CASE REPORT

Primary breast lymphoma presenting as non-healing axillary abscess

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SUMMARY

A 67-year-old woman with non-insulin dependent diabetes mellitus with a history consistent with a right axillary abscess, presented to her general practitioner (GP). A diagnosis of folliculitis was made and the GP started a course of flucloxacillin. Despite antibiotics, the patient's symptoms worsened and the abscess increased in size. This prompted her GP to perform an incision and drainage procedure of the abscess. The practice nurse subsequently oversaw the follow-up care of the wound. Two months after the incision and drainage, and after regular wound dressing, the patient was referred to the acute surgical team with a complicated, non-healing right axillary abscess cavity and associated generalised right breast cellulitis. There was no history of breast symptoms prior to the onset of the axillary abscess. The patient underwent wound debridement, washout and application of negative pressure vacuum therapy. Biopsies revealed primary breast lymphoma (B-cell). She underwent radical chemotherapy and is currently in remission.

BACKGROUND

Subcutaneous abscesses are common presenting symptoms at most general practitioners (GPs), accident and emergency departments, and surgical consultations. Usual sites include the perianal region, axilla, breast and groin. Most are caused by bacterial infections, most commonly by skin flora. Incision and drainage with appropriate wound management remains the mainstay of treatment for subcutaneous abscesses. Some GP surgeries in the UK now have adequate resources and skills to perform this minor procedure in the community. However, surgical review should be sought in cases where the abscess cavity postincision and drainage shows signs of delayed healing or necrosis.

We present a case of a 67-year-old diabetic woman with no breast symptom, who presented to her GP with a right axillary abscess. The abscess was drained and managed in the community. Two months later, the patient was referred to the surgical team, with delayed healing, worsening infection and associated right breast swelling thought to be secondary to spreading cellulitis. Excision biopsies of the base and wall of the abscess cavity and a trucut biopsy of the right breast showed right breast B-cell lymphoma in all specimens.

CASE PRESENTATION

A 67-year-old woman with a background of non-insulin dependent diabetes mellitus and hypertension was referred to the acute surgical team, with a

2-month history of complicated non-healing right axillary abscess. This was associated with right breast swelling, possibly due to spreading cellulitis. According to the GP, she presented 2 months prior to the referral with right axillary redness and swelling. At this point, she did not report any breast lump, swelling or redness, and all of her previous screening mammograms were normal. Examination of both breasts at this point was unremarkable. She denied any history of B symptoms, including weight loss, night sweats and fever. Her screening mammograms were up to date and they had been reported as normal following the last mammogram screen 3 years prior.

At the time of presentation, she was diagnosed with folliculitis and commenced on a 7-day course of flucloxacillin. Unfortunately, her symptoms worsened and the swelling/abscess progressively increased in size. This prompted an incision and drainage of the right axillary abscess at the local GP surgery, and subsequent wound management of the cavity by community nurse practitioners.

Two months following the incision and drainage, and regular wound care by the community nurses, the abscess cavity did not show any signs of healing. It appeared to be expanding in size with onset of tissue necrosis at the base and edges. Furthermore, the patient now reported of a 1-month history of non-tender generalised right breast swelling. This was thought to be secondary to cellulitis spreading from the right axilla. The above described wound complication and new breast symptoms prompted referral to the acute surgical team by the GP.

On surgical assessment, the patient was febrile at 38.7°C, while her heart rate and blood pressure remained within normal limits. On clinical examination, a large, non-tender oedematous right breast was evident on inspection. No clinical evidence of cellulitis or spreading infection was identified. Palpation did not reveal any discrete breast lump. Examination of her left breast was normal.

Examination of her right axillary revealed a large abscess cavity with evidence of ongoing infection. There were slough, necrotic and indurated tissues at the base and skin edges of the cavity, accompanied by foul smelling and purulent discharge ([figure 1](#)). Subsequent examination of the left axilla was unremarkable.

Emergency surgical wound debridement and washout of the right axilla abscess cavity under general anaesthetic was performed on the day of admission. Six biopsies were also taken and sent for further analysis: *two skin excision biopsies of*

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Figure 1 A photo of the patient's right axilla seen in accident and emergency.

the edges of the abscess cavity, two core biopsies (using trucut needle) of the lateral borders of the right breast, and two core biopsies of the medial aspect of the right axilla. These were sent for histology and microscopy, culture and sensitivity.

INVESTIGATIONS

Microscopy, culture and sensitivity showed no significant bacterial growth.

Histology of the excised axillary skin sample showed a deep dermis and subcutaneous tissue component infiltrated by sheets of large atypical malignant mononuclear cells with extensive tissue necrosis. Immunohistochemistry showed strong unequivocal positivity for B-cell markers (CD20, CD79a) with high proliferation ratio on Ki-67. The appearances were consistent with high-grade B-cell lymphoma.

Core biopsies of the right breast showed fibrofatty tissue infiltrated by malignant B-cell lymphoma.

Core biopsy of the axilla showed fatty tissue infiltrated by malignant B-cell lymphoma consistent with the other specimens described above. There was also extensive tissue necrosis. Further immunohistochemistry of all tissue samples showed positivity for bcl-2, bcl-6 and MUM-1, with a reactive T-cell population in the background (CD3 and CD5 positive) with negative CD10. In conclusion, all sampled biopsies showed an appearance in keeping with diffuse large B-cell lymphoma, activated B-cell type.

With regard to radiological investigation, a staging CT of the chest, abdomen and pelvis was performed. This showed a 13×15×12 cm ulcerating mass in the right breast (figure 2). Several pulmonary nodules in both lungs were noted, in keeping with the appearance of metastatic deposits. Radiological imaging did not reveal any lymph nodes. There were no significant abnormalities noted below the diaphragm and there was no evidence of obvious bony metastasis.

Figure 2 CT scan showing inflammatory breast mass.

The patient was diagnosed with stage IVB large B-cell non-Hodgkin's lymphoma (NHL) of the breast.

TREATMENT

Three further surgical debridements were carried out under general anaesthesia. This was followed by the application of long-term negative pressure vacuum therapy (vac dressing). Concurrently, the patient was started on broad-spectrum antibiotics, clindamycin and piperacillin/tazobactam, as advised by the microbiologists.

Subsequently, she was referred to a haematologist, with a diagnosis of large B-cell NHL of the breast. She received six cycles of three weekly R-mini-CHOP, that is, rituximab 375 mg/m², cyclophosphamide 400 mg/m², doxorubicin 25 mg/m², vincristine 1 mg flat dose and prednisolone 60 mg/m². The chemotherapy regime was well tolerated and she did not suffer any adverse complications.

OUTCOME AND FOLLOW-UP

Our patient responded well to chemotherapy. A positron emission tomography (PET) scan 3 months postchemotherapy revealed complete metabolic remission with some residual soft tissue and skin changes in the right axilla. The haematologists decided that she would be reviewed annually by the haematology nurse specialist.

With regard to the right axilla following the surgical treatments, there is residual scarring and a non-discharging sinus (figure 3). The breast surgeon offered the option of excision of the sinus and scarred tissue with possible reconstruction, but the patient declined.

DISCUSSION

Primary breast lymphoma (PBL) is a rare form of localised extranodal NHL representing about 1% of breast tumours and 2% of extranodal NHL.¹ Breast NHL can be difficult to diagnose, as occasionally they present with symptoms similar to those of primary breast carcinoma. Wiseman and Liao suggested criteria for diagnosing PBL. These include:

1. The availability of adequate pathology material.
2. Both mammary tissue and lymphomatous infiltrate present.
3. No widespread disease or preceding extramammary lymphoma.
4. Homolateral axillary lymph node involvement.²

Figure 3 A photo of the patient's right axilla seen in clinic.

Our case fulfils the diagnostic criteria for PBL stated above.

Histologically, most PBLs are of a diffuse large cell type. Gholam *et al*³, in 2003, reviewed 34 cases of Breast lymphoma seen over a 25-year period. Twenty were of B-cell origin (including one case of Burkitt lymphoma and two cases of low-grade histology type). PBL classically presents with a short history of a rapidly enlarging non-tender breast mass. Classic B symptoms (weight loss, night sweats and fever) seen in other forms of lymphoma are uncommon in PBL.⁴ Our patient had an atypical presentation, as her first symptom was a right axillary abscess without a discrete palpable breast lump and no other breast symptoms. The only breast abnormality on clinical examination was generalised diffuse swelling of the right breast, which occurred 1-month after incision and drainage of the right axillary abscess.

Breast and axillary abscesses are relatively common. On rare occasions, breast carcinomas have been known to present as breast abscesses. In 2006, Scott and colleagues investigated the rate of associated malignancies in breast abscess over a 10-year period. Only 9/206 patient (4.3%) were diagnosed with malignancy in the abscess cavity wall.⁵

The mainstay of management of axillary abscess is incision and drainage without the need for biopsy of the cavity. Pus swabs are routinely sent for microscopy, culture and sensitivity. In cases where patients present with a breast abscess, research has shown that the rate of breast malignancies occurring in the abscess cavity is not significant enough to warrant a biopsy of the wall of every breast abscess cavity.⁵

This case is unusual as it is a PBL (B-cell lymphoma) initially presenting as an axillary abscess without any initial breast symptoms or breast abnormality clinically. An extensive literature search of studies of breast lymphomas did not reveal any cases with a similar presentation. It is important to note that the histology of the excision biopsies of abscess cavity edges, and core biopsy of the cavity wall and right breast in this case study, collectively demonstrated features of diffuse B-cell lymphoma.

The primary learning point in this case is the management of abscesses in the primary care setting. Axillary abscesses account for 16% of all cutaneous abscesses. Most are caused

by bacteria infection, predominantly *staphylococcus aureus*.⁶ The mainstay of treatment of axillary abscess is still incision and drainage, with pus swab sent for microscopy, culture and sensitivity analysis. The natural history of subcutaneous abscesses is such that drainage of the pus should ideally ensure rapid resolution. However, various factors can contribute to delayed healing of a drained abscess cavity. These include the patient's immune status, type of organism, antibiotics received, wound care, poor surgical drainage and likelihood of malignancy. Undoubtedly, subcutaneous abscesses can be managed in the community. However, in some cases, it is advisable to refer these patients to secondary care for further assessment and possible biopsy. These include cases where the abscess or its cavity shows atypical morphology and/or signs of delayed healing following incision and drainage. This is particularly important when a non-healing abscess occurs in the breast and other areas with regional lymph nodes, such as the axilla and groin.

Furthermore, when a subcutaneous abscess occurs in regional lymph nodes, a thorough clinical and, where necessary, radiological assessment of organs that drain into those lymph nodes, should be carried out.

Treatments for PBL have evolved over the past 50 years. However, at the moment, there is no standard treatment for PBL in the literature due to the rarity of this form of cancer.⁷ Surgery such as mastectomy or wide local excision is usually not indicated, as often these tumours respond very well to radiotherapy and systemic chemotherapy.⁸ As PBL may be grouped with large B-cell lymphoma histologically,^{3 9 10} the treatment for PBL adopted by most haematologists is R-CHOP i.e rituximab, cyclophosphamide, doxorubicin, vincristine with or without radiotherapy. However, there have only been a few reports of patients with PBL who were treated successfully with R-CHOP with and without radiotherapy.^{7 11 12}

Our 67-year-old patient with PBL received six cycles of R-CHOP and responded well to the chemotherapy regime. As previously mentioned, she had a PET scan 3 months after chemotherapy, which showed a complete metabolic remission with some residual soft tissue and skin changes in the right axilla. She is currently being followed-up annually by the haematology nurse specialist in our hospital.

To date, there are no agreed on or recommended treatments for PBL, as echoed by Shao *et al*,⁷ hence more studies are required to find the optimum treatment for PBL.

Learning points

- ▶ Delayed wound healing postincisional and drainage of abscesses should prompt secondary care referral for further assessments.
- ▶ Thorough clinical assessment of neighbouring organs should be carried out when abscess occurs in areas with regional lymph nodes.
- ▶ Primary breast lymphoma (PBL) presenting as a non-healing axillary abscess is rare.
- ▶ There is no standard treatment for PBL, so more studies are required to find the optimum treatment.

Competing interests None declared.

Patient consent Obtained.

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