Anal metastasis as the sentinel and isolated presentation of invasive ductal breast carcinoma

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ABSTRACT

Breast cancer currently affects 1 in 8 women in the UK during their lifetime. Common sites for breast cancer metastasis include the axillary lymph nodes, bones, lung, liver, brain, soft tissue and adrenal glands. There is well documented evidence detailing breast metastasis to the gastrointestinal tract but anal metastasis is exceptionally rare. We present the case of a 78-year-old woman with an anal metastasis as the sentinel and isolated presentation of an invasive ductal breast carcinoma. As advances in the treatment of breast cancer improve, and with an ageing and expanding population, there will be an increasing number of cancer survivors, and more of these unusual presentations may be encountered in the future.

KEYWORDS

Anal metastasis – Invasive ductal breast carcinoma

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Breast cancer currently affects 1 in 8 women in the UK during their lifetime.¹ Common sites for breast cancer metastasis include the axillary lymph nodes, bones, lung, liver, brain, soft tissue and adrenal glands.² There is well documented evidence detailing breast metastasis to the gastrointestinal tract^{3–5} but anal metastasis is exceptionally rare. Extrahepatic gastrointestinal metastasis usually derives from a lobular carcinoma, the stomach being the most frequently involved site.^{3–5}

McLemore *et al* reported on 41 patients (from a population of 12,001) at the Mayo Clinic with a diagnosis of gastrointestinal tract or peritoneal metastasis from breast cancer.⁵ They found that gastrointestinal metastasis occurs more frequently in patients with infiltrating lobular carcinoma (64%). The mean time between breast cancer diagnosis and evidence of gastrointestinal metastasis was seven years. There were no cases in this study detailing anal metastasis.

Adenocarcinomas of the anus are uncommon. Klas *et al* reviewed the pathologies of 192 patients with malignant tumours of the anal canal over a 10-year period.⁶ They found that 74% were attributed to squamous cell carcinomas and 19% to adenocarcinomas. The authors concluded that surgical management of adenocarcinomas (with adjuvant therapy for selected patients) leads to good results. The study attributed no cases to metastasis from other sites.

A review of the literature identified five individual cases of breast cancer metastasising to the anus.^{7–11} Three

patients had an invasive lobular carcinoma and two had an invasive ductal carcinoma.

In 2012 Bochicchio *et al* detailed the case of a 72-year-old woman treated previously with surgery, chemotherapy and endocrine therapy, with recurrence after one year, and hepatic and bone metastases after a further two years.¹¹ After four years, she developed anal symptoms and underwent palliative rectal amputation. Histopathology of this resection showed the metastatic cancer but at this time, she already had widespread metastasis.

The initial four case reports were summarised in a literature review in the fifth case report (by Bochicchio *et al*).¹¹ Only one of these patients presented with synchronous breast and anal disease,¹⁰ and none of the reports detail the anal lesion presenting in isolation. We describe the first case in the UK of anal metastasis from invasive ductal breast carcinoma presenting as the sentinel and isolated symptom with no evidence of widespread metastasis.

Case history

A 78-year-old woman presented in September 2012 with rectal bleeding, weight loss of 2½ stone and occasional constipation. On examination, she was found to have a palpable mass involving the anal canal at the five o'clock position. Biopsies were reported to show a poorly differentiated tumour, most likely from the anal gland. She went on to have staging computed tomography (CT), magnetic resonance imaging of the pelvis and positron emission

Figure 1 The yellow arrows indicate pagetoid spread in the anal squamous mucosa. The black arrows highlight tumour infiltration composed of cords and glands in the lamina propria. Inset: The cancer cells show strong nuclear reaction for oestrogen receptor.

Figure 2 Tumour cells showing strong membrane staining for keratin 7 and negative reaction for keratin 20 (inset)

tomography, the results of which were discussed at the anal multidisciplinary team meeting. The pathology was categorised as a locally advanced anal carcinoma with no metastasis (T3 N0 M0). She was recommended to receive palliative radiotherapy, to which she had a good response. She was not considered a candidate for further radiotherapy or chemotherapy and the decision was taken for her to receive best supportive care.

Twenty-seven months after being treated for the presumed anal adenocarcinoma, the patient presented to the breast clinic and was diagnosed with a breast cancer, which appeared to be a poorly differentiated adenocarcinoma. Immunohistochemistry (IHC) suggested that it may resemble the previous anal cancer. The primary histology from 27 months previously was therefore reviewed and the tumours were identified as histologically compatible.

Histology

The anal biopsy showed a moderately differentiated adenocarcinoma with pagetoid spread in the anal squamous mucosa (Fig 1). The tumour cells were positive for keratin 7 (Fig 2) but were negative for keratin 20, CDX2 (Fig 3), p63, CD56, synaptophysin and S100. At the time, there was no other primary site involvement and so it was suggested that this was either a primary anal gland carcinoma or a possible metastasis from the female genital tract. However, no female genital tract tumour was confirmed on imaging.

In view of the current growth of the breast tumour, which showed features of an adenocarcinoma, the anal biopsy was reviewed for the breast multidisciplinary team alongside the breast core biopsy. It showed similar histomorphology to the breast cancer and additional immunostaining was performed on both lesions to establish the primary site. Naturally, the main differential diagnosis was

Figure 3 Tumour cells showing negative staining for CDX2

between a primary anal adenocarcinoma and metastatic breast cancer. Both the anal tumour and the breast tumour revealed strong positive nuclear reactions for oestrogen receptor and progesterone receptor (both 8/8) (Fig 1) and patchy staining for gross cystic disease fluid protein 15. The patient's human epidermal growth factor receptor 2 IHC score was 1+ (negative) in both lesions. Owing to the striking similar histomorphology and immunoprofile of both lesions, it was concluded that the anal tumour was in keeping with a metastatic breast carcinoma.

Full CT and bone scintigraphy for staging revealed no evidence of metastatic disease and the patient was therefore recommended (after discussion by the multidisciplinary team) to undergo left wire guided wide local excision

with sentinel node biopsy. She had a single metastatic lymph node and underwent regional radiotherapy and was started on letrozole as adjuvant treatment.

Discussion

A thorough literature review was performed and although there have been well documented cases of breast cancer metastasising to the gastrointestinal tract, anal metastasis remains extremely rare. In particular, among the five published case reports,^{7–11} there was not a single case of a breast cancer metastasising to the anus with the anal symptoms presenting as the sentinel symptom. It is also remarkably unusual given the 27 months between the presentations. Furthermore, this case is unique because the patient did not have widespread metastasis.

Clinicians need to be aware of the unusual possibility of a breast carcinoma metastasising to the gastrointestinal tract, with the anus being the least likely site. This case report highlights the importance of thoroughly checking histological reports. Anal metastasis from breast cancer may have a long interval for manifestation. Symptoms can be non-specific and so accurate diagnosis requires an extremely high index of clinical suspicion.

Conclusions

As advances in the treatment of breast cancer improve, and with an ageing and expanding population, there will be an increasing number of cancer survivors. As a result, more of these unusual presentations may be encountered

in the future. An accurate diagnosis raises the possibility of systemic treatment to complement local radiotherapy and avoid radical surgical intervention.

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