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LETTER TO THE EDITOR

Warthin's tumour, a rare false positive on positron emission tomography in melanoma staging

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To the Editor:

Positron emission tomography (PET) has increased the accuracy of staging in high-risk cutaneous malignant melanoma. 18 flouro-deoxy glucose (FDG) PET works by detecting uptake in cells that have a high glucose utilization, including many forms of cancer. However, clinicians must be aware of the possibility of a false-positive uptake in cells that are benign. We report a case where a histological confirmation of Warthin's tumour as responsible for a volume of positive uptake initially thought to be a metastasis changed treatment intent in a patient with nodal melanoma.

Case report

A 73-year-old Caucasian male presented with left-sided parotid lymphadenopathy seven months after removal of a nodular malignant melanoma of the left cheek. The primary lesion was a non-ulcerated 3.9 mm thick Clark level IV melanoma. Wide local excision revealed no further disease. Staging at the time of lymphadenopathy including an 18 flouro-deoxy glucose positron emission tomography scan showed a left parotid node but also a right cervical hot spot (see Figure 1A–C). He was staged as having distant metastatic disease. Left superficial parotidectomy on histopathology revealed a lymph node replaced with tumour and with extracapsular extension and he was referred to a specialist melanoma unit for further care. The isolated spread of the disease to the right neck was considered unusual and a core biopsy under imaging control was done. Histopathology showed macroscopically 3 tan cores of tissue 3, 5 and 7 mm. On microscopy, there was lymphoid tissue with a small amount of salivary gland tissue. Within the lymphoid tissue are large tortuous glandular spaces filled with eosinophilic proteinaceous material and lined by benign, bi-layered apocrine-type epithelium, features typical of Warthin's tumour. There was no evidence of malignancy (see Figure 2A and B). The patient was restaged as having loco-regional disease and further treatment was given with radical intent.

Comment

PET staging of melanoma has been of enormous benefit. Swetter et al. [1] compared PET with CT in primary and recurrent disease prospectively in 53 melanoma patients. PET demonstrated 84% sensitivity (95% confidence interval [CI] 78% to 89%) and 97% specificity (95% CI 91% to 99%), whereas CT showed 58% sensitivity (95% CI 49% to 66%) and 70% specificity (95% CI 51% to 84%). They concluded that PET should be considered the primary staging study for recurrent disease. Stas et al. [2] support this finding in their study of 83 melanoma patients. PET scanning truly upstaged in 10 cases, truly downstaged in 24 cases, and depicted more lesions within the same stage of disease in 15 cases. However, they state that "PET spots may represent false-positive images, which would falsely upgrade a patient to an incurable state".

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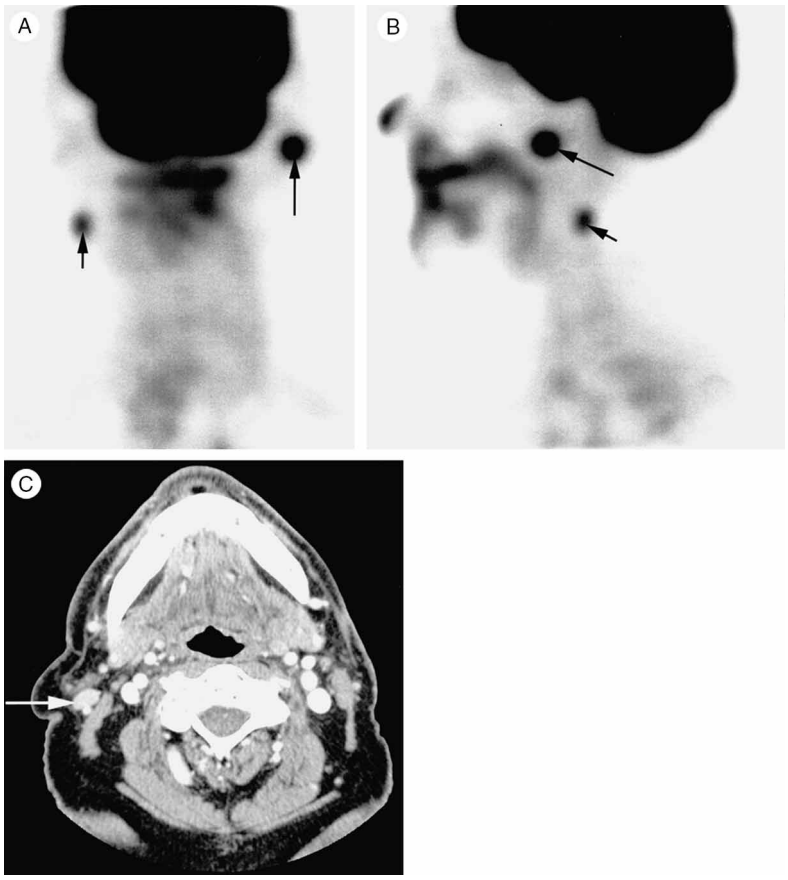

Figure 1. Warthin's tumour on right side of neck (short arrow), parotid lymph node positive for melanoma on the left (long arrow). (A) PET scan anterior view; (B) lateral view; (C) correlative CT scan post-surgery prior to biopsy. Solitary white arrow shows volume that was hot on PET scan, histopathology of this showing Warthin's tumour.

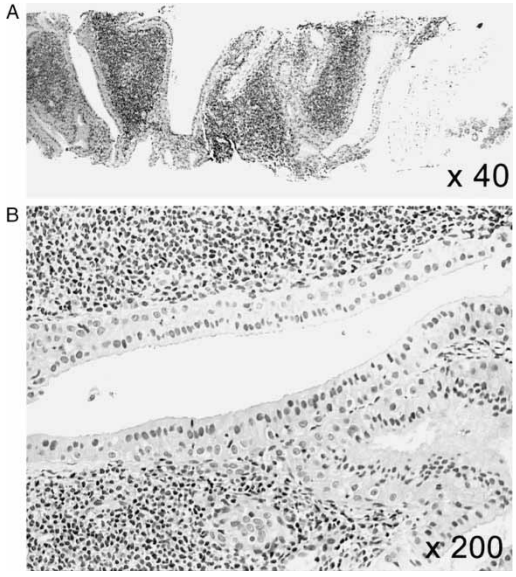

Figure 2. Histopathology of Warthin's tumour biopsy. Microscopy shows lymphoid tissue with a small amount of salivary gland tissue. Within the lymphoid tissue are large tortuous glandular spaces filled with eosinophilic proteinaceous material and lined by benign, bilayered apocrine-type epithelium, features typical of Warthin's tumour. There is no evidence of malignancy. Magnification of (A) $\times 40$, (B) $\times 200$.

Warthin's tumour, or adenolymphoma, is a benign salivary gland tumour arising almost exclusively in the parotid glands. There is a definite male predominance and usual presentation is over the age of 50. It is multifocal in a quarter of patients. It is thought that the tumour results from neoplastic transformation of heterotopic salivary gland tissue in lymph nodes. Microscopically, the tumour is composed of glandular spaces, often cystic with papillary projections, lined by bilayered eosinophilic columnar epithelium. The epithelium has a prominent inner layer of oncocytes overlying an outer layer of basal cells, sharply demarcated from a prominent lymphoid stroma [3]. Oncocytes are benign epithelial cells whose granular cytoplasm is swollen with mitochondria [4]. These intracellular organelles are concerned with the production of energy from the oxidation of glucose. Holder et al. [5] in study of PET in 76 melanoma patients found that a Warthin's tumour of the parotid caused a false positive. There were eight other false positives, one carcinoma, two other benign tumours and five inflammatory conditions.

In our patient, confirmatory biopsy led to down-staging and change of treatment intent, confirming the conclusion of Stas et al. [2].

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