Contiguity Index in Positive TRUS Biopsy Zones and Extent of Disease in Radical Prostatectomy Specimens

Introduction and Objective: We examine the relationship between contiguity index (number of borders between positive cores) in TRUS biopsies with bilateral disease, T stage, tumour volume and Gleason score in subsequent radical prostatectomy specimens.
Materials and Methods: A database of 259 anonymised prostate biopsy specimens matched with radical prostatectomy specimens was used. A contiguity index was generated for all cases. The data was analyzed using linear and logistic regression with Pearson's product moment correlation analysis.
Results: Bilateral disease was present in 82.6% (n=119) of patients. T3 disease was discovered in 38.9% (n=56) of patients. Cumulative Gleason score was 7 in 84% (n=121) of patients. Mean contiguity index for 12 zone biopsies (CI-12) was 3.21 (SD 3.74) and 2.52 (SD 2.31) for 6 zone biopsies (CI-6). The strongest correlations found were between CI-6 and tumour volume (percentage of gland) with PCC 0.459 ($p<0.001$) and between CI-12 and tumour volume PCC 0.584 ($p<0.001$). Weaker but statistically significant correlations were found for Gleason score and tumour stage. Bilateral disease did not correlate with CI-6 or 12. In our series correlation of contiguity index (CI-12) with final tumour volume was stronger than the correlation between tumour volume and number of cores positive PCC 0.584 vs 0.421 ($p<0.001$).
Conclusions: Contiguity index is easily calculated and has a strong, significant correlation with poor prognostic factors in prostate cancer. It may have a value in the interpretation of TRUS biopsy results, determination of final histology and in predicting outcomes, particularly in view of emerging non surgical treatments. It outperforms number of cores positive, a currently used prognostic marker, in our series.