CASE PRESENTATION

A 61-year-old woman presented with a palpable painless mass in the right axilla for a few months. She had a past history of poorly-differentiated endometrioid carcinoma of the left ovary, with hysterectomy and bilateral salpingo-oophorectomy, and chemotherapy performed seven years ago. Physical examination revealed a 3 cm mass in the right axilla and no palpable mass in both breasts. Mammography was performed to search for occult primary breast carcinoma. What do bilateral mediolateral oblique mammograms (Fig. 1a), spot right craniocaudal magnification view (Fig. 1b), and spot magnification view of the right axillary nodes (Fig. 1c) show? What is the diagnosis?

Fig. 1 (a) Bilateral mediolateral oblique mammograms; (b) spot right craniocaudal magnification view; (c) spot magnification view of the right axilla.
Bilateral mediolateral oblique mammograms (Fig. 1a) and spot magnification views of the right breast (Fig. 1b) and right axilla (Fig. 1c) showed segmental-distributed pleomorphic microcalcifications in the upper outer quadrant of the right breast and enlargement of the right axillary nodes with increased density, and loss of fatty hilum. The biggest node contained multiple microcalcifications (arrowed in Fig. 1c).

**DIAGNOSIS**
Suspicious right breast carcinoma with axillary node metastases.

**CLINICAL COURSE**
The patient underwent right axillary node dissection. Histopathology revealed metastatic adenocarcinoma in 14 of 21 nodes. Unfortunately, the patient was then lost to follow-up. 17 months later, she came back with a palpable mass in the upper outer quadrant of the right breast. Mammograms showed a 2.5-cm ill-defined mass with microcalcifications in the upper outer quadrant of the right breast (Fig. 2). Core needle biopsy of the mass revealed invasive ductal carcinoma, and simple mastectomy was subsequently performed. Pathological examination confirmed poorly-differentiated, invasive ductal carcinoma.

**DISCUSSION**
On the routine mediolateral oblique mammogram, level I axillary nodes are often visualised. The normal axillary node appears on the mammogram as a round or oval
A well-defined mass, isodense or hypodense compared with breast parenchyma, and containing a central area of hilar fat (Fig. 3). Size is not important because a normal node with a large, fatty hilum may be as large as 3.5 cm. Abnormality of the axillary node is suggested by an increased nodal density and loss of fatty hilum.\(^{(1)}\) Benign causes of axillary adenopathy include infection, collagen vascular diseases such as rheumatoid arthritis (Fig. 4), and a variety of skin conditions.\(^{(2)}\) Malignant causes of axillary adenopathy include lymphoma (Fig. 5), metastasis from primary breast carcinoma and other primary tumours.\(^{(3)}\)

Both benign and malignant nodes have a similar appearance, but the presence of intranodal coarse calcifications is suggestive of granulomatous infection (Fig. 6) and the presence of intranodal microcalcifications or spiculated margins (Fig. 7) is suggestive of metastasis from the primary breast carcinoma.\(^{(4-6)}\) In patients who have received intramuscular gold injections for rheumatoid arthritis may have stippled opacities in the axillary nodes which mimic microcalcifications.\(^{(7)}\) However, distinction between malignant calcifications and gold deposits in the axillary nodes is not a frequent problem and is not difficult. The patients with gold deposits should be supported by a clinical history of rheumatoid arthritis with gold injection, and malignant calcifications by the presence of typical malignant calcifications in the breast. To differentiate among the causes of axillary adenopathy, it is recommended to see if the axillary adenopathy is unilateral or bilateral. Causes of unilateral axillary adenopathy include ipsilateral breast carcinoma, mastitis, or inflammation involving the upper extremity. Bilateral axillary adenopathy is usually due to systemic processes such as lymphoma, leukaemia, infection, metastatic tumours, or collagen vascular diseases such as rheumatoid arthritis.

Fig. 5 Non-Hodgkin lymphoma with bilateral axillary adenopathy. Bilateral mediolateral oblique mammograms show bilateral enlarged nodes with increased density and loss of fatty hilum. Note that these findings cannot be differentiated from rheumatoid arthritis. History of patients is helpful for differential diagnosis.

Fig. 6 Tuberculous lymphadenitis. Spot right axillary view shows multiple enlarged nodes with loss of fatty hilum and macrocalcifications (arrows).

Fig. 7 Metastatic breast carcinoma. Left mediolateral oblique mammogram shows multiple increased density nodes, loss of fatty hilum with spiculated margins in one node (arrow). Note that the size of nodes is not enlarged.

Although ovarian carcinoma may spread to the axillary nodes,\(^{(8)}\) the presence of microcalcifications in the breast is suggestive of primary breast carcinoma. Occult breast carcinoma presenting with axillary nodal metastasis is an uncommon manifestation of stage II breast carcinoma. However, the prognosis is similar to and possibly even better than that of stage II patients who present with a palpable breast cancer.\(^{(9)}\) In a patient with known primary extramammary malignancy and axillary adenopathy, it is important to differentiate if it is metastasis from the
primary breast carcinoma or extramammary malignancy because of different prognosis and treatment. Singer et al reported the mammographical appearance of metastatic axillary nodes from ovarian carcinoma to contain amorphous calcifications which differ from that seen in metastatic breast carcinoma.\(^\text{(10)}\) From our experience, metastatic axillary adenopathy from ovarian carcinoma also contains macrocalcifications.\(^\text{(11)}\)

**ABSTRACT**

A 61-year-old woman who had a known history of ovarian carcinoma presented with a palpable painless mass in the right axilla. Mammograms showed segmental-distributed pleomorphic microcalcifications in the upper outer quadrant of the right breast with marked enlargement of the right axillary nodes. The biggest node contained microcalcifications. Right axillary node dissection showed metastatic adenocarcinoma which was likely to be metastasis from the primary breast carcinoma. Unfortunately, she was then lost to follow-up and came back again with a right breast mass. Histopathology of the right breast mass revealed invasive ductal carcinoma. The causes and differential diagnosis of axillary adenopathy are discussed. In a patient with known primary extramammary malignancy and axillary adenopathy, it is important to differentiate if it is metastasis from the primary breast carcinoma or extramammary malignancy to provide proper management.

**Keywords:** axillary adenopathy, axillary metastases, breast carcinoma, mammography, nodal metastases

**REFERENCES**

Multiple Choice Questions (Code SMJ 200812B)

Question 1. Concerning normal axillary lymph nodes:
(a) They are seen as round or oval well-circumscribed masses.
(b) They are hyperdense compared to breast parenchyma.
(c) The size can be as large as 3.5 cm.
(d) They contain a central hilar fat.

Question 2. Concerning mammography:
(a) Level I axillary nodes are often seen on the craniocaudal mammographic view.
(b) The spot magnification view is useful to evaluate microcalcifications.
(c) It is indicated in patients presenting with axillary adenopathy to search for occult breast carcinoma.
(d) Axillary adenopathy with spiculated margins is suggestive of metastasis from the primary breast carcinoma.

Question 3. Concerning axillary adenopathy:
(a) Benign causes include infection and collagen vascular diseases.
(b) Malignant causes include metastasis from the breast and other primary cancers.
(c) Malignant axillary adenopathy can be differentiated from benign by the loss of fatty hilum.
(d) Axillary adenopathy is suggested by an increased nodal size.

Question 4. Intranodal calcifications can be found in the following conditions:
(a) Granulomatous infection.
(b) Metastatic ovarian carcinoma.
(c) Metastatic breast carcinoma.
(d) Lymphoma.

Question 5. Concerning breast carcinoma:
(a) Some patients may present with axillary adenopathy and a nonpalpable breast mass.
(b) The presence of spiculated axillary adenopathy is highly suggestive of metastasis from the primary carcinoma.
(c) The presence of intranodal microcalcifications is highly suggestive of metastasis from the primary carcinoma.
(d) Axillary node metastasis from nonmammary malignancy has a better prognosis than from primary breast carcinoma.

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