Liver abscess secondary to an endoscopic tattoo in the colon

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ABSTRACT

INTRODUCTION Endoscopic tattooing of colonic lesions has been used safely for their localization.

CASE HISTORY We report a 61-year-old female who had left hemicolectomy in 2006 for adenocarcinoma of the left colon (pT3, pNO, MO). Cancer in the transverse colon was discovered during annual colonoscopy surveillance. The lesion was tattooed 5cm proximal to the lesion. Twenty-four days after tattooing, she was admitted to the emergency department with increased levels of inflammatory markers. CT showed an abscess in the left lobe of the liver adjacent to the tattoo site. The abscess was drained under ultrasound guidance. She had antibiotic treatment for 3 weeks and made a full recovery.

CONCLUSION Endoscopic tattooing of colonic lesions is safe but this case report highlights the possibility of a rare (but serious) complication that must be taken into consideration.

KEYWORDS

Endoscopic tattoo – Complication – Abscess

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Colonic polyps can be removed safely by endoscopic submucosal resection. Lesions that are unsuitable for endoscopic resection must be marked for future identification at resection.

Several methods have been used to determine the site of impalpable lesions intraoperatively. Indian ink has been used safely as a localisation agent during colonoscopy.¹ Tattooing a lesion with Indian ink can identify polyps or polypectomy sites for subsequent colonoscopy or resection.^{1, 2} Tattooing of lesions with Indian ink has been used widely by endoscopists as a safe approach for lesion localisation, but tattoo-related complications have been reported. A rare complication is reported here.

Case history

A 61-year-old female underwent a left hemicolectomy in 2006 for a moderately differentiated adenocarcinoma of the sigmoid colon of Dukes' stage B (pT3 pNo MO). At annual colonoscopy surveillance, a suspicious lesion in the proximal transverse colon was noted. The lesion was biopsied and tattooed ≈5cm distal to the lesion. Biopsy showed a moderately differentiated adenocarcinoma. She also had a few benign polyps in the ascending colon that were removed by endoscopic means.

Tattooing was undertaken according to the protocol used at our hospital. A sterile, plastic tube prefilled with physiological (0.9%) saline was connected to a syringe prefilled with sterile Spot™ (GI Supply, Camp Hill, PA, USA). Saline

was injected first into one site to create submucosal 'bleb'. Then, ink was injected into the submucosal bleb. Staging CT of the chest, abdomen and pelvis confirmed no evidence of metastasis.

The decision of the multidisciplinary team was to undertake total colectomy and an ileorectal anastomosis. Staging CT also showed an extramural reaction to the tattoo as manifested by stranding of the pericolic fat of the transverse colon that extended to the left lobe of the liver at the same site as the tattoo.

She was admitted 24 days after colonoscopy with generalised malaise, fever and abdominal pain. Upon examination she had a palpable, tender epigastric mass. White cell count was 32,000/μl, haemoglobin was 114g/l, and C-reactive protein was 318mg/l. She was admitted and treated for abdominal sepsis. Initially, chest radiographs showed left basal consolidation. *Streptococcus faecalis*, *Escherichia coli* and *Bacteroides fragilis* was grown in her blood culture and showed sensitivity to tazobactam. She was started on piperacillin and tazobactam (4.5 g, i.v., t.d.s.).

CT taken 2-days later showed a collection (12cm × 10cm × 12cm) in the left lobe of the liver with the transverse colon adherent to it at the point where the tattoo had been placed (Fig 1). The next day, ultrasound-guided drainage was undertaken and 500 ml offrank brown pus was aspirated from the collection. The blue stain of the tattoo material was noticed. A drain (10 F) was left *in situ* and she was continued on piperacillin and tazobactam (4.5 g, i.v., t.d.s.) for 3 weeks. She made a good recovery.

Figure 1 CT shows a collection in the left lobe of the liver

Figure 2 Postoperative colon specimen shows an intact tattoo site

Our patient underwent ultrasound 3 weeks after abscess drainage and before discharge from hospital that showed considerable improvement because the collection had decreased in dimension to 10cm × 2cm × 3cm. Two months after abscess drainage, she had a planned elective subtotal colectomy with end ileostomy. The specimen showed a dark-blue circular mark (diameter, ≈2cm) with an intact colonic wall (Fig 2). Histology revealed a moderately differentiated adenocarcinoma of the transverse colon of Dukes' stage C2 (pT3, pN1, M0). She had a prolonged recovery over 1 month. She had ileus, a high-output stoma, and acute

kidney injury. Eventually, the patient improved and was discharged home 45 days after surgery.

Discussion

Tattooing of colonic lesions using Indian ink was done first in 1975. Endoscopists have described Indian ink to be a sensitive, reliable, and safe method for lesion localisation. However, a few studies and case reports have demonstrated rare (but serious) complications.

One study that reviewed 447 colonoscopy tattoos demonstrated the rarity of associated complications (0.22%).⁴ However, a case report by Park and colleagues showed formation of a local colonic abscess with peritonitis, abdominal pain, fever and increased white cell count.⁵ Another case report detailed 2 patients who had tattoos of colonic lesions: intraoperative findings reported fat necrosis, inflammatory phlegmons, and fibroblast infiltration of the colonic mesentery and omentum adjacent to tattoo sites.⁴ Another rare complication is abscess formation in the rectus sheath 10 days after tattooing of the transverse colon.⁵ An interesting study by Burton and colleagues⁶ examined the long-term safety of using Indian ink in 74 tattoos. None of these patients who had tattoos suffered pain, peritonitis, fever or any serious complication, and only six colon specimens demonstrated mild inflammation in tissue. One study showed that, before the mid-1990s, 42% of Indian ink used for tattooing was non-sterile.¹ Nowadays, all Indian ink is diluted and autoclaved before being used for injection. We employed a sterile, prefilled syringe containing an Indian ink named Spot. In our patient, the needle may have inoculated bacteria inadvertently through the colonic wall. This phenomenon induced an inflammatory reaction which, in turn, led to abscess formation.

Conclusions

Tattoo-related complications are very rare but can be serious. We recommend: (i) reducing the amount of Indian ink and diluting the Indian ink to the minimal visible titre to reduce the concentration that might induce an inflammatory reaction; (ii) ensuring the sterility of the injection needle; (iii) raising a submucosal saline bleb and then injecting Indian ink into it.

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