

PET-CT in the diagnosis of recurrent rectal cancer complicated by left thigh abscess

RT Skelly, CM McClintock, SJ Hughes, ST Irwin

Accepted 30 June 2005

Recurrent rectal cancer presents a difficult problem for both patient and surgeon. One of the main factors influencing recurrence includes involved circumferential resection margins.¹ In the diagnosis of pelvic recurrence, the most common symptom is pain, which may be perineal and/or radiate to the lower limbs. Usually computed tomography (CT) and magnetic resonance scanning are the imaging modalities of choice. More recently, the introduction of PET (Positron Emission Tomography) and PET-CT, have shown accuracy in the detection of pelvic recurrence following colorectal cancer.² We present an unusual case, in which use of PET-CT identified a perforated pelvic recurrence of a rectal cancer, which was complicated by a left thigh abscess.

CASE REPORT

A 57-year old man, who 2 years previously had undergone an anterior resection for a locally advanced rectal adenocarcinoma, with adjuvant chemo-radiotherapy was referred to our unit. At initial surgery, his liver was clear and there was no tumour spillage. Gross pathology revealed a large cancer invading the mesorectum. Histology demonstrated a moderately differentiated Dukes' C (pT4,N2) adenocarcinoma, with features predisposing to a high likelihood of recurrence including tumour to within <1mm of the circumferential resection margin (CRM) as well as lymphovascular invasion.

When referred, he complained of symptoms suggestive of pelvic recurrence including anorexia, weight loss, diarrhoea and most ominously bilateral buttock pain. Clinical examination revealed signs of cancer cachexia. On digital rectal examination there was no evidence of a pelvic mass, although the anastomosis felt rigid.

When admitted, in addition to the symptoms and signs described, he also complained of left hip pain and was pyrexial (38°C), with tenderness overlying the left hip. Blood investigations revealed; Hb 6.7g/dl,

WCC $11.1 \times 10^9/l$, Albumin 27g/l and CRP 289 mg/l (Normal <7mg/l). PET-CT scanning revealed a pre-sacral mass with soft tissue density and increased uptake of [F^{18}]2'-fluoro-2-deoxy-D-glucose (FDG) within the pelvis (*Figure 1*). The first image is a mid-sagittal CT, the middle image is the FDG-PET and the third image is the fused data.

In addition an abnormal area was noted to extend laterally through the sciatic notch (*Figure 2*).

He underwent laparotomy, pelvic drainage and formation of an end colostomy. At operation, no attempt was made to excise the recurrent tumour within the pelvis. Histopathology of a tissue biopsy confirmed tumour recurrence. Following surgery he complained of increasing pain in the left hip and thigh with clinical evidence of cellulitis. A CT scan (*Figure 3*) showed evidence of gas formation along the lateral aspect of the left thigh deep to tensor fascia lata, extending to the knee. He underwent incision and drainage of the left leg. Following this a further smaller abscess developed over the left fibular region requiring further incision and drainage. From this he made a slow but steady recovery and subsequently had his left leg wound closed prior to

Department of Colorectal Surgery, The Royal Victoria Hospital, Belfast, Northern Ireland.

RT Skelly, MD, FRCS(I), Specialist Registrar in Colorectal Surgery.

C M McClintock, BSc, MB, BCh, Senior House Officer in Colorectal Surgery.

ST Irwin, MD, DMI, FRCS, Consultant Colorectal Surgeon.

Department of Nuclear Medicine.

SJ Hughes, FRCR, Consultant in Radiology and Nuclear Medicine.

Correspondence to: Mr. Irwin, Consultant Colorectal Surgeon, Royal Victoria Hospital, Grosvenor Road, Belfast BT12 6BA.

E-mail: terry.irwin@royalhospitals.n-i.nhs.uk

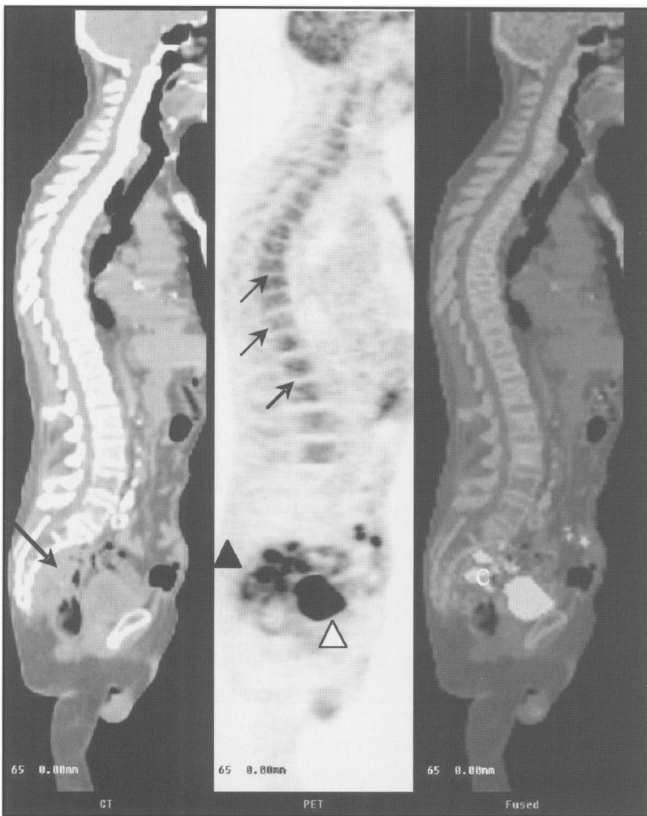


Fig 1. PET-CT (sagittal section) demonstrating a pre-sacral mass with soft tissue density (long black arrow) and abnormal FDG uptake within the pelvis (black arrow head). Note the normal FDG excreted in the bladder (white arrow head). The fused (PET-CT) image shows abnormal activity within the pelvis (c). Also note the increased activity in the spinal bone marrow due to pyrexia and marrow stimulation (short black arrows). Note the absence of marrow in the lumbar spine due to prior radiotherapy.

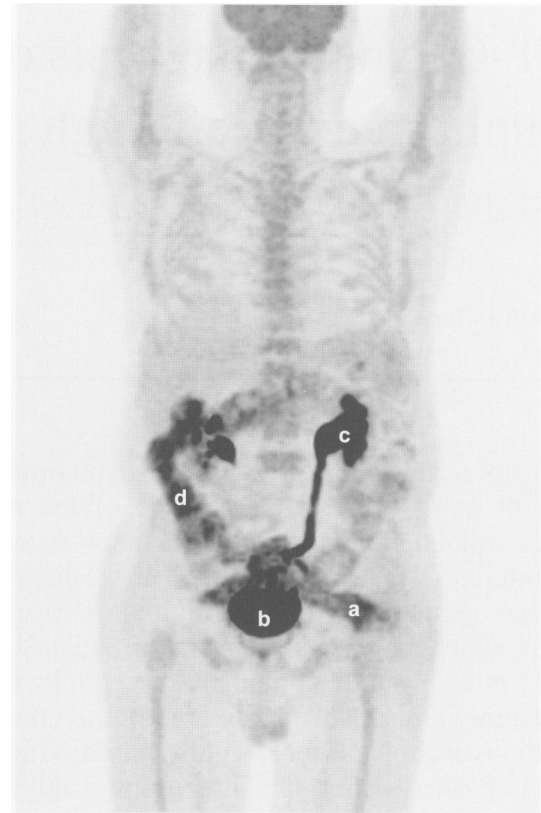


Fig 2. Maximum Intensity Projection (MIP) of the FDG-PET data (coronal section) demonstrating enhanced activity extending laterally to the left from the pelvis (a). Normal FDG activity is seen in the bladder (b), left kidney and ureter (c) and colon (d).

discharge 2 months after admission. On discharge, he was referred to oncology to be considered for further adjuvant treatment.

DISCUSSION

Local recurrence of rectal cancer after “curative” surgery is a major clinical problem, with a low resectability rate and a dismal prognosis. As a consequence of Total Mesorectal Excision (TME), 5 year survival figures for rectal cancer have risen from 45-50% to 75%, with a decrease in local recurrence rates from 30% to 5-8%.³ However in spite of better surgery and improved neoadjuvant and adjuvant therapies, recurrence remains a problem. This case demonstrates the typical presentation of recurrence: that is, buttock pain as a consequence of pelvic nerve infiltration by tumour.

Positron emission tomography with [F^{18}]2'-fluoro-2-deoxy-D-glucose (FDG) is being increasingly



Fig 3. Coronal section, demonstrating gas formation (a) along the lateral aspect of the left upper leg.

used in the management of cancer and is helpful in discriminating recurrent tumour from post-intervention scar tissue. PET-CT has a clear role to play in the diagnosis of any potential local recurrence of rectal cancer, with the literature reporting an accuracy of 96%.⁴ In this case, there was a pre-sacral mass and increased FDG uptake, features typical of recurrence with in addition extra-pelvic FDG activity.

Colorectal perforations causing gluteal/thigh abscesses are reported, in association with both diverticular disease⁵ and colorectal malignancy.⁶ Appropriate management of such sepsis usually involves a laparotomy with a defunctioning end stoma, plus or minus pelvic drainage and appropriate antibiotic therapy. Progression of sepsis, as happened in this case was the result of spreading infection into the lateral fascial compartment of the leg, giving rise to the tenderness, cellulitis and gas forming infection that required incision and drainage.

Primary abscesses of the thigh are uncommon and although readily diagnosed, their aetiology may often be obscure.⁷ Routes of extension of infection into the thigh can be either direct, through the subcutaneous tissues, or through naturally occurring defects in the abdominal wall.⁵ Whilst percutaneous drainage of localised collections may be performed,⁷ more extensive abscesses require formal surgical drainage.

In conclusion, we describe the unusual and uncommon complication of a recurrent rectal cancer, which was complicated by a left thigh abscess, and demonstrate the role of PET-CT in this case.

REFERENCES

1. Birbeck KF, Macklin CP, Tiffin NJ, Parsons W, Dixon MF, Mapstone NP, *et al.* Rates of circumferential resection margin involvement vary between surgeons and predict outcomes in rectal cancer surgery. *Ann Surg* 2002; **235(4)**: 449-57.
2. Even-Sapir E, Parag Y, Lerman H, Gutman M, Levine C, Rabau M, *et al.* Detection of recurrence in patients with rectal cancer: PET/CT after abdominoperineal or anterior resection. *Radiology* 2004; **232(3)**: 815-22. Epub 2004 Jul 23.
3. Enker WE. Total mesorectal excision – the new golden standard of surgery for rectal cancer. *Ann Med* 1997; **29(2)**: 127-33.
4. Staib L, Schirrmeister H, Reske SN, Beger HG. Is (18)F-fluorodeoxyglucose positron emission tomography in recurrent colorectal cancer a contribution to surgical decision making? *Am J Surg* 2000; **180(1)**: 1-5.
5. Rotstein OD, Pruett TL, Simmons RL. Thigh abscess. An uncommon presentation of intraabdominal sepsis. *Am J Surg* 1986; **151(3)**: 414-8.
6. Shimizu J, Kinoshita T, Tatsuzawa Y, Takehara A, Kawaura Y, Takahashi S. Gluteal abscess caused by perforating rectal cancer: case report and review of the literature. *Tumori* 2001; **87(5)**: 330-1.
7. vanSonnenberg E, Wittich GR, Casola G, Cabrera OA, Gosink BB, Resnick DL. Sonography of thigh abscess: detection, diagnosis, and drainage. *AJR. Am J Roentgenol* 1987; **149(4)**: 769-2.