Reference

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Imaging of prostate cancer local recurrences: why and how?

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Université de Lyon, Lyon, France
Eur Radiol. 2010; 20: 1254-66.

Objective: Because prostate cancer local recurrences can be efficiently treated by salvage therapies, it becomes critical to detect them early.

Methods: The first alert is the rise of the prostate specific antigen (PSA) level after the post-treatment nadir, which can correspond to a distant recurrence, a local recurrence or both. This so-called biochemical failure (BF) is defined as PSA level > 0.2 ng/ml after radical prostatectomy (RP) and PSA level > nadir + 2 ng/ml after radiotherapy. There is no consensual definition of BF after cryotherapy, high-intensity focused ultrasound (HIFU) ablation or brachytherapy.

Results: Local recurrences after RP are treated by radiotherapy, those after radiotherapy by RP, cryotherapy, brachytherapy or HIFU ablation. Recurrences after cryotherapy or HIFU ablation can be treated by a second session or radiotherapy. Recurrences after brachytherapy are difficult to treat. In patients with BF, MRI can detect local recurrences, whatever the initial treatment was. Dynamic contrast-enhanced MRI seems particularly accurate. The role of spectroscopy remains controversial. Ultrasound-based techniques are less accurate, but this may change with the advent of ultrasonic contrast media.

Conclusion: These recent advances in imaging may improve the outcome of salvage therapies (by improving patient selection and treatment targeting) and should open the way to focal salvage treatments in the near future.

Editorial Comment

The authors should be congratulated for reviewing this important issue on uro-oncology. Important aspects of local recurrence after radical prostatectomy (RP), external-beam radiotherapy (EBRT), HIFU ablation, cryotherapy and brachytherapy are presented and discussed. For each modality of local treatment of prostate cancer, the authors define biochemical failure and discuss treatment options and the role of imaging techniques for the detection of tumor recurrence.

In our experience, dynamic-contrast enhanced MRI is the best modality for the detection of local recurrence after RP. For local recurrence after EBRT our better results are obtained with spectroscopy although dynamic-contrast enhanced MRI can also be useful in most cases. We also prefer to use spectroscopy for the detection of local tumor recurrence after brachytherapy. The quality of dynamic-contrast enhanced MRI stud-

ies in post-brachytherapy glands may be impaired due to the presence of several false-positive results. In our institution we have no experience with MRI for the detection of local tumor recurrence after HIFU ablation or cryotherapy.

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PATHOLOGY

Prostate-specific antigen kinetics during follow-up are an unreliable trigger for intervention in a prostate cancer surveillance program

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Purpose: To assess the predictive ability of prostate-specific antigen (PSA) velocity (PSAV) and doubling time (PSADT) for biopsy progression and adverse pathology at prostatectomy among men with low-risk prostate cancer enrolled on an active-surveillance program.

Methods: We evaluated 290 men who met criteria for active surveillance (ie, PSA density < 0.15 ng/mL/cm(3) and Gleason score < or = 6 with no pattern > or = 4, involving < or = 2 cores with cancer, and < or = 50% involvement of any core by cancer) with two or more serial PSA measurements after diagnosis from 1994 to 2008. Follow-up included twice-yearly digital rectal exam and PSA measurements and yearly surveillance biopsy. Treatment was recommended for biopsy progression (ie, Gleason score > or = 7, or > 2 positive cores, or > 50% core involvement). Sensitivity and specificity of postdiagnostic PSAV and PSADT were explored by using receiver operating characteristic (ROC) analysis.

Results: Overall, 188 (65%) men remained on active surveillance, and 102 (35%) developed biopsy progression at a median follow-up of 2.9 years. PSADT was not significantly associated with subsequent adverse biopsy findings ($P = .83$), and PSAV was marginally significant ($P = .06$). No PSAV or PSADT cut point had both high sensitivity and specificity (area under the curve, 0.61 and 0.59, respectively) for biopsy progression. In those who eventually underwent radical prostatectomy, PSAV ($P = .79$) and PSADT ($P = .87$) were not associated with the presence of unfavorable surgical pathology.

Conclusion: Postdiagnostic PSA kinetics do not reliably predict adverse pathology and should not be used to replace annual surveillance biopsy for monitoring men on active surveillance.

Editorial Comment

This is an important study concluding that postdiagnostic PSA kinetics do not reliably predict adverse pathology and should not be used to replace annual surveillance biopsy for monitoring men on active surveillance. At Johns Hopkins, the criteria for active surveillance are: PSA density < 0.15 ng/mL/cm3, Gleason score $\leq$ 6 with no pattern 4 or 5, involving $\leq$ 2 cores with cancer, and $\leq$ 50% involvement of any core by cancer (1).