Transrectal ultrasound-guided prostate biopsy – is it reliable for Prostate Cancer staging?

Hugo Coelho, Paulo Temido, Alfredo Mota
Urology and Renal Transplantation Department - Centro Hospitalar e Universitário de Coimbra - Portugal

Introduction
Despite its’ shortcomings transrectal ultrasound-guided prostate biopsy remains the gold standard investigation for diagnosing prostate cancer. As new less invasive therapeutic options arise (active surveillance, focal therapy, nerve-sparing RRP) can we trust the biopsy results alone to accurately stage prostate cancer?

Materials and methods
A retrospective study of the patients submitted to radical retropubic prostatectomy (RRP) in the period between January 1st and December 31 of 2013 was performed. The results of the pathological study and previous biopsy were compared regarding Grade, Gleason, side, % of invasion and pT stage. Statistical analysis was performed using IBM® SPSS® Statistics v.22.

Results
118 patients were submitted to RRP in this period. The average age was 63.44 years[43-75]. PSA mean was 11.92 [2-160]. Average time between biopsy and surgery was 3.36 months. The mean size of the prostate was 47 cc.

In the biopsy 25% were right side only, 22% left side and 53 bilateral while after surgery 95% were bilateral. Spearman’s correlation coefficient was 0.178 (p= 0.61).

Biopsy grade was most frequently 2 (66.1%) and 1 (32.1%) while after surgery grade was 2 (82%) and 1 (10.6%). Spearman’s correlation coefficient was 0.376 (p= 0.05).

There was also correlation between higher invasion percentages and higher pT stages. Spearman’s correlation coefficient was 0.489 (p<0.05).

Prostates with size larger than 50cc had a lower correlation coefficient regarding side and Gleason score. With PSA higher than 10 ng/mL Gleason score correlation is higher but not grade or laterality.

Conclusion:
Although there is a high correlation coefficient regarding Gleason score and histological grade ultrasound guided biopsy tends to underestimate the Gleason and grade. A good correlation between percentage of invasion and pT stage exists. There was a weak correlation regarding laterality. Prostate biopsy is more accurate in patients with smaller prostate sizes and higher PSA values. Based on this series, ultrasound guided prostate biopsy alone is not a reliable method for staging prostate cancer, especially when proposing less invasive therapeutic modalities.