CASE REPORT

Splenic injury after colonoscopy requiring splenectomy

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SUMMARY

We present a case of a middle-aged woman, who presented with abdominal pain less than 24 h following an uneventful colonoscopy for rectal bleeding. Initial diagnosis was thought to be colonic perforation. An urgent CT scan performed owing to dropping haemoglobin and blood pressure revealed a large perisplenic haematoma. An urgent laparotomy was performed in which the patient had a total blood loss of 2500 ml and required splenectomy. The patient recovered well postoperatively. Colonoscopy is a commonly performed procedure in which complications of perforation and bleeding are well recognised. This case represents one of the rare but serious complications that endoscopists and patients should be aware of to aid prevention and early diagnosis.

BACKGROUND

Splenic injury is a rare complication of colonoscopy. Colonoscopy is a relatively safe and routinely performed investigation of choice for the diagnosis of colonic pathology and treatment, screening and surveillance of certain conditions. However, it is important that the patient and the endoscopist are aware of the commonly encountered as well as the unusual complications of the procedure. Increased awareness among endoscopists might help prevent the complications where possible and in early identification of the complications. We report a case of a lady who required splenectomy 24 h following a diagnostic colonoscopy performed to investigate rectal bleeding.

CASE PRESENTATION

A 64-year-old woman underwent routine colonoscopy at the day procedure unit for investigation of new onset bright red rectal bleeding with history of colonic metaplastic polyps. Colonoscopy showed mild sigmoid diverticulosis. There was no difficulty encountered during or complications after the procedure and she was discharged home.

Within 24 h, she presented to emergency department with crampy pain in the left side of her abdomen and left shoulder tip pain. On examination, she had signs of localised peritonism with guarding in the left upper quadrant. Her pulse rate was 105/min and blood pressure was 78/53 mm of Hg. Blood investigations showed: Hb 9.7 g/dl, white cell count $13.9 \times 10^9/l$ and C reactive protein 82.6 mg/l. Abdominal x-ray showed mild gaseous distension of the large bowel. Chest x-ray showed no free gas. Her medical history included total abdominal hysterectomy, clipping of middle cerebral artery aneurysm and hypertension.

Figure 1 CT scan of the abdomen demonstrating a large perisplenic haematoma and blood around the liver (S, spleen; PSH, peri-splenic haematoma; L, liver; B, free blood around the liver).

INVESTIGATIONS

An urgent CT scan of the abdomen and pelvis was performed. CT scan revealed a large perisplenic haematoma with free fluid in abdomen and pelvis that represented blood. There was no free air within the peritoneal cavity (figure 1).

DIFFERENTIAL DIAGNOSIS

Prior to CT scan clinical diagnosis of a possible colonic perforation was made (figure 2).

TREATMENT

The patient was taken for an urgent laparotomy which revealed a complete avulsion of the capsule

Figure 2 CT scan of the pelvis demonstrating blood (B) in the pelvis.

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of the spleen with a large perisplenic haematoma. There was blood in all four quadrants of the abdomen, with a total blood loss of 2500 ml. Splenectomy was performed and on careful examination of colon, no colonic perforation/serosal tear was found. There were no excessive adhesions noted between the spleen and the colon. She was transfused two units of packed red cells in theatre and a further two units postoperatively.

OUTCOME AND FOLLOW-UP

She was discharged home on day 6 on long-term prophylactic antibiotics. Postsplenectomy vaccinations were given.

DISCUSSION

Colonoscopy remains the most commonly performed procedure for the diagnosis and/or therapeutic management of lower gastrointestinal diseases. An average district general hospital in UK is expected to have an annual workload of 800–1000 lower gastrointestinal procedures per 100 000 population.¹ There is a further increase in the usage of colonoscopy with the introduction of UK National Health Service Bowel Cancer Screening Programme.²

With the increasing number of colonoscopies performed each year, the associated complication incidence is bound to increase. Colonic perforation (<1:1000 diagnostic colonoscopies, <1:500 polypectomy colonoscopies) and gastrointestinal bleeding (bleeding rates of 0.3–6.1% for polypectomies) are the commonly encountered complications of colonoscopy.³ Other rare complications documented in literature include mesenteric tear, pneumomediastinum, retroperitoneal abscess, portal vein gas, retroperitoneal emphysema, diverticulitis, incarceration of hernia, septicaemia, appendicitis and colonic volvulus.⁴ Splenic injury following colonoscopy is very rare.

The first documented splenic injury as a result of colonoscopy was described in 1974 by Wherry and Zehner.⁵ Ko *et al*³ in their prospective study to evaluate the complications of screening colonoscopy in 21 375 patients reported only one case of splenic injury. Overall, there are only 93 cases of splenic injury reported in the literature following colonoscopy. It is likely that splenic injury may be under-reported, as there is reluctance to publish morbidity information and there is also an absence of complication codes for splenic injury following colonoscopy.⁶ It is also possible that there are a higher number of undiagnosed subclinical splenic injuries occurring after colonoscopy.

The reported patient presented within 24 h of the procedure with left-sided abdominal pain, left shoulder tip pain (Kehr's sign) and hypotension. In a recent review, the majority of patients with postcolonoscopy splenic haematoma presented with abdominal pain in less than 24 h after the procedure and only 34% of patients had a positive Kehr's sign.⁴ Differential diagnosis for these symptoms include colonic perforation and retained colonic gas. Based on this, we propose that for postcolonoscopy patients presenting with significant abdominal pain and pain radiating to shoulder tip just after procedure, there should be a low threshold for CT scan.⁷

In general, about three-quarters of individuals with traumatic splenic injury whose vital signs are stable are treated non-operatively. Non-operative management includes close observation in high dependency unit for 24–48 h with continued observation for up to 2 weeks. Repeat CT scans and haematocrit monitoring are required and blood transfusions where necessary. However, two recently published reviews suggested that 60–70% of the patients with postcolonoscopy splenic injury underwent splenectomy.^{4 8} This may be because patients with postcolonoscopy splenic haematoma are more likely to be

associated with larger haematoma/haemoperitoneum and/or haemodynamically unstable. Where possible, non-operative management options of splenic injury include angiographic embolisation and wrapping the spleen in a Vicryl net.⁸ Death rates of up to 5.4% have been reported in patients with postcolonoscopy splenic trauma.⁴

Different theories have been proposed to explain the mechanism of splenic injury following colonoscopy. Injury may occur owing to excessive traction on the splenicocolic ligament therefore leading to partial capsular avulsion or tears.^{4 7 8} This could be further complicated by adhesions between the spleen and colon from previous abdominal surgery, inflammation or intra-abdominal infection.⁶ Technical manoeuvres that increase the risk of splenic injury include the α -manoeuvre, straightening of the sigmoid loop and external pressure on the left hypochondrium.⁷

Prevention of such a complication can be aided by careful positioning and minimising external pressure. The left lateral position allows the spleen and splenic flexure to descend to the left, therefore reducing the tension on any adhesions.^{6 8} If placed in the supine position the spleen falls away from the splenic flexure and tightens splenicocolic adhesive bands when attempting to straighten the colonoscope leading to capsular tears.⁸ The supine position should therefore be avoided especially in patients who have undergone previous abdominal surgery. External pressure to aid navigation should also be avoided.⁸

Learning points

- ▶ Splenic injury following colonoscopy is a rare complication; however, as increasing numbers of colonoscopies are being performed each year, these rarer complications are likely to increase.
- ▶ A high index of suspicion is needed to ensure this complication is not missed. A CT scan should be performed on any patient presenting with significant abdominal pain radiating to shoulder tip within 24 h of colonoscopy.
- ▶ In a haemodynamically stable patient, non-operative options including high dependency unit stay, repeated CT scans, blood transfusions and angiographic embolisation may be considered. Splenectomy is required in all patients who are unstable.
- ▶ This complication may be avoided by careful left lateral positioning of the patient and minimising external pressure.

Contributors RMB, HM, BD and MM were all involved in literature research and writing of case report. EM and MY added in expert input.

Competing interests None.

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