Imaging for Prostate Cancer Recurrence.

Maurer T, Eiber M, Fanti S, Budäus L, Panebianco V.

Abstract

CONTEXT: Correct identification of metastatic sites in recurrent prostate cancer (PCa) is of crucial importance because it leads to further treatment decisions.

OBJECTIVE: To provide an overview on current imaging procedures and their performance in recurrent PCa.

EVIDENCE ACQUISITION: Medline search via PubMed was performed with the keywords imaging, recurrent, and prostate cancer as well as more detailed searches including the keywords bone scan, bone scintigraphy, computed tomography, magnetic resonance imaging, positron emission tomography, PET, choline, FDG, prostate-specific membrane antigen, and PSMA, with emphasis on recent literature from 2010 to the present. Non-English published literature was excluded. Abstracts and full-text articles were reviewed and assessed for relevant content.

EVIDENCE SYNTHESIS: In diagnostic imaging and particularly with newer technologies like positron emission tomography (PET), a profound lack of prospectively designed studies in recurrent PCa has to be noted. In most studies histologic validation has only been performed in a subset of patient cohorts. Heterogeneity of included patient cohorts, lack of standardized assessment, as well as diverging end points, hamper systematic comparison of different image modalities. Thus evidence for currently used imaging in recurrent PCa is only presented descriptively.

CONCLUSIONS: Computed tomography and magnetic resonance imaging (MRI) as well as bone scintigraphy still represent the standard imaging for recurrent PCa; however, particularly for detection of local recurrence, multiparametric MRI is a valuable imaging modality. PET using choline and particularly tracers against prostate-specific membrane antigen might improve visualization of metastatic lesions. These findings need to be validated in prospective trials.

PATIENT SUMMARY: Imaging of recurrent prostate cancer (PCa) is important to guide further treatment. Computed tomography, magnetic resonance imaging, and bone scintigraphy represent the current standard. Positron emission tomography, especially with cancer-specific tracers, might improve imaging of recurrent PCa in the future.
KEYWORDS: Bone scintigraphy; CT; Choline; MRI; PET; PSMA; Prostate cancer

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