What Can We Do to Maximize the Detection Rates of Prostate Cancer?

Introduction and Objective: Since Hodge introduced a revolutionary biopsy technique, “the sextant biopsy”, many investigators have tried to make refinements to increase detection rates of prostate cancer, which was done mainly by increased biopsy cores. This extended biopsy scheme resulted in higher cancer detection rates; however, the reason why we need to biopsy the sites defined by each extended or saturation biopsy protocol has not been shown clearly. Here we show a subzonal cancer incidence-based transrectal biopsy strategy to maximize the detection rates of prostate cancer.
Materials and Methods: From 2000 to 2005, radical prostatectomy with no neoadjuvant therapy was performed in 254 cases in our hospital. Serial whole mount 4 mm-thick sections were reviewed to determine the subzonal incidence of prostate cancer. At the same time, we found 97% of all cases contained cancer lesions in the first two slices from the apex. So, we designed a subzonal cancer incidence-based transrectal biopsy template. In this strategy, biopsies are concentrated in the apex side. From Jan. 2006 to Dec 2011 we prospectively studied the cancer detection rates by this biopsy technique in men with suspicious prostate cancer based on an elevated PSA, digital rectal examination, and/or contrast-enhanced transrectal power Doppler ultrasound.
Results: A total of 2012 consecutive cases were biopsied. Mean patient age was 69. Median PSA was 7.3 ng/ml with a range of 0.6-4195. Prostate cancer was detected in 1167 patients (58.0%). In patients with PSA 0-4, 4-10, 10-20, and >20, cancer was detected 32.7% (48/147), 53.7% (625/1163), 57.3% (235/410), and 88.7% (259/292), respectively. In all cases, positive biopsy rate of each site was well-correlated with subzonal incidence of prostate cancer. In PSA gray zone cases, 25.1% of cancer was diagnosed in the cores other than the sextant regions. This means that the sextant biopsy misses 25% of cancer cases.
Conclusions: Our biopsy strategy based on subzonal cancer incidence increases prostate cancer detection on initial biopsy and minimizes the potential for misdiagnosis and need for repeat biopsy.