alterations in the terminal ileum. In a prospective, case-control study, alterations of the terminal ileum were detected more frequently in patients than in controls (47/138 vs 15/138; $p < 0.0001$)⁽¹⁾. In addition, Crohn's disease (9/138 vs 0/138; $p = 0.007$) and nonpeptic ileitis (18/138 vs 2/138; $p = 0.0009$) were significantly more frequent in patients than in

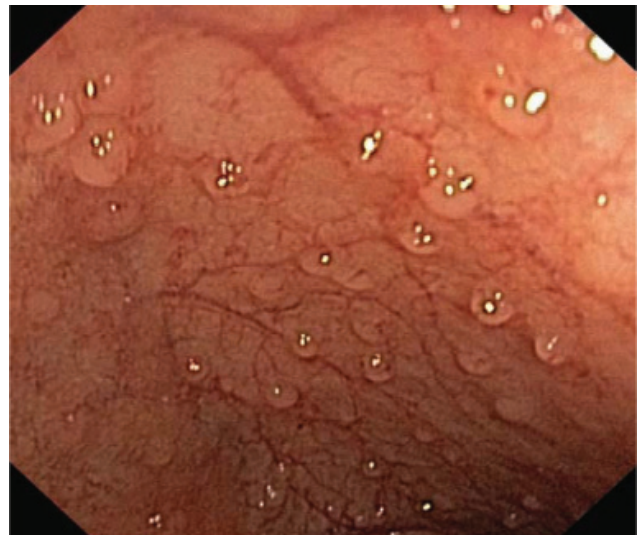


Figure 1

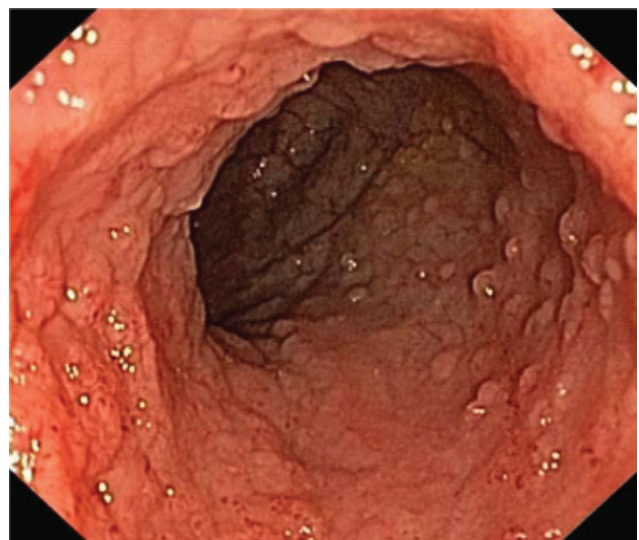


Figure 2

Kittitrakul C, *et al.*

controls. Likewise, nodular lymphoid hyperplasia was more common in patients than controls (33/138 vs 16/138; $p = 0.008$).

In this case, nonspecific ileitis was reported along with lymphoid hyperplasia. Benign lymphoid hyperplasia is best described in children and is often associated with viral infections⁽²⁾. When present in adults, it has been linked to a variety of conditions such as giardiasis, familial adenomatous polyposis, Gardner's syndrome, food allergens and diseases of immunodeficiency such as immunoglobulin A deficiency⁽³⁾. The other malignant cause as a differential diagnosis of lymphoid hyperplasia is primary lymphoma of small intestine.

REFERENCES

1. Morini S, Lorenzetti R, Stella F, *et al.* Retrograde ileoscopy in chronic nonbloody diarrhea: a prospective, case-control study. *Am J Gastroenrol* 2003; 98:1512-5.
2. Mukhopadhyay S, Harbol T, Floyd FD, *et al.* Polypoid nodular lymphoid hyperplasia of the terminal ileum. *Arch Pathol Lab Med* 2004;128:1186-7.
3. Turunen S, Karttunen TJ, Kokkonen J. Lymphoid nodular hyperplasia and cow's milk hypersensitivity in children with chronic constipation. *J Pediatr* 2004;145:606-11.

CASE 2

A 55-year-old male, with no history of bowel habit change or lower GI bleeding, came to the hospital for a further evaluation after abnormal barium enema result. The barium test was done as a routine screening for colon cancer from an outside hospital. The colonoscopic pictures are shown as below (Figure 3-6).

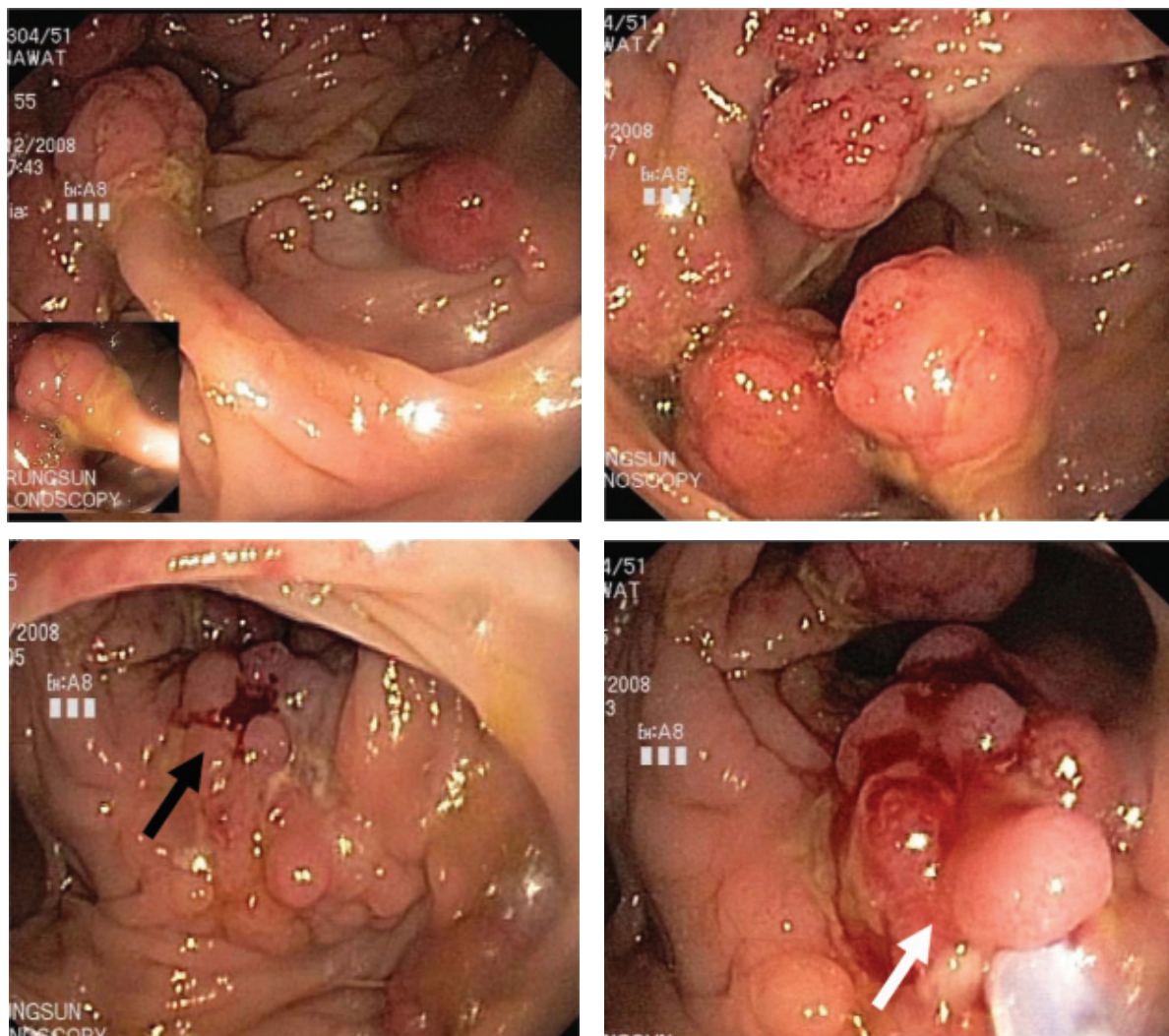


Figure 3-6

Colonoscopy findings:

Ascending colon: Multiple sessile and pedunculated polyp (size 1-3 cm.). One depressed lesion with contact bleeding and ulcer (black arrow) was detected. Rectum, sigmoid, descending, transverse colons and cecum were normal. A chunk biopsy using a snare loop (white arrow) was done.

Figure A: Section showing polypoid lesion with focal high grade dysplastic change.

Figure B: Similar lesion of a polyp comprising groups of glands lining with low grade dysplastic epi-

thelium.

Figure C, D: There is a focal area of malignant transformation with minimally invasion to the adjacent lamina propria.

Diagnosis:

Multiple pedunculated and sessile polyp at right side of colon with focal area of malignant transformation. The possibility of sporadic carrier of hereditary non-polyposis colon cancer syndrome (HNPCC) related gene is high.

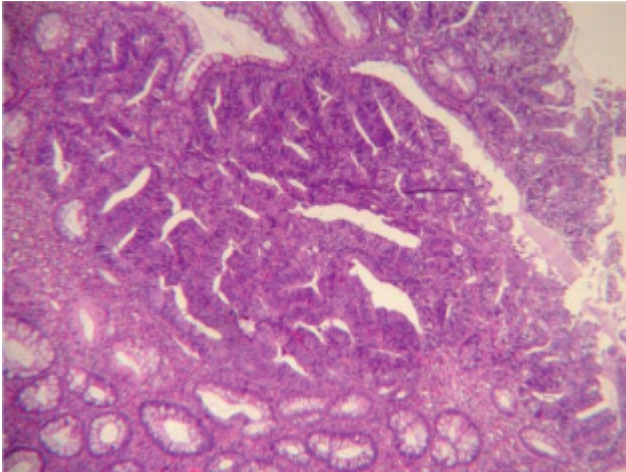


Figure A:

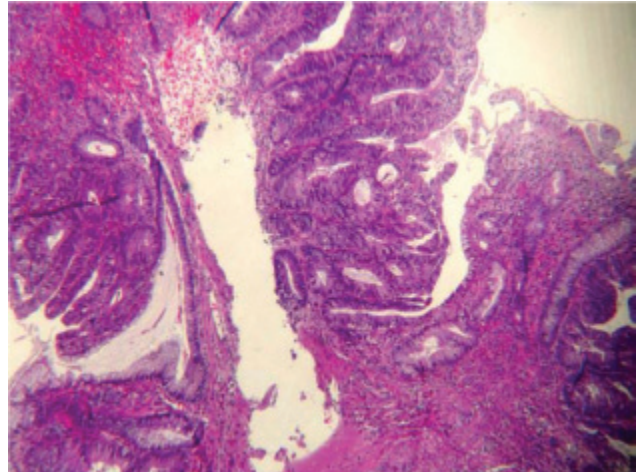


Figure D:

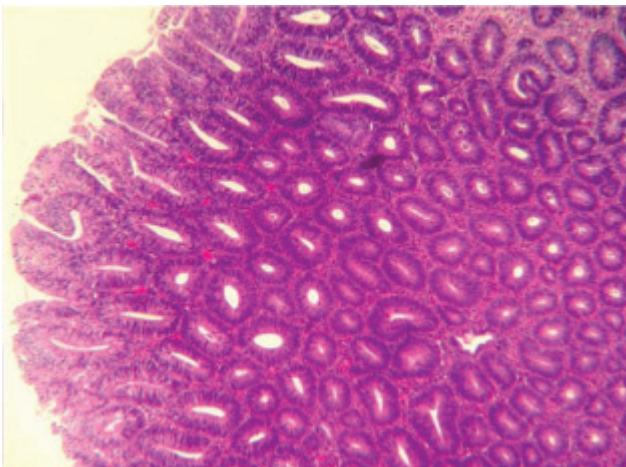


Figure B:

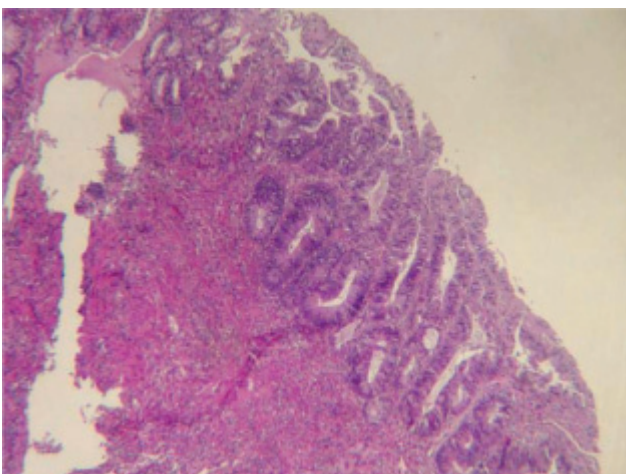


Figure C:

Discussion:

Most colorectal carcinomas are believed to originate in an preexisting adenoma. This reflects adenoma-

carcinoma sequence. There are evidence supports that the prevalence of colorectal neoplasm increases with age and varies with countries and lifestyle⁽¹⁾. If this is the case, the right-side shift with aging can be expected, not only in colorectal cancers but also in benign adenomas. The mechanism of the right-side shift is uncertain. Changes in diet, fecal bulk, colonic motility, are suspected as shown from prior studies⁽²⁾. As for cancers, a different mechanism of carcinogenesis in the right-side colon from rectosigmoid cancer has been suggested. Recent studies have shown that there is a specific occurrence of microsatellite instability (MSI) and the presence of abnormal transforming growth factor beta type II receptor or other suppressor genes in the proximal type colon cancer, especially in older patients.

MSI is a characteristic phenotype of cancers in patients with hereditary nonpolyposis colorectal cancer who has congenital mutation of DNA mismatch repair genes, such as hMLH1 or hMSH2. Patients who carry these genes are susceptible to proximal colon cancers⁽³⁾. Sporadic colon cancers with MSI have frequently shown hypermethylation in the promoter region of hMLH1 gene instead of mutation of the gene itself⁽⁴⁾. It can be supposed that a considerable percentage of right-side cancers in older subjects originates through the accumulation of genetic mutations because of these mechanisms.

Patients who should be considered for genetic evaluation of HNPCC include those who meet the Amsterdam I criteria or the revised Bethesda criteria⁽⁵⁾. If the gene is positive, counseling should include screening for colorectal, endometrial, and ovarian cancer⁽⁶⁾. The evidence to support screening for cancer in

other organs is insufficient but should be considered based upon types of presented malignancies within the family.

In HNPCC case, when colon cancer or numerous advanced adenomas are detected on colonoscopy, consideration should be given to total colectomy with ileorectal anastomosis instead of segmental colectomy because metachronous colorectal cancer is reported up to 50% and the risk of cancer in the remaining rectum warrants lifelong, annual surveillance⁽⁷⁾.

REFERENCES

1. Kim EC, Lance P. Colorectal polyps and their relationship to cancer. *Gastroenterol Clin North Am* 1997;26:1-17.
2. Wynder EL, Kajitani T, Ishikawa S, *et al*. Environmental factors of cancer of the colon and rectum. II. Japanese epidemiological data. *Cancer* 1969;23:1210-20.
3. Thibodeau SN, Bren G, Schaid D. Microsatellite instability in cancer of the proximal colon. *Science* 1993;260:816-9.
4. Cunningham JM, Christensen ER, Tester DJ, *et al*. Hypermethylation of the hMLH1 promoter in colon cancer with microsatellite instability. *Cancer Res* 1998;58:3455-60.
5. Umar A, Boland CR, Terdiman JP, *et al*. Revised Bethesda guidelines for hereditary nonpolyposis colorectal cancer (Lynch syndrome) and microsatellite instability. *J Natl Cancer Inst* 2004;96:261-8.
6. Lindor N, Peterson G, Hadley D, *et al*. Recommendations for the care of individuals with an inherited predisposition to Lynch syndrome. *JAMA* 2006;296:1507-17.
7. Lee JS, Petrelli NJ, Rodrigues-Bigas MA. Rectal cancer in hereditary nonpolyposis colorectal cancer. *Am J Surg* 2001; 181:207-10.

CASE 3

A 57-year-old male patient, presented with anemia. His stool exam, gastroscopy and colonoscopy results were unremarkable. Subsequently, he underwent a capsule endoscopy.

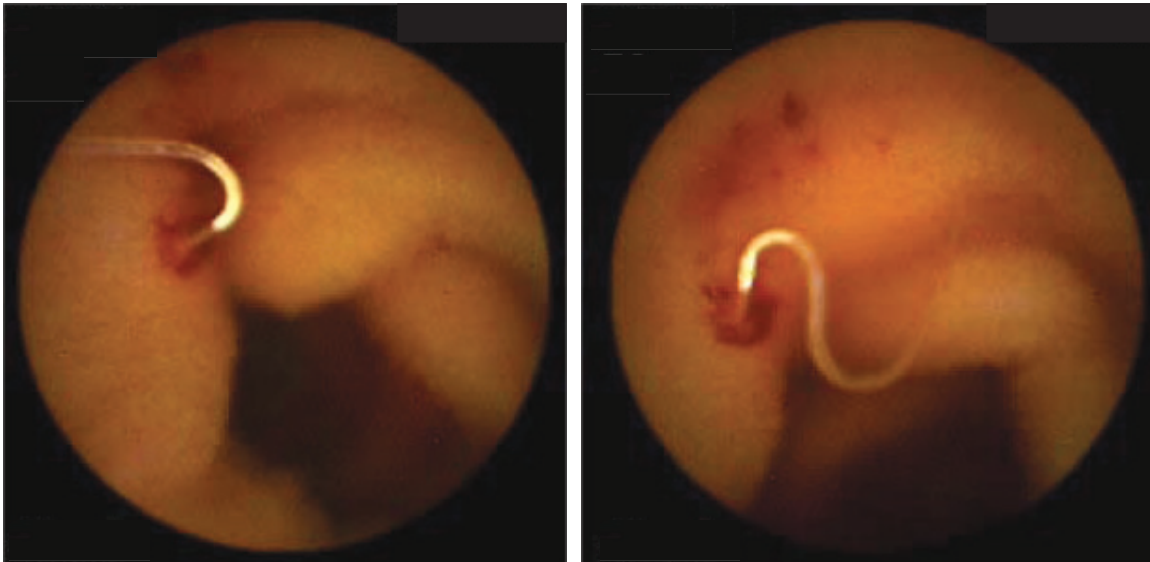


Figure 7,8

Pictures revealed movable, round parasite in the jejunum. There was an active blood oozing from the mucosa that attached by the parasite. The most likely organism is “hook worm on duty” (Figure 7,8).

Discussion:

Hook worm; *Ancylostoma intestinalis* and *Americana duodenale* are two species that infested in human. Majority of patient presented with anemic symptoms. The standard test is stool exam for parasite and ova. For unknown reason, this patient had a negative study from this stool test. Recently, the role of capsule

endoscopy to investigate small bowel diseases and the etiology caused by hook worm infestation has emerged^(1,2).

REFERENCES

1. Li ZS, Liao Z, Ye P, *et al.* Dancing hookworm in the small bowel detected by capsule endoscopy: a synthesized video. *Endoscopy.* 2007;39 Suppl 1:E97.
2. Sandrasegaran K, Maglinte DD, Jennings SG, *et al.* Capsule endoscopy and imaging tests in the elective investigation of small bowel disease. *Clin Radiol* 2008;63:712-23.

CASE 4

A 31-year-old female presented with obscure GI bleeding over a few month, She had negative bidirectional endoscopy. A capsule endoscopy was performed as shown in Figure 9-12. An intraluminal mass with some erosion was detected.

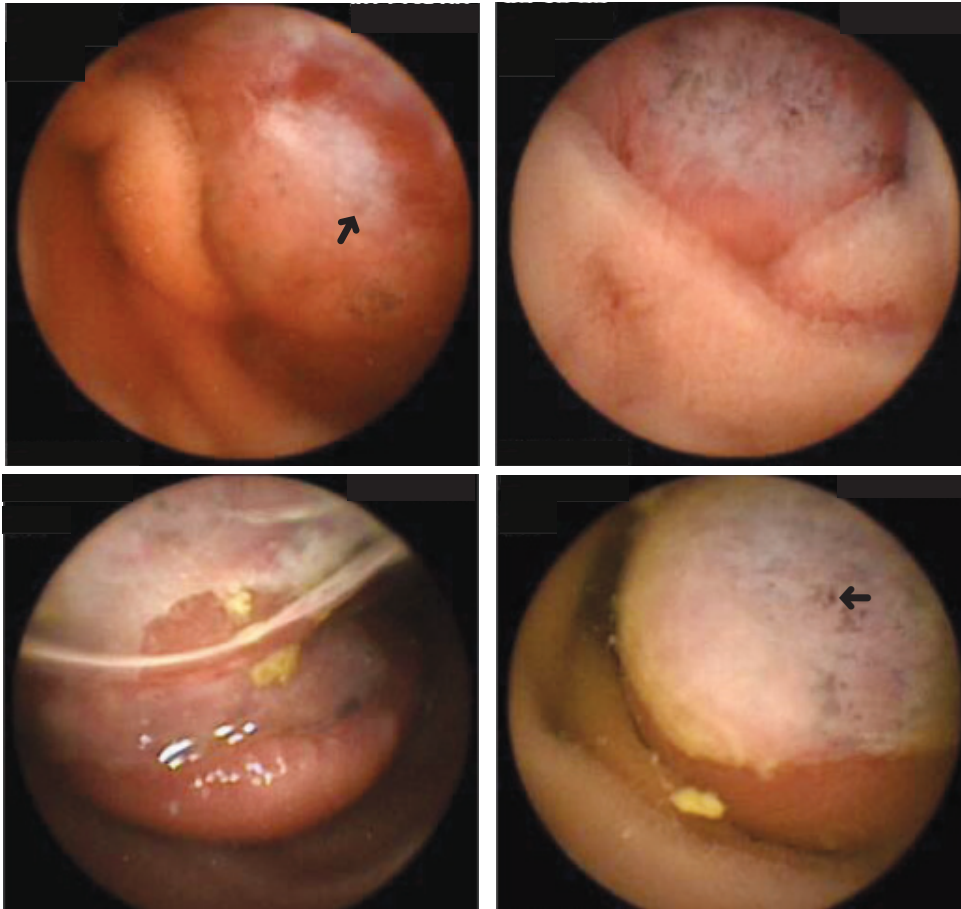


Figure 9-12

Subsequently patient underwent a small bowel enteroscopy by using a single balloon endoscope (Olympus, Tokyo, Japan)

The endoscopic images from enteroscopy showed more prominent of the same submucosal mass with ulceration in the jejunum (Figure 13,14).

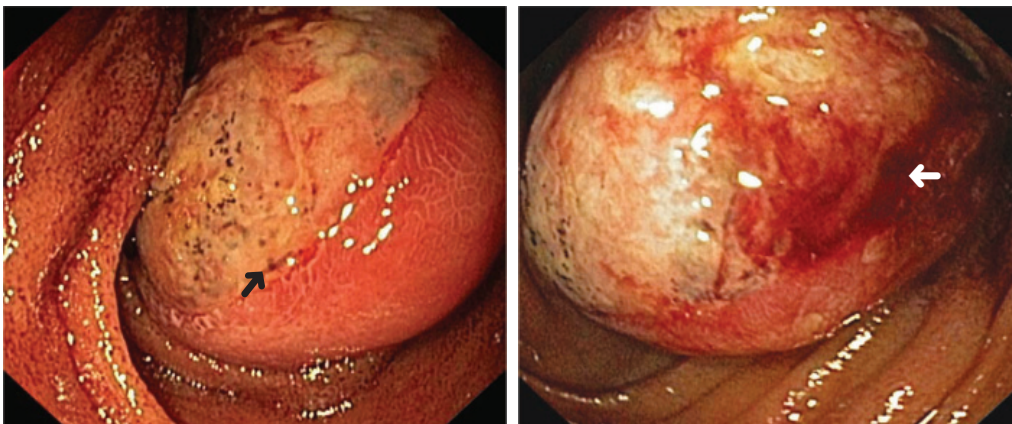


Figure 13-14

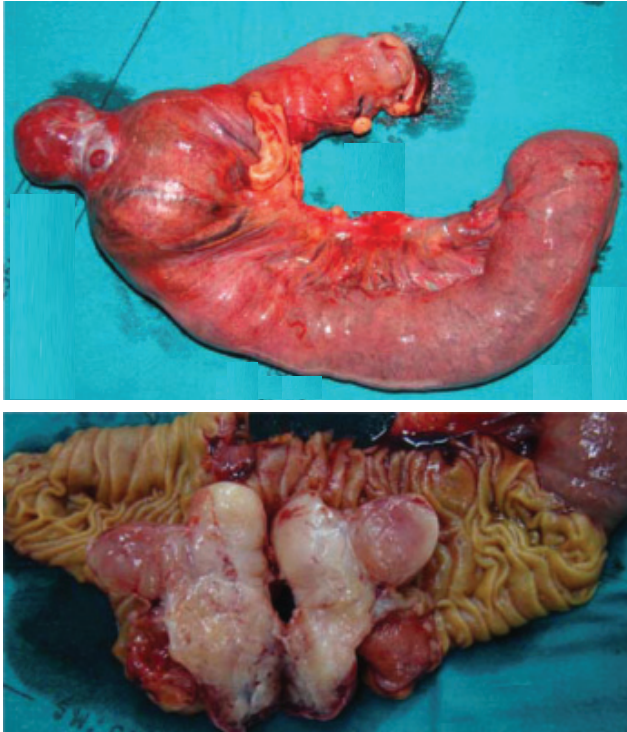


Figure 15-16. Resected specimen.

Patient underwent surgical resection. The tumor was removed along with a short segment of jejunum (Figure 15-16). Pathology showed spindle cell tumor (4 × 4 × 3 cm.) of the intestinal wall. An immunohistochemistry stain for CD117 was positive (Figure 17,18).

Diagnosis:

Gastrointestinal stromal tumor (GIST) of the small bowel.

Discussion:

Majority of small bowel tumor detected by capsule endoscope was gastrointestinal stromal tumor (GIST) (32%) followed by adenocarcinoma (20%) and carcinoid (15%)¹ and obscure GI bleeding was the main indication for this capsule study^(1,2). Over a few years, balloon assisted enteroscopy has been applied for detecting and targeting biopsy of this tumor. Majority of reports used a double balloon system since a single balloon system has just been introduced less than 2 years⁽³⁻⁵⁾.

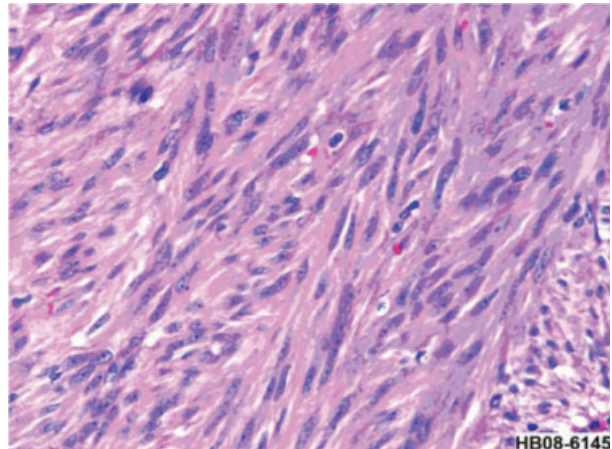


Figure 17. Tumor cells showing spindle shape cells in fascicle × 400.

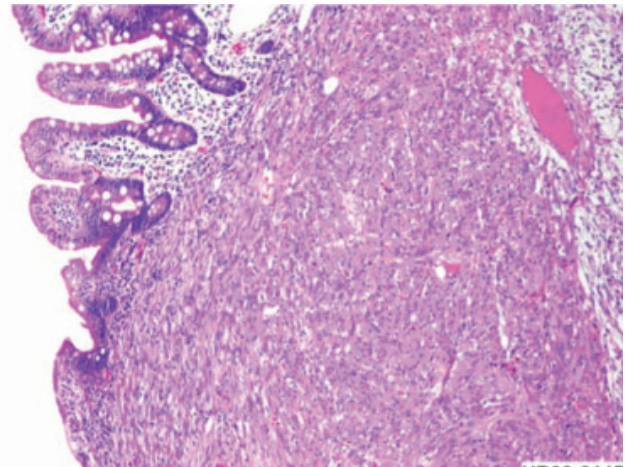


Figure 18. Tumor beneath the small intestinal mucosa × 100.

REFERENCES

1. Rondonotti E, Pennazio M, Toth E, *et al.* Small-bowel neoplasms in patients undergoing video capsule endoscopy: a multicenter European study. *Endoscopy* 2008;40:488-95.
2. Spada C, Riccioni ME, Familiari P, *et al.* Video capsule endoscopy in small-bowel tumours: a single centre experience. *Scand J Gastroenterol* 2008;43:497-505.
3. Su MY, Liu NJ, Hsu CM, *et al.* Double balloon enteroscopy-the last blind-point of the gastrointestinal tract. *Dig Dis Sci* 2005;50:1041-5.
4. Ohmiya N, Yano T, Yamamoto H, *et al.* Diagnosis and treatment of obscure GI bleeding at double balloon endoscopy. *Gastrointest Endosc* 2007;66(3 Suppl):S72-7.
5. Choi H, Choi KY, Eun CS, *et al.* Korean experience with double balloon endoscopy: Korean Association for the Study of Intestinal Diseases multi-center study. *Gastrointest Endosc* 2007;66(3 Suppl):S22-5.