Prostate Cancer on Computed Tomography: Comparison with Multi-Parametric MRI & Pathology

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Case 1

75-year-old male on active surveillance for prostate cancer secondary to rising PSA levels with most recent PSA measurement of 14.2 ng/ml
(a) Venous phase post-contrast CT imaging for colorectal carcinoma follow-up, 4 months prior to multi-parametric MRI shows a circumscribed mass-like area of brisk enhancement along the left posterolateral prostate gland (arrow),
(b) Multi-parametric MRI including post-contrast, T2, ADC, DWI, and dynamic contrast enhancement (DCE) sequences show a focal area of enhancement, low-T2 signal, restricted diffusion, and intense vascularity corresponding to the CT findings and consistent with prostate carcinoma, Gleason score 3+4 (arrows). Dynamic enhancement curve demonstrates brisk wash in and wash out,
(c) 3D reconstructed image of the prostate using software for biopsy planning.
Case 2

56-year-old male with PSA 7.5 ng/ml. Biopsy revealed Gleason 4+5 prostate adenocarcinoma
Venous phase post-contrast CT of the pelvis performed concurrently to evaluate for metastatic shows a focal area of contrast enhancement in the mid-gland of the prostate at the 4-6 o'clock position (arrow),
Multi-parametric MRI including post-contrast, T2-weighted, and DCE sequences demonstrate a corresponding region of contrast enhancement, low-T2 signal, and intense vascularity with a diameter of approximately 0.8cm (arrows) at the area of biopsy-proven prostate adenocarcinoma (Gleason 4+5) Dynamic-enhancement curve shows wash in and wash out,
3D reconstructed image of the prostate with color created using the Profuse software (Eigen, Grass Valley, California) for biopsy planning.
Case 3

73-year-old male who was referred to our institution for a PSA of 14ng/ml. Subsequent biopsy revealed Gleason score 4+3 prostate adenocarcinoma. The patient ultimately underwent a radical prostatectomy, with specimens resulting in an upgrading to Gleason score 4+5.
Venous phase contrast-enhanced CT performed to evaluate a retroperitoneal soft tissue nodule 2 years prior to multi-parametric MRI shows enhancement at the left anterior to left lateral peripheral gland (arrow). This was found to extend from apex to midgland,
MRI

Multi-parametric MRI performed prior to initial prostate biopsy shows a mass-like area of enhancement, low T2-signal, restricted diffusion, and intense vascularity at 12–3 o'clock (arrows) corresponding to the area of tissue-proven prostate adenocarcinoma, 2.7cm at largest diameter, Gleason 4+3 extending from apex to mid gland.
(c) 3D reconstructed image of the prostate with color created using the Profuse software (Eigen, Grass Valley, California) for biopsy planning.
CONCLUSION

Incidental focal areas of mass-like enhancement in the peripheral prostate gland, detected on venous phase contrast-enhanced CT imaging, may correspond to prostate neoplasm. It may thus be prudent to suggest further work-up with PSA levels and perhaps multi-parametric MRI, especially in high-risk patients.
REFERENCES


