CASE REPORT

Splenic injury as a complication of colonoscopy: more common than we think?

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SUMMARY

Splenic injury during colonoscopy is thought to be rare. The case reported here would not have been diagnosed if the patient had not presented with a pleural effusion. It is likely that this complication may present with differing severities of clinical features with a significant proportion being thought to be due to expected postcolonoscopy insufflation discomfort. This complication is under-recognised and under-reported and therefore is unlikely to be thought of as a diagnosis. A 63-year-old woman had an elective day case colonoscopy but did not seek medical attention for the abdominal pain following the procedure. She presented to hospital 6 weeks after the procedure with dyspnoea and hypoxia. She was diagnosed with a parapneumonic pleural effusion but the CT scan also discovered a splenic haematoma for which there was no other cause in her history other than the colonoscopy 6 weeks prior.

BACKGROUND

Colonoscopy is considered a safe, routine procedure with a low risk of complications, the most common being haemorrhage (1%) and perforation (0.1%). Splenic injury after colonoscopy was first described over 40 years ago by Wherry and Zehner¹ in 1974. It is thought to be due to excessive traction on the splenicocolic ligament, although it is largely unknown if other factors such as direct trauma to the spleen or specific manoeuvres are involved. Unfortunately most of the literature regarding this complication is taken from case reports or case series. To date, there are little over 100 cases reported. This is likely to be the tip of the iceberg as many will go unreported, unrecognised or attributed to another cause. In addition, with the increase in number of colonoscopies performed due to national screening of colorectal cancer, for example, the prevalence of postcolonoscopy splenic injury will almost certainly increase.

CASE PRESENTATION

A 63-year-old woman with a medical history of hypertension, hypothyroidism, mild asthma and a surgical history of appendicectomy and several laparoscopies before a hysterectomy, went for an elective colonoscopy under propofol sedation and went home the same day. She developed severe left-sided abdominal pain, which radiated to her left shoulder but she attributed this to postcolonoscopy insufflation discomfort. This pain eased over the following weeks, but she became short of breath and saw her general practitioner (GP) 4 weeks following her procedure. A chest X-ray reported

consolidation, but she failed to improve with antibiotics and steroids. The GP therefore organised a CT pulmonary angiogram (CTPA) to exclude a pulmonary embolus. This was negative for a pulmonary embolus (PE) but showed a large left-sided pleural effusion and she was referred to hospital. She was admitted to the intensive care unit (ICU) due to her hypoxia, 6 weeks after her colonoscopy.

On review of her CTPA, it was reported that she had a grade 2 splenic haematoma (figure 1). A dedicated abdominal CT scan was obtained which excluded any other intra-abdominal pathology. Revisiting her history did not reveal any other reason for her splenic haematoma and her symptoms after the colonoscopy make this the likely cause. She was reviewed by the surgical team and given her haemodynamic stability, it was felt she did not require any surgical intervention and was treated conservatively with antibiotics for pneumonia and an intercostal drain for the associated parapneumonic effusion.

INVESTIGATIONS

Inflammatory markers were elevated with a white cell count of $11.5 \times 10^9/L$ and a C reactive protein of 121 mg/L. Her haemoglobin remained stable at 10.3 g/dL with a normal clotting profile during her stay. Her pleural fluid was exudative by Light's criteria with a normal pH and amylase.

OUTCOME AND FOLLOW-UP

The patient was discharged from ICU but was unfortunately readmitted a week later with bilateral pulmonary emboli. She had not received prophylactic anticoagulation during her initial stay due to the risk of bleeding and, despite being informed of the

Figure 1 A coronal CT scan showing a large left pleural effusion and a grade 2 splenic haematoma.

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risks, she was non-compliant with thromboembolic stockings due to local discomfort. After appropriate counselling, it was decided to start therapeutic anticoagulation with low molecular weight heparin.

DISCUSSION

The true incidence of postcolonoscopy splenic injury is unknown, but it is generally accepted to be rare. However, with the increasing number of colonoscopies performed, it is reasonable to assume that this complication may present more frequently. It is also likely that the number of subclinical splenic injuries after colonoscopy shall increase. Indeed, this case was an incidental retrospective diagnosis. Interestingly, on a related note, of those who fail a colonoscopy and proceed to have CT colonography, a subclinical perforation can be seen in about 1% of patients (10-fold that of a symptomatic perforation).²

The hypothesised mechanism behind this injury is excessive traction on the splenocolic ligament or on splenocolic adhesions (secondary to previous abdominal surgery or intra-abdominal inflammatory processes). Direct blunt trauma when navigating the colonoscope through the splenic flexure is also possible.^{3,4} There have been several proposed risk factors for developing a postcolonoscopy splenic injury. This includes a history of abdominal surgery and being female (both present in this case). Other risk factors include underlying splenic disease, use of anticoagulants or antiplatelet agents, history of smoking and a rapid colonoscopy completion time.^{5,6} Propofol is becoming more commonly used as sedation for colonoscopy (as in this case) for its rapid onset and quicker recovery time. It allows a deeper level of sedation and this has been proposed as an additional risk factor.⁷

Typical clinical features mimic that of any cause of splenic injury. Abdominal pain is the most common symptom, often in the left upper quadrant. Referred left shoulder tip pain (Kehr's sign) is present in 56–88% of cases but is not very specific as it may manifest in up to half of patients after an uncomplicated colonoscopy.^{5,8} There may also be signs and symptoms of haemodynamic compromise, anaemia and leucocytosis, which would warrant further investigation. Additionally, any pain reported that is out of proportion to that expected should also warrant further imaging.

Management depends on the patient's haemodynamic status. If stable, then splenic embolisation or a conservative approach is possible. However, if the patient has a high grade of injury (ie, $\geq$ grade 3) according to the American Association for the Surgery of Trauma (AAST; table 1), requires transfusion of more than 1 unit of blood, has a large haemoperitoneum, evidence of active bleeding or has a contained intrasplenic vascular injury, then there is a high risk of failing non-operative management. Indeed, the incidence of delayed rupture with higher grades of injury is considerable in the first 10 days after the insult. In these situations, emergency splenectomy is the most suitable management option.⁹

Anticoagulation in this setting is difficult, controversial and based on clinical judgement. Discussion is needed between the relevant parties including the surgical team and the patient to weigh up the risks and benefits. In the case presented, with the initial uncertainty of the nature of her splenic haematoma, there was an informed decision to not give prophylactic anticoagulation. Unfortunately, with the development of new acute bilateral pulmonary emboli, the issue of anticoagulation had to be readdressed as the risk-benefit ratio had shifted. One option would have been to insert an inferior vena cava filter, but it was now thought that the risk of delayed rupture of the spleen, at this

Table 1 The American Association for the Surgery of Trauma (AAST) splenic injury grading scale

Grade	Injury description
I	Haematoma Subcapsular, <10% surface area
	Laceration Capsular tear, <1 cm parenchymal depth
II	Haematoma Subcapsular, 10–50% surface area; intraparenchymal <5 cm in diameter
	Laceration 1–3 cm parenchymal depth; does not involve a trabecular vessel
III	Haematoma Subcapsular, >50% surface area or expanding; ruptured subcapsular or parenchymal haematoma
	Laceration >3 cm parenchymal depth or involving trabecular vessels
IV	Laceration Laceration involving segmental or hilar vessels and producing major devascularisation (>25% of spleen)
V	Laceration Completely shattered spleen

point, was minimal. Obviously, with hindsight, if a different approach had been made on her initial presentation, then a PE may have been avoided but at the risk of either giving anticoagulation earlier (albeit prophylactic doses) or having a splenectomy.

Learning points

- The true incidence of postcolonoscopy splenic injury is unknown due to its rarity, underdiagnosis and under-reporting.
- The increasing use of colonoscopies will result in the increasing presentations of its complications, including splenic injury.
- Be aware of splenic injury as a possible diagnosis in the patient with abdominal pain after a colonoscopy.
- Consider discussing the risk of splenic injury when obtaining consent for colonoscopy.

Competing interests None declared.

Patient consent Obtained.

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