

# MRI, Enhanced CT, and FDG PET/CT in Basal Cell Carcinoma of the Prostate

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**Abstract:** Primary basal cell carcinoma of the prostate is a very rare neoplasm with a good prognosis. A 55-year-old man presented with urinary frequency for 2 months. Serum prostate-specific antigen level was normal. T2-weighted MR images showed an inhomogeneously hyperintense tumor in the prostate. Enhanced CT showed heterogeneous enhancement of the tumor. FDG PET/CT showed strong FDG uptake of the tumor with  $SUV_{max}$  of 14.1. Prostate biopsy findings revealed basal cell carcinoma with high proliferation index.

**Key Words:** basal cell carcinoma, prostate cancer, prostate, MRI, CT, FDG, PET/CT

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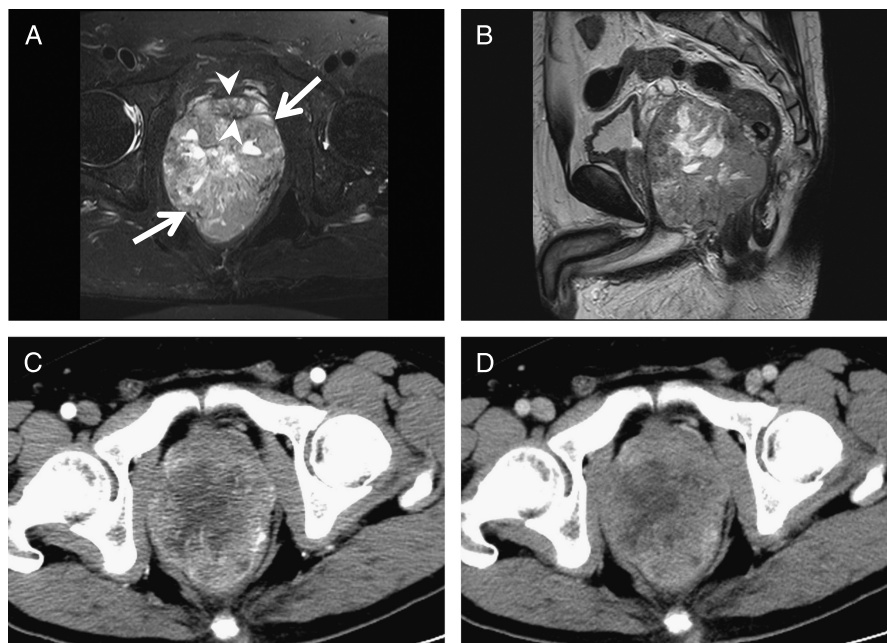
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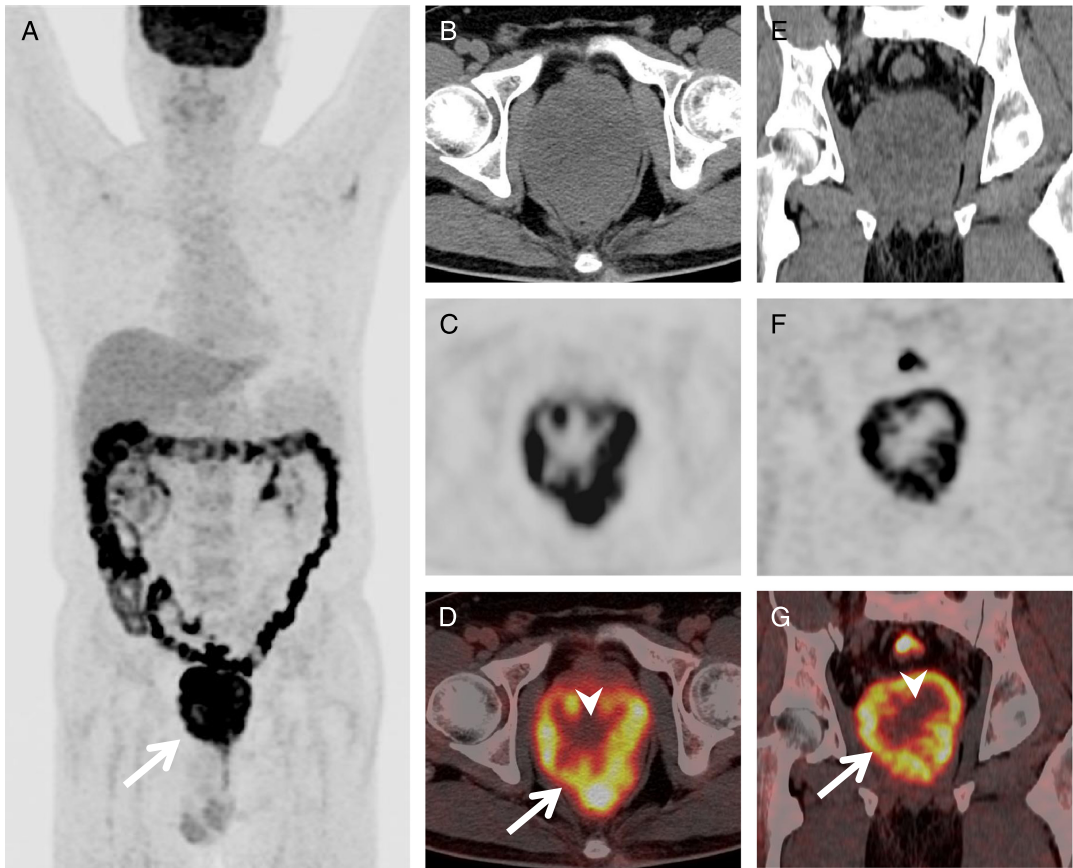
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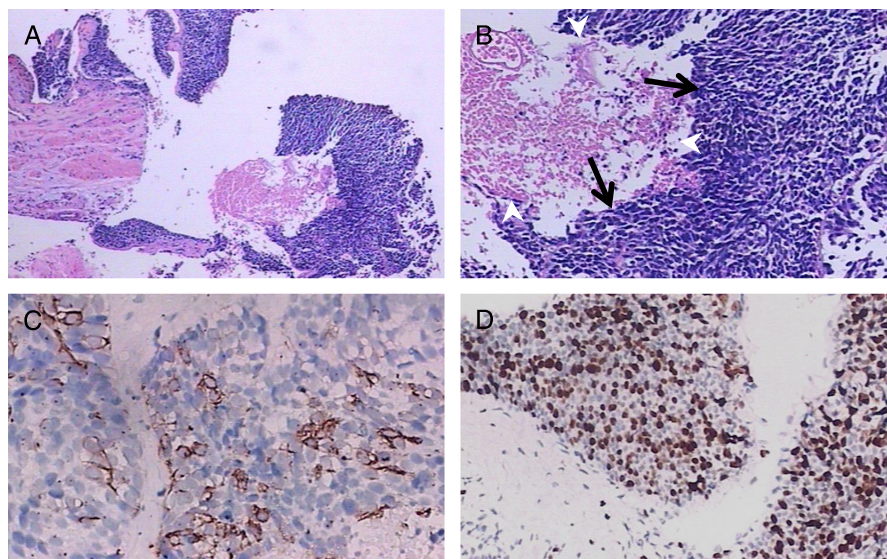
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**FIGURE 1.** A 55-year-old man presented with urinary frequency for 2 months. Serum prostate-specific antigen level was normal. Transverse (A) and sagittal (B) T2-weighted MR images showed a well-circumscribed tumor (arrows) measuring  $8.1 \times 7.7$  cm with inhomogeneous hyperintensity in the prostate. The central necrotic areas showed higher intensity. The normal prostate (arrowheads) was displaced anteriorly. Enhanced CT in the arterial (C) and venous (D) phases showed heterogeneous enhancement of the tumor.



**FIGURE 2.** FDG PET/CT scan (Biograph 64; Siemens, Knoxville, TN) was performed 1 hour after the injection of 370 MBq (10 mCi) of  $^{18}\text{F}$ -FDG with a blood glucose level of 7 mmol/L. Maximum intensity projection PET (A), transverse (B–D), and coronal (E–G) CT (B and E), PET (C and F), and fused (D and G) images showed heterogeneous FDG uptake of the tumor (arrow) with  $\text{SUV}_{\text{max}}$  of 14.1. The central necrotic areas (arrowhead) showed photopenia.



**FIGURE 3.** The patient underwent ultrasound-guided biopsy of the prostate tumor. Photomicrographs (A, hematoxylin-eosin, original magnification  $\times 40$ ; B, hematoxylin-eosin, original magnification  $\times 100$ ) showed nests of tumor cells (arrows) with central necrosis (arrowheads). Immunohistochemical findings revealed positive reactivity for HCK (C, original magnification  $\times 200$ ) and P63. Ki-67 staining (D, original magnification  $\times 100$ ) showed the proliferation index of the tumor cells was more than 50%. These findings were consistent with basal cell carcinoma (BCC) of the prostate. Basal cell carcinoma of the prostate is a very rare variant of prostatic carcinoma.<sup>1,2</sup> Basal cell carcinomas predominantly occur in older men with symptoms of urinary obstruction or prostatism. The serum prostate-specific antigen or prostate-specific acid phosphatase level is usually normal. These tumors have an indolent biological potential with a good prognosis.<sup>1-3</sup> A small subset (about 14%) behaves aggressively with local recurrences and distant metastases.<sup>3</sup> Correct diagnosis is important because of the unique clinical and biological features and the implications for treatment and prognosis. There are only a few publications in the literature regarding the imaging diagnosis.<sup>4-7</sup> Komura et al<sup>7</sup> reported the FDG PET/CT findings in a case of prostatic BCC with lymph node and bony metastases. Both the primary tumor and the metastases showed intense FDG uptake. In contrast to prostate adenocarcinoma, the bony metastases were osteolytic on CT.<sup>7</sup> Although FDG PET does not seem to be a suitable imaging method for evaluating prostate adenocarcinoma,<sup>8,9</sup> it may be useful in the staging of prostate BCC.