CASE REPORT

Unusual presentation of primary cutaneous melanoma of the forearm with epitrochlear and axillary lymphadenopathy

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SUMMARY

In patients with primary cutaneous melanomas of the distal upper limb, metastatic involvement of the epitrochlear lymph nodes is uncommon. It belongs to a particular category of nodal metastasis termed as interval or in-transit lymphadenopathies often encountered by tumour cells as they spread from the primary sites. We describe the case of a 41-year-old woman who presented with a right forearm melanoma that was metastatic to both the epitrochlear and axillary lymph nodes. She underwent wide excision of the primary lesion as well as epitrochlear and axillary nodal clearances in the same sitting. Although uncommon, it is prudent to search for the presence of sentinel lymph nodes in the epitrochlear region although uncommon, and where positive, a completion axillary clearance should be undertaken at the same time as the epitrochlear clearance. Failure to detect the presence of interval lymph nodes along the melanoma spread pathways may be a cause of tumour recurrence.

BACKGROUND

The presence of lymph node metastasis remains one of the single most important prognostic indicators in patients with melanomas.^{1,2} Common sites of involvement include the axillary nodes in upper limb and truncal melanomas, inguinal nodes in lower limb melanomas and cervical nodes in head and neck melanomas. Although rare, melanomas of the distal upper extremities have the potential to metastasise to the epitrochlear nodal basin with reported rates varying from 3% to 20%.³

In this report, we describe a rare case of primary cutaneous melanoma of the distal upper extremity with metastatic spread to both the epitrochlear and axillary nodal basins.

CASE PRESENTATION

Our patient is a 41-year-old Chinese woman who first presented to us in November 2016 with a right forearm mole of 10 years duration which had been gradually increasing in size over the past 6 months. She was otherwise premorbidly well with no significant medical or surgical history of note. On examination, there was a 20×20 mm pigmented lesion on her right forearm with no obvious palpable upper arm or axillary lymph nodes.

INVESTIGATIONS

Prior to her presentation at our institution, a shave biopsy of the lesion was performed in the referring

institution and histological examination revealed an ulcerated melanoma with adjacent intraepidermal component, Breslow thickness of 0.5 mm, Clark level III and mitotic rate of 4 per 10 high-power field. A positron emission tomography (PET) scan was performed to rule out occult metastases in view of high risk histological features, and it showed enlarged fludeoxyglucose (FDG) avid right epitrochlear and subpectoral lymph nodes measuring 11×6 mm (figure 1) and 10×12 mm (figure 2), respectively, which were suspicious for nodal involvement. There was also an unenlarged but FDG avid left axillary lymph node measuring 7 mm in size (figure 3).

Ultrasound (US) was then performed which showed a right epitrochlear lobulated nodule with irregular margins, a right subpectoral solid rounded nodule which was homogeneously hypoechoic with loss of fatty hilum and mild internal vascularity, as well as a left axillary ovoid nodule with a thickened and irregular cortex. All three nodules displayed ultrasonic features suspicious for nodal involvement and corresponded with those seen on PET scan.

Fine needle aspiration cytology (FNAC) was performed for all three nodes under US guidance and while the right epitrochlear and subpectoral nodes were positive for metastatic melanoma, the left axillary node yielded inconclusive results. She then went on to have a CT-guided hookwire localisation excision biopsy of the left axillary lymph node which turned out to be negative for metastatic involvement.

TREATMENT

As the extent of disease was limited to the right arm only, she was hence counselled and underwent a wide excision of the primary forearm lesion with epitrochlear and axillary nodal clearance in the same sitting. Due to the small size and the unfamiliar territory of the right epitrochlear lymph node, she was initially planned for CT-guided hookwire localisation of the lymph node prior to surgery to ensure complete and en bloc resection intraoperatively. However, when CT imaging was performed in preparation for hookwire localisation, it was noted that the lymph node had doubled in size to 18×19 mm during the interval of 7 weeks (figure 4), presumably related to reactive changes following FNAC and could now be easily palpable and assessed clinically. Hence,

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Figure 1 Positron emission tomography scan demonstrating an enlarged and fludeoxyglucose avid right epitrochlear lymph node measuring 11×6 mm in size (arrow).

there was no clinical indication for any additional procedures prior to resection.

Given the presence of ipsilateral nodal disease and the inaccuracy of shave biopsy in determining the actual Breslow thickness of the primary lesion, decision was made to proceed with wide local excision with maximal gross margins of 2 cm. As a result of the large defect and its location on the forearm, a split skin graft harvested from the left lateral thigh was utilised for wound coverage (figure 5).

OUTCOME AND FOLLOW-UP

Her postoperative recovery was unremarkable and she was discharged well 2 days later with both an epitrochlear and an axillary drain in situ. The epitrochlear drain was subsequently removed on the sixth postoperative day and the axillary drain removed on the ninth postoperative day on review in our outpatient clinic.

Histological examination of the resected specimens revealed Stage 3B disease with metastatic involvement in one out of 14 axillary lymph nodes with focal extracapsular extension. The epitrochlear clearance specimen yielded only one lymph node which was positive for metastatic involvement as well. On the other hand, the wide excision specimen composed mainly dermal scar tissue and melanophages with no residual melanoma seen.

She declined adjuvant therapy after extensive discussion with the medical oncologist and decision was made for expectant management with close surveillance at 4-monthly intervals.

The first surveillance CT imaging of the brain, thorax, abdomen and pelvis has since been performed for her at 4 months postoperatively which did not reveal any disease recurrence. She was last reviewed in our outpatient clinic 5 months postoperatively and has recovered well. Repeat surveillance imaging has been scheduled for her as planned.

Figure 2 Positron emission tomography scan demonstrating an enlarged and fludeoxyglucose avid right subpectoral lymph node measuring 10×12 mm in size (arrow).

Figure 3 Positron emission tomography scan demonstrating an unenlarged but fludeoxyglucose avid left axillary lymph node (arrow), indeterminate for nodal involvement.

DISCUSSION

Epitrochlear lymph node dissection

The superficial lymphatic channels in the distal upper extremities follow the course of either the basilic vein or the cephalic vein. The medial superficial lymphatic system follows the basilic vein to pass through the deep fascia in the mid arm after which they join the deep lymphatic system running with

Figure 4 Plain CT demonstrating an increase in size of the right epitrochlear lymph node (arrow), presumably related to reactive changes post-fine needle aspiration cytology.

Figure 5 Clinical photograph showing the primary forearm lesion as well as the extent of wide excision performed.

the brachial artery. The lateral superficial lymphatic system follows the cephalic vein to pass up the forearm and arm. The epitrochlear and deltopectoral regions are the major locations for lymph nodes of the distal upper extremities.⁴

The epitrochlear nodal basin is located 5 cm above the medial humeral epicondyle, in the subcutaneous connective tissue lying just superficial to the biceps fascia. Its boundaries are the medial head of the triceps, the short head of the biceps and the medial epicondyle. It usually contains only one or two lymph nodes, although occasionally up to four lymph nodes have been detected as well.^{3 5}

After induction of general anaesthesia, the patient is positioned supine with the arm extended. A curvilinear incision is undertaken 5 cm above the medial epicondyle and extending down towards the antecubital fossa (figure 6). Skin flaps are raised and dissection is carried down to the fascia of the biceps. The basilic vein is identified and preserved. The neurovascular bundle containing the brachial artery and median nerve lie deep to the biceps and can be easily palpated and identified. Dissection is then continued within the boundaries of the epitrochlear nodal basin as mentioned above. At the end of the operation, haemostasis is secured, after which the fascia

Figure 6 Clinical photograph showing the enlarged right epitrochlear lymph node as well as the curvilinear surgical incision undertaken to access the nodal basin intraoperatively.

is then approximated and the wound closed over a negative suction drain.^{6–8}

Discussion

In most cases, the epitrochlear lymph nodes drain the last three fingers and the medial aspect of the hand while the rest of the limb drains directly into the axillary lymph nodes. Despite this, there is often extensive anastomosis between the lymphatic channels of the upper limb and as a result, the drainage basins may differ widely among individuals. Hence, the location of the primary lesion cannot accurately predict the presence of epitrochlear nodal involvement.^{5 9}

Epitrochlear nodal involvement from cutaneous melanoma of the distal upper extremities is uncommon and occurs in a small minority of patients. The available literature is limited and reported incidences vary widely. Smith *et al*⁹ reported epitrochlear nodal involvement in 3% (7/240) of patients with cutaneous melanomas of the upper extremities. However, when the analysis is confined to those patients with primary lesions of the forearm and hand located within 5 cm of the elbow or on the ulnar aspect, the proportion increases significantly to 18% (7/39).

In another study of 74 patients with primary cutaneous melanomas of the forearm and hand, DasGupta and McNeer¹⁰ found neither clinical nor histological involvement of the epitrochlear nodal basin in the 21 patients subjected to epitrochlear lymphadenectomy.

In primary cutaneous melanoma, there is a particular subtype of nodal metastasis known as 'interval' lymphadenopathies which includes the epitrochlear nodal basin. They are postulated to be an 'in transit' target as tumour cells spread from primary lesions usually located below the elbow. Therefore, it is prudent to recognise the presence of these lymph nodes and its potential for nodal involvement as failure to do so may result in relapse.⁵ Kidner *et al*³ reported nodal involvement in 15.8% (6/38) of patients with primary melanomas of the forearm and hand draining to the epitrochlear basin.

In the performance of a sentinel lymph node biopsy (SLNB), it is important to note that using a blue dye alone without preoperative lymphoscintigraphy and making an immediate incision at the axilla may result in missing out a possible sentinel node at the epitrochlear region. In the identification of 'interval' lymph nodes, Thompson *et al*¹¹ highlighted the importance of routine preoperative lymphoscintigraphy in order not to miss those sentinel lymph nodes that may be located outside the usual draining basins. Hence, SLNB is best performed with a preoperative lymphoscintigraphy and gamma detector with or without using blue dye. Alternatively, a palpable node at any site should preclude the need for a SLNB if an FNAC yields a positive result, as in our patient.

In a study conducted by Hunt *et al*,¹² epitrochlear lymph node metastases occurred in only 2.4% (2/83) of patients with upper extremity melanoma with spread to the axillary nodal basin. In contrast, concurrent axillary nodal involvement occurred in 50% (3/6) of patients who underwent elective axillary clearance at the time of surgery for epitrochlear nodal disease. Hence, for an upper extremity melanoma with proven axillary nodal involvement, routine epitrochlear clearance is not required.¹² In contrast, whenever there is proven epitrochlear nodal involvement, a completion axillary clearance should always be undertaken.^{3 9 12}

Learning points

- ▶ Although rare, upper extremity melanomas have the potential to metastasise to the epitrochlear nodal basin. Reported incidences vary widely and available literature is limited.
- ▶ There is often extensive anastomosis between the lymphatic channels of the upper limb and as a result, the drainage basins may differ widely among individuals. Hence, the location of the primary lesion cannot accurately predict the presence of nodal involvement.
- ▶ It is important to recognise the presence of interval or in-transit lymph nodes along the melanoma spread pathways and failure to do so may result in tumour relapse.
- ▶ Sentinel lymph node biopsy is best performed with a preoperative lymphoscintigraphy and gamma detector with or without using blue dye. However, the presence of a clinically palpable and positive node should preclude this need.
- ▶ In an upper extremity melanoma with proven axillary nodal involvement, routine epitrochlear clearance is not required. In contrast, whenever there is proven epitrochlear nodal involvement, a completion axillary clearance should always be undertaken.

Contributors SYP collected and interpreted the data and wrote the manuscript including the discussion and implications of the collected data. MT designed the study concept and contributed to the discussion, provided conceptual advice and supervised as well as edited the manuscript. Both authors approved the final version of the manuscript to be published.

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