

¹⁸F-Fluorocholine integrated PET/MRI for the initial staging of prostate cancer

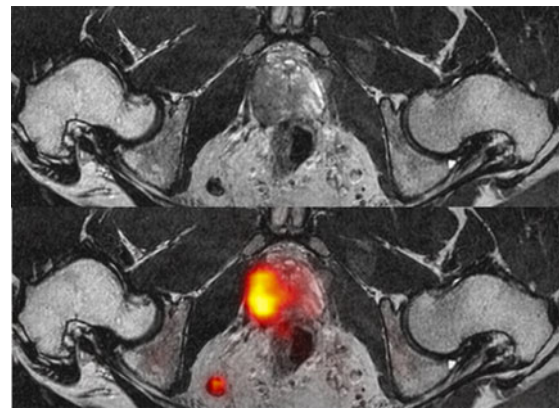
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A 47-year-old man with an elevated prostate-specific antigen (PSA) level of 11.6 µg/l underwent transrectal biopsies confirming a Gleason 9 prostatic adenocarcinoma. ¹⁸F-Fluorocholine integrated positron emission tomography (PET)/MRI revealed a hypermetabolic lesion (maximum standardized uptake value: 9.3) in the right posterolateral peripheral zone, corresponding to a hyposignal in MRI T2-weighted images (reoriented oblique axial slices). A 9-mm right internal iliac lymph node was noted on MRI, which was very ¹⁸F-fluorocholine avid. Pathological results from prostatectomy and pelvic lymph node dissection confirmed the presence of neoplasia in both the same prostate region and lymph node. All other resected lymph nodes were negative.

Integrated PET/MRI is receiving growing interest in oncology, particularly for imaging of head and neck, breast and prostate cancers, where CT has some limitations [1]. During the last decade, ¹⁸F-fluorocholine has been studied as a promising tracer in patients with newly diagnosed prostate cancer and in patients with rising PSA after initial treatment [2]. MRI allows excellent anatomical localization of ¹⁸F-fluorocholine abnormal prostatic uptake, and extracapsular extension is easily assessed on the prostate MRI specific acquisitions obtained the same day.

Classically, 1 cm has been considered the cutoff size between benign and malignant lymph nodes [3]. However, PET/CT imaging has showed that this cutoff has some



limitations [4]. Some infracentimetric lymph nodes that look benign on CT or MRI may appear hypermetabolic on PET and thus become suspicious.

With the growing concerns about the ionizing radiations in medical imaging [5], integrated PET/MRI has the potential to become the modality of choice for prostate cancer imaging.

Conflicts of interest None.

References

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