

## Periarticular FDG Uptake on PET/CT in Malignant Melanoma—Metastatic or Misleading?

A 74-year-old male with newly diagnosed melanoma of the right mastoid region, underwent resection of the lesion followed by F-18 fluoro-deoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) for staging. Figure 1 demonstrates a whole body maximal intensity projection image while Figures 2 and 3 show cross-sectional images through the elbows and wrists.

What is the diagnosis?

- A. Metastatic melanoma
- B. Rheumatoid arthritis
- C. Myositis ossificans
- D. Tophaceous gout
- E. Cutaneous T-cell lymphoma

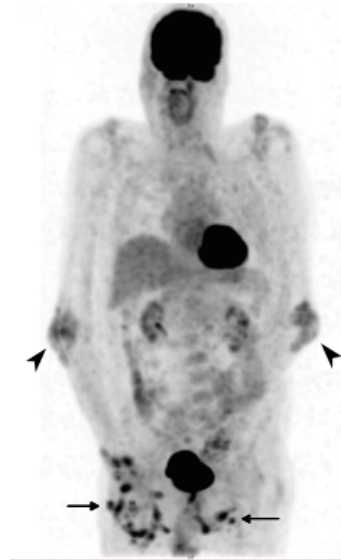


Fig. 1. FDG PET maximal intensity projection image shows moderately intense metabolic activity in the elbows (arrowheads), hands and wrists (arrows) bilaterally.

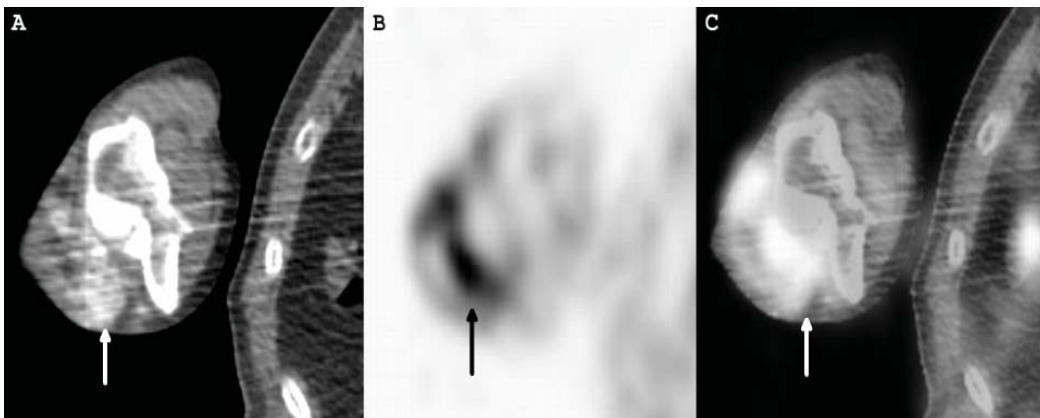


Fig. 2. Axial images through the elbow. The CT (A) demonstrates partially calcified soft tissue nodules over the dorsal aspect of the left elbow (arrow) with moderate FDG uptake on the PET image (B, arrow). Fusion PET/CT image (C) confirms that the metabolic activity is within the soft tissue nodule (arrow).

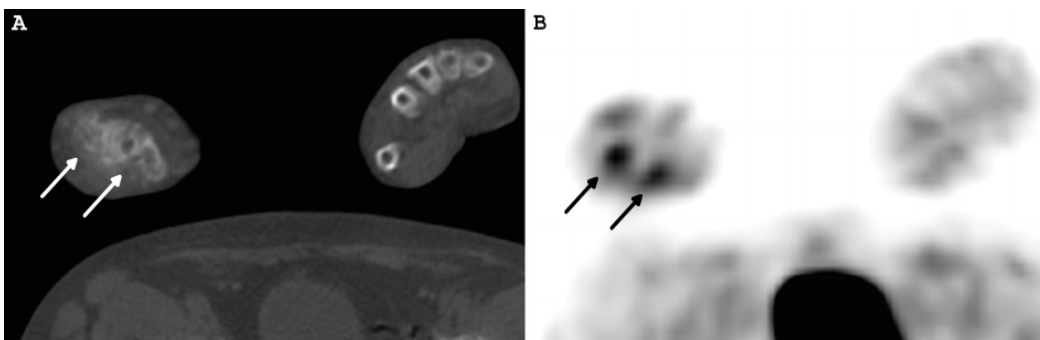


Fig. 3. Axial images through the wrists demonstrate bony erosions on the right on CT (A, arrows), corresponding to sites of increased FDG activity on PET (B, arrows).

Answer: D

The findings are best explained by tophaceous gout. Subsequent questioning of the patient confirmed that he did indeed have long-standing gout.

### Discussion

Gout is typically seen in middle-aged males, and is the most common inflammatory joint disease in males over the age of 40.<sup>1</sup> It is a biochemical derangement with elevated levels of uric acid, resulting in deposition of sodium urate crystals in the soft tissue and joints. The crystals provoke an acute inflammatory response (acute gouty arthritis), which is responsible for the increased metabolic activity on FDG PET.

Gout generally has an oligoarticular and asymmetric distribution. It usually starts in the small joints of the lower limbs, classically the 1st metatarso-phalangeal joint. However, polyarticular involvement is common in the later stages, and can involve any musculoskeletal site. Erosions occur only in longstanding disease, and are classically juxta-articular and well-circumscribed with sclerotic margins, resulting in a “punched-out” appearance with “overhanging edges”.<sup>2</sup>

The diagnosis is based on clinical history, biochemical profile, and plain radiographs, and advanced imaging such as CT, magnetic resonance imaging (MRI) or nuclear medicine studies are rarely required. Nonetheless, given the widespread prevalence of gout in the general population, these patients may be incidentally imaged. The case reports of FDG PET in gout to date have described soft tissue hypermetabolism, although this is the first case which includes correlative CT to show that the uptake lies with the soft tissue tophi.<sup>3</sup> Given the increasing usage of PET, it is conceivable that such lesions may be mistaken for metastatic disease, especially if the primary tumour is a soft tissue lesion such as a sarcoma or melanoma. Recognition of the imaging findings, in particular the asymmetric juxtaarticular distribution, and the calcified soft tissue tophi and bony erosions on any correlative CT scan, should prompt one to consider the diagnosis of gout and to obtain additional clinical history to confirm the diagnosis.

### REFERENCES

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