CASE REPORT

Caecal cancer presenting as leg erythema and a lung opacity

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Accepted 25 August 2017

SUMMARY

Necrotising infection of the lower limb is a rare presentation for colorectal malignancy. We report a case of a perforated caecal adenocarcinoma presenting with right leg erythema, pain and swelling in the presence of a right lower lobe lung opacity. Following initial debridement and washout, CT imaging demonstrated a thickened terminal ileum, caecum and appendix, in keeping with primary malignancy. This fed the right-sided lower limb sepsis tracking down from the medial aspect of the psoas muscle to give rise to the multiloculated collection seen in the adductor compartment. The lung lesion measured 16 mm and was metastatic. The patient was successfully managed with a subtotal colectomy and an end ileostomy. The biopsy confirmed an adenocarcinoma (T4N1M1). We highlight the importance of perforated colonic carcinoma as a leading differential for lower limb abscesses. Suspicions should be raised further if accompanied by rounded opacifications on plain film radiography of the lungs.

BACKGROUND

Colorectal cancer is a very common and lethal disease. It is the fourth most common cancer in the UK and the third most common cancer in both men (12% of the male total) and women (10%) separately. In 2014 there were 41 265 new cases of bowel cancer in the UK.¹ It can account for up to 10% of total cancer deaths.² The most common presenting signs and symptoms include rectal bleeding, abdominal pain, unexplained anaemia and/or a change in bowel habit. A sizeable portion of patients may present with clinical features suggestive of metastatic disease due to lymphatic and haematogenous dissemination, the most common metastatic sites being the liver, lung, lymph nodes and peritoneum. The liver is usually the primary site of haematogenous dissemination owing to the portal venous drainage system.

More unusual presentations can come in a variety of forms and include local invasion-induced malignant fistula and fever of unknown origin from localised perforation.³ Several of such cases have been reported and are explored in this article. This is the first case in the literature where a malignant colorectal tumour presented in the form of lower limb sepsis and lung metastasis.

Figure 1 Chest X-ray on admission. Note the round opacity seen in the right lower zone.

CASE PRESENTATION

A 69-year-old Caucasian man was referred by the general practitioner to the acute medical unit with a 2-week history of worsening pain, redness and swelling of the right thigh and calf. He had been feeling generally unwell. Other than a few days of loose stools, he denied any long-standing changes in bowel habit. He had not suffered from any weight loss of note and was an ex-smoker of 15 pack years. On examination, there was erythema and pitting oedema of the right thigh and calf. The heart sounds were normal, the chest was clear, and the abdomen was soft and non-tender with no obvious masses of note on palpation. His routine observations on presentation were all stable and he was afebrile. Initial blood tests on admission revealed raised inflammatory markers, microcytic anaemia, acute kidney injury and hyponatraemia, with a White Cell Count of $20.40 \times 10^9/L$, C-Reactive Protein of 333 mg/L, platelet count of $516 \times 10^9/L$, Haemoglobin of 82 g/L (MCV 65.6 fL), urea of 15.4 mmol/L, creatinine of 136 $\mu\text{mol/L}$ and Na^+ of 120 mmol/L.

INVESTIGATIONS

A chest X-ray on presentation revealed an ambiguous-looking, rounded opacity in the right lower zone (see figure 1). The Doppler scan and ultrasound of the right lower limb excluded a deep vein thrombosis but were suggestive of

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To cite: Das A, Hureibi K, Tayyab M, et al. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2017-220752

Figure 2 CT of the lower limbs. Note the large abscess in the right adductor compartment.

infection after detecting soft tissue oedema and enlarged lymph nodes in the right groin. A CT scan of the abdomen, pelvis and thigh confirmed a diagnosis of a large yet difficult to measure loculated right iliopsoas abscess extending from the L3/L4 level into the adductor muscles of the right thigh (see [figure 2](#)). It was not deemed amenable to percutaneous drainage. The report of the first CT scan did not initially identify any potential root cause for the collection. At this point, the patient was taken to the operating theatre for a drainage of abscess and debridement of soft tissue.

DIFFERENTIAL DIAGNOSIS

The two leading differential diagnoses were cellulitis and deep vein thrombosis, but other possibilities remained vast, including an abscess, Baker's cyst or unilateral lymphoedema. The patient was started on empirical intravenous piperacillin-tazobactam and a therapeutic dose of subcutaneous enoxaparin until the Doppler scan of the leg had taken place.

TREATMENT

Following transfusion with two units of packed red cells, the first operation involved the excision of necrotic tissue from the right medial calf, with 900 mL of purulent discharge deemed to be tracking down as a psoas abscess with a suspected abdominal cause (see [figure 3](#)). The resected tissue was sent for urgent gram stain, dry microscopy and culture. A second look was done for further debridement. A further

Figure 3 Medial thigh incision and debridement of fascia over gastrocnemius (left). Vacuum dressing on posterior calf and medial thigh wound (right).

300 mL of pus was evacuated intraoperatively. Following a third debridement and washout 4 days afterwards, the initial CT report was reviewed in the orthopaedic multidisciplinary meeting (MDT) with the intention of exploring the possibility of open drainage of a missed abscess sourcing from the psoas. The images re-explored the right lung nodule, which measured 16 mm in the right base, suggestive of metastasis. Bilateral pleural effusions were also noted. Following thorough re-examination and review of the CT images, marked thickening of the terminal ileum, caecum and appendix, in keeping with primary malignancy, was detected (see [figure 4](#)). This was deemed to be the source of the right-sided lower limb sepsis tracking down from the retroperitoneum on the medial aspect of the right psoas muscle to give rise to the multiloculated collection seen in the right lower limb, primarily in the adductor compartment of the thigh and deep to the gastrocnemius.

The patient was subsequently referred to the colorectal multidisciplinary team meeting, where the decision was made to offer a right haemicolectomy for palliative purposes.

Intraoperatively, a caecal mass was found, which had fistulated into the rectosigmoid colon and also a distal loop of ileum. A decision was made to convert to a subtotal colectomy with an end ileostomy.

The biopsy confirmed an adenocarcinoma (T4 N1 M1), Dukes stage D, due to the presence of metastatic disease.

OUTCOME AND FOLLOW-UP

The patient recovered well postoperatively. His vital signs were stable throughout the remainder of his admission and he remained afebrile. His stoma was functioning well. He required two further washouts and a removal of the vacuum dressing prior to being fit for discharge. He was sent home in a stable condition with routine follow-up from both the colorectal and plastic surgery teams.

Following regular dressing changes, most areas of incision and debridement on the lower limb were healing well, except for a small area over the anterior tibia and upper medial thigh, which are currently granulating and re-epithelialising. A positron emission tomography-CT postdischarge, as recommended by the lung MDT, has confirmed the presence of an avid right lower lobe nodule, hilar node as well as multiple liver metastasis likely to be from the bowel primarily. He is due to be referred to the oncology MDT.

DISCUSSION

Numerous cases of abscesses formed secondary to colonic perforation have been reported previously.

Two cases involved the development of gluteal abscesses secondary to the perforation of a caecal carcinoma.⁴⁻⁶ One article reported an abscess in the iliopsoas muscle alone,⁷ while only two cases report a distinct tracking of infection into the thigh or below. Mann *et al*⁸ describe a 3-day history of infection in the anterior compartment of the right thigh resulting from a retroperitoneal abscess descending down the iliopsoas, while the case that is most similar in presentation to ours is that reported by Timbrell *et al*,⁹ which describes a 69-year-old man presenting with acute fever, confusion, unexplained microcytic anaemia and a swollen right leg, which was secondary to a retroperitoneal caecal perforation also tracking down from a psoas abscess.

It should also be brought to attention that other tumours or inflammatory conditions can present with necrotising

Figure 4 CT of the abdomen and pelvis. Marked thickening of terminal ileum, appendix and caecum, representing the primary malignancy.

fasciitis of the upper leg, such as the thigh abscess that presented as an extension of a psoas abscess as the first manifestation of a perforated appendiceal adenocarcinoma, as reported by Petrovic *et al* in 2015.¹⁰

The presence of metastatic disease at the time of diagnosis is not uncommon, with up to 15%–25% of newly diagnosed colorectal cancers being metastatic at presentation, the vast majority presenting as hepatic metastases.¹¹ However the concomitant revelation of metastatic disease combined with an extremely unusual and rare presentation of a common malignancy is truly unique. While all of the above examples have highlighted the importance of a low index of suspicion for intra-abdominal perforation as the main driving source for lower limb soft tissue infection, none of them have presented with metastatic lesions being detected prior to the primary pathology. We propose that perforated colorectal carcinoma should always be considered as a primary differential for any undue presentation of lower limb sepsis, particularly those that are tracking down from the psoas muscle in the retroperitoneum. From a radiological perspective, CT imaging on early presentation should always be analysed meticulously to seek the pathological source with a high index of suspicion for colorectal disease. This index of suspicion should be raised further still if accompanied by lesions suggestive of metastatic disease.

In the initial stages of the case, the CT scan was only reviewed in detail for assessing the feasibility of draining the intra-abdominal source of the abscess percutaneously. It was only after the leakage failed to resolve following multiple incisions and drainages of the calf that the images were subsequently scrutinised more thoroughly in the orthopaedic MDT for consideration of an open incision and drainage of the abscess from its intra-abdominal source, when it was finally realised that the infection most likely originated from an ongoing and unrelenting leak from a perforated tumour along the posterior aspect of the caecum.

The fact that the primary referral was made to the orthopaedic team in suspicion of a lower limb abscess tracking superiorly has undoubtedly caused the chronology and

sequencing of the patient's management to be somewhat suboptimal. Had the man presented with more typical signs of an acute abdomen such as abdominal pain, guarding and peritonism via an anterior perforation, he may have been referred to the more appropriate surgical subspecialty (general surgery) earlier on, highlighting the invaluable importance of a more holistic and general outlook from the beginning.

Learning points

- ▶ Perforated colonic carcinoma should always be considered as a leading differential diagnosis for lower limb abscesses tracking down from the psoas muscle. CT imaging on early presentation should be meticulously scrutinised to seek the source of the collections.
- ▶ Large retroperitoneal collections may obscure the radiological detection of primary colonic malignancy.
- ▶ The index of suspicion should be raised even further if the above symptoms are accompanied by suspicious rounded opacifications on plain film radiography of the lungs, which could be indicative of metastatic disease.
- ▶ Joint care under orthopaedic surgery for soft tissue debridement/washout and colorectal surgery for large bowel resection is likely to represent the most appropriate care strategy.

Contributors AD was involved in writing the case report. KH, MT and PMC all provided regular input into helping to edit and finalise the article.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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