Malignant melanoma metastasis to the sentinel node in the popliteal fossa

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SUMMARY. Malignant melanoma metastasis to regional nodes is a well-recognised clinical event. Increasingly, sentinel lymph-node biopsy is being advocated for diagnostic and prognostic purposes. The lymphatic spread of tumour from the lateral aspect of the lower leg and foot is classically described as draining directly to the groin. We discuss the role of lymphoscintigraphy and popliteal dissection with reference to a recent case of a patient with a malignant melanoma at the level of the lateral malleolus that was shown to drain directly to a sentinel node in the popliteal fossa.

Keywords: popliteal fossa, lymphogram, lymphoscintigraphy, malignant melanoma.

Malignant melanoma is a skin cancer that is increasing in prevalence throughout the world. Unlike other skin cancers, malignant melanomas are not confined to sun-exposed areas. Melanoma comes from the Greek word ‘melanos’, meaning black. The sinister correlation with black is warranted, as the natural history of malignant melanoma can be aggressive and the response to conventional treatment unpredictable.

Effective treatment of malignant melanoma involves early and wide excision of the skin lesion. Prompt referral can be achieved by increasing patient awareness of skin lesions and improving the referral patterns between General Practice and the relevant skin tumour specialist. Chemotherapy has some value in certain clinical situations, but does not form part of the treatment of the primary tumour.

In recent years, sentinel lymph-node biopsy has been advocated as a diagnostic and prognostic indicator for a number of tumours, including malignant melanoma. By definition, the first site of drainage of a lesion is the sentinel node. Whilst spread from a lower-limb malignant melanoma is common, reports of positive popliteal fossa nodes are rare, and popliteal dissection is rarer still.

We present the case of a patient with a malignant melanoma on the lateral aspect of her left ankle, who had a positive popliteal sentinel node metastasis and underwent a popliteal lymph-node dissection.

Case report

A 59-year-old female presented to her General Practitioner with a 3 month history of a lesion above her lateral malleolus that was increasing in size, crusting over and had bled once. An incision biopsy confirmed the presence of a malignant melanoma, 1.1 mm thick, Clarke’s level III.

When seen by the senior author 10 days later, the patient was noted to be fair skinned, with no history of excessive sun exposure and no family history of skin cancer. Interestingly, she mentioned that, as a child, her family had once counted 109 moles on her arms and torso while bored at camp. The day before surgery, lymphoscintigraphy showed two channels of drainage into the popliteal fossa, involving four nodes, and further delayed uptake in the groin (Fig. 1).

Figure 1—Lymphoscintigraphy: uptake from injection at the tumour site on the lateral malleolus is shown to drain primarily to a number of nodes in the popliteal fossa.

Prior to excising the primary tumour with a 2 cm margin, 1 ml of Patent Blue V (Guerbet, France) was injected intradermally around the primary site (Fig. 2). After excision of the malignant melanoma from the lateral aspect of the ankle, the defect was covered with a split-skin graft. At the same time, using a combination of a gamma probe and the highlighted lymphatics obtained from the Patent Blue dye, we performed a sentinel lymph-node biopsy of the popliteal fossa (Fig. 3). Although histology reported that the primary site was clear of tumour at all margins, malignant melanoma was found in the sentinel node from the popliteal fossa. Therefore, radical popliteal fossa dissection was performed, as described by Karakousis, with meticulous dissection of all tissues from around the popliteal vessels and major nerve trunks to the lower leg (Fig. 4). Examination of the specimen showed no evidence of malignant melanoma in the nine lymph nodes obtained.

The patient made an uneventful recovery on the ward, and at review in the outpatients’ clinic 4 weeks later all her wounds had settled. There were no local or systemic signs of recurrence until her 6 month follow-up, when signs of local recurrence and lymphoedema were seen in the lower leg. An oncological opinion was sought for local treatment options.

Discussion

Classical descriptions in textbooks describe lymphatic drainage from the lateral malleolus along the lateral...
of small volumes of radioactive tracer around the site of a
lesion or biopsy, lymphoscintigraphy, has been shown to
produce more accurate lymphatic drainage patterns.
Although there is variability between patients injected in
the same site, the reproducibility of the same pathways in
the same patient is said to be high.4
Previous authors have suggested that positive popliteal
nodes will only be seen if injections are made inferior
and posterior to the lateral malleolus. However,
Thompson et al proved that the drainage is variable and
showed that positive nodes in the popliteal fossa can
occur from a lesion anywhere below the knee.4 The find-
ing in our case supports this view.
Positive nodes in the popliteal fossa are rarely found
clinically, with a paucity of reports in the literature. This
could be due to a number of factors, including the diffi-
culty in examining the popliteal fossa, where the nodes
lie deep to the fascia. Also, there is a tendency to ignore
the popliteal fossa and to examine the tumour’s primary
site in the lower limb before going straight to the groin.
Whether these nodes inhibit the spread of tumour,
compared with other lymphatic beds such as the groin, is
debatable. Approximately 20% of all melanomas metas-
tasise, so one would expect a corresponding pick up of
popliteal lymph nodes on lymphoscintigraphy. However,
a study of lymphoscintigrams, from the Sydney cancer
database, of malignant melanomas at or below the knee
showed a significantly lower number of positive nodes in
the popliteal fossa than expected.4
Once a node in the popliteal fossa has shown up on
lymphoscintigraphy, a sentinel lymph-node biopsy is
indicated. In confirming the presence of tumour, a combi-
nation of routine histology and reverse transcription poly-
merase chain reaction (RT-PCR) for tyrosinase been
shown to be more accurate than histology alone.5 If this
specimen is positive for malignant melanoma, a popliteal
fossa dissection is indicated.
However, what is not clear from the literature is that
many clinicians still perform elective lymph-node dissec-
tion of the groin at the same time as wider excision of the
primary.6 The groin may be a primary or secondary
drainage site, as assessed by lymphoscintigraphy. If it is
the primary drainage site, the operation could be con-
strued as diagnostic and prophylactic. However, where
there is more lymphatic drainage than was first expected
from the whole of the lower leg into the popliteal fossa,
there seems no reason for dissection of the popliteal fossa
not to be carried out more routinely.
The indications for performing both popliteal fossa
and groin dissection based on lymphoscintigraphy are
more difficult to promote. This is because there will be
an increased morbidity associated with this procedure,
even with positive evidence of spread there is no
effective treatment that has been shown to improve
survival.

References
the use of sentinel lymph node biopsy and adjuvant high-dose
interferon alfa-2b in melanoma. Arch Dermatol 2001; 137:
1217–24.
Giant basal cell carcinoma affecting the lower abdominal, genital and bilateral inguinal regions

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SUMMARY. We describe a giant basal cell carcinoma, measuring 40 cm x 20 cm, of the lower abdominal, genital and bilateral inguinal regions. The rectus abdominis muscle and the adductor magnus muscle were exposed centrally, and the penis and scrotum were completely destroyed. Reconstruction was performed with a fillet thigh flap, and an excellent result was obtained 1 year after surgery. © 2002 The British Association of Plastic Surgeons

Keywords: giant basal cell carcinoma, fillet thigh flap, inguinal region.

Basal cell carcinoma (BCC) is the most common cutaneous malignancy. BCC predominantly occurs on sun-exposed and sun-damaged skin, and BCC affecting the lower abdomen is uncommon. Only 10% of all BCCs are located on the trunk.

We report the case of a 63-year-old patient who presented with a BCC measuring 40 cm x 20 cm. This is, to our knowledge, the first report of a giant BCC in the lower abdominal, genital and bilateral inguinal regions.

Case report

A 63-year-old man visited our clinic, and reported noticing a black macula, 1 cm in diameter, in the right inguinal region about 8 years previously. The lesion grew rapidly, ulcerated and started to weep serous fluid. The patient noticed a swelling on the right leg accompanied by gait disturbance. Ulceration occurred on the penile shaft and spread over the penis.

On admission, a large well-demarcated ulcerated lesion, measuring 40 cm x 20 cm, was seen in the lower abdominal, genital and bilateral inguinal regions. The rectus abdominis muscle and the adductor magnus muscle were exposed centrally, and the penis and scrotum were completely destroyed.

Histology at low magnification demonstrated the invasion of irregularly shaped tumour islets into the dermis. Fibrosis was also observed around the tumour. At higher magnification, the tumour was composed of basaloid cells with peripherally situated nuclei. The cells were arranged in a palisading pattern, and there was evidence of mitotic activity.

On physical examination, the external iliac lymph nodes were enlarged and palpable. Severe lymphoedema was observed in both legs, and was more severe on the right. The patient was experiencing severe pain in the right leg. Other physical, radiological and laboratory findings were within normal limits, except for iron-deficiency anaemia and low serum albumin.

A CT scan revealed tumour invasion into the femoral vessels bilaterally. There was severe stenosis of the right external iliac and femoral vessels, together with complete occlusion of the femoral artery in the right inguinal region. A biopsy from the margin of the lesion confirmed the diagnosis of an infiltrative BCC. Surgery consisted of massive tumour resection and reconstruction with a large fillet thigh flap. Excision margins were 2 cm from the macroscopic border of the tumour. The full thickness of the abdominal wall was resected, together with the pubic symphysis, corpus and right hip joint. Urethrorrhaphy was performed and a vesicocutaneous fistula was constructed. The affected segments of the left femoral artery and vein were resected, and an iliopopliteal bypass was constructed using the right popliteal vessel as a graft. The right femoral vessels were ligated proximal to the tumour and resected. A large myocutaneous flap (fillet flap), including all the soft tissue of the thigh, was prepared after filleting the femur and used to cover the large soft-tissue defect.