Novel treatment (new drug/intervention; established drug/procedure in new situation)

Formalin dab for treatment of haemorrhagic radiation proctitis

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Summary

The authors present a case of a 75-year-old man who underwent 2 months of radiotherapy for prostate cancer. He developed rectal bleeding 6 months later. A colonoscopy showed radiation proctitis with no other abnormalities up to the caecum. He was treated with a variety of medical therapies and argon beam laser with minimal effect. He was treated with epinephrine injection after a subsequent flexible sigmoidoscopy. He required multiple blood transfusions because of the resulting anaemia. He was finally treated with topical formalin dab therapy over three sessions, after which his rectal bleeding subsided and haemoglobin levels eventually reached normal levels.

BACKGROUND

This case highlights that formalin dab is a simple, effective and safe treatment modality in the management of chronic haemorrhagic radiation proctitis (CHRP).¹ The treatment of chronic radiation proctitis with oral sulphasalazine, tranexamic acid, sucralfate and rectal steroid retention enema alone or in combination has not been satisfactory in controlling the blood loss.² Other treatments such as argon beam laser and hyperbaric oxygen therapy have become more popular. Surgery is performed only when it is absolutely necessary, such as life-threatening haemorrhage. Our patient received many of the above therapies with poor results. It was only when he commenced treatment with topical application of formalin in theatre that his bleeding began to improve. There have been no significant local or systemic toxic effects observed following rectal instillation of 4% formalin.³ This patient received his treatment following a tertiary consultant to consultant referral. This treatment modality is not yet mainstream for radiation proctitis, and this case can further highlight its importance and therefore consideration by clinicians in similar cases.

CASE PRESENTATION

A 75-year-old man presented to the outpatient colorectal clinic with rectal bleeding. He has a background of atrial fibrillation treated with warfarin, which was well controlled and diverticulosis. He had undergone 2 months of radiotherapy for prostatic carcinoma. The rectal bleeding began approximately 6 months after completing his radiotherapy regimen.

On examination with rigid sigmoidoscopy, there was some reddening of rectal mucosa with large haemorrhoids present. After banding of the haemorrhoids, the rectal bleeding worsened over the next few weeks.

INVESTIGATIONS

A colonoscopy performed 3 months after the initial presentation showed radiation proctitis with rectal bleeding, and no other abnormalities to the caecum. The patient

was then commenced on various medical therapies and a flexible sigmoidoscopy was performed the following month. This again showed distal radiation proctitis. After further treatment, a flexible sigmoidoscopy 2 months later showed florid radiation proctitis in the distal rectum which was injected with 30 ml of 1 in 10 000 epinephrine.

Haemoglobin taken 2 months after the bleeding symptoms was 11.4g/dl. The patient's baseline haemoglobin was 13.7g/dl prior to radiotherapy.

DIFFERENTIAL DIAGNOSIS

The most likely cause of this presentation was radiation proctitis, due to the fact that the symptoms appeared soon after radiotherapy. Other causes which should be considered in this patient are diverticulitis (he has known diverticulosis), bowel carcinoma, haemorrhoids and anticoagulant induced bleeding but his international normalised ratio had been stable. Least likely on the list of differentials would be inflammatory bowel disease.

TREATMENT

This patient initially received rubber band ligation of his haemorrhoids. His bleeding subsequently worsened and he was commenced on a 2-week course of oral and rectal steroids without improvement. He was then commenced on Nystatin suppositories for 2 weeks, again with no benefit. In view of persisting bleeding, a further flexible sigmoidoscopy was performed showing distal radiation proctitis which was treated with argon beam laser to oozing areas. The patient was prescribed 6 weeks treatment with sucralfate enemas. He was transfused with three units of blood 5 months after onset of symptoms and he was prescribed metronidazole suppositories for 10 days following this. A further flexible sigmoidoscopy performed 6 months after onset of symptoms showed florid radiation proctitis in the distal rectum and this was injected with 30 ml of 1 in 1000 epinephrine.

The patient received more blood transfusions as his above treatments were not working and his haemoglobin

Figure 1 Graph showing haemoglobin levels over time. Blood transfusion and formalin dab sessions are indicated.

levels were dropping. The patient was finally referred to another consultant colorectal surgeon (tertiary referral). He was commenced on formalin dab treatment in the operating theatre approximately 8 months following the onset of the bleeding. Following the first application, there was little improvement and his haemoglobin dropped to 9.4g/dl. He was transfused another three units of blood. A month later he underwent a second application of formalin. His haemoglobin began to stabilise and he was given another two sessions over the next 4 months.

OUTCOME AND FOLLOW-UP

This patient was regularly followed-up in the outpatient clinic. After commencing formalin therapy, he only required one session of blood transfusion. He required five sessions prior to this therapy. His haemoglobin went up to 12.6g/dl and is now stable (figure 1). He has since experienced another episode of rectal bleeding but this is much less severe and less frequent compared to the situation prior to formalin dab therapy. His haemoglobin has remained stable. He is regularly monitored in the outpatient clinic and has regular blood tests. The plan is to try further formalin applications if he develops further problems and anaemia.

DISCUSSION

Radiation proctopathy (proctitis) is a common unfortunate complication following radiation therapy of pelvic malignancies.⁴ Medical therapy as discussed above and as highlighted in this case has largely been ineffective. Rectal

resection with or without anastomosis may be an effective treatment but is often not possible or is associated with a high morbidity and mortality.^{5 6} Laser ablation is relatively successful in controlling rectal bleeding, but is time consuming, requires expensive equipment and highly trained staff. It is therefore not always readily available. Furthermore, complications of laser therapy include transmural necrosis and fibrosis with perforation or stricture formation.⁴

Evidence suggests that formalin is very effective in the treatment of CHRP, mainly in patients in whom the distal third of the rectum is affected. Other advantages of formalin application are low cost, low incidence of side-effects, ready availability and easy application.⁷ In most cases, formalin therapy can be performed in the outpatient or day surgery setting, without anaesthesia.⁸ At the present time, there is little evidence to support the benefits of medical therapy.⁷

Brown⁹ first introduced the use of intravesical formalin to control haemorrhagic radiation cystitis in 1969. Another case report¹⁰ was done in 1986 for the use of formalin in haemorrhagic radiation proctitis. De Parades¹¹ *et al* study indicated that formalin may worsen anal incontinence in radiation-induced stricture, prior anal incontinence, or treated anal cancer. The results of Seow-Choen¹² *et al* and of Ismail¹ *et al* indicate that formalin therapy appears to be a safe and effective treatment for intractable haemorrhagic radiation proctitis. It is a simple and efficient technique, and more clinicians should be made aware of its use for this challenging side-effect of radiotherapy for pelvic malignancy.

Formalin therapy was successful in controlling the bleeding in this case. This encouraging result in the short term shows that this treatment is a worthwhile consideration in similar cases.

Learning points

- Radiation proctitis is a common complication of radiotherapy for pelvic malignancy, and can lead to intractable haemorrhage.
- Several treatment modalities are available for haemorrhagic radiation proctitis, which do not appear to be effective and may have serious side effects.
- Formalin dab is a simple, safe, effective treatment modality in the management of intractable haemorrhagic proctitis and should thus be considered for more mainstream use.

Competing interests None.

Patient consent Obtained.

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