Global Gleason grade groups in prostate cancer: concordance of biopsy and radical prostatectomy grades and predictors of upgrade and downgrade.

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Abstract

AIMS: To evaluate concordance, upgrades and downgrades from biopsy to prostatectomy, and associated clinicopathological parameters, using the recently proposed Gleason grade groups/International Society of Urologic Pathology (ISUP) grades.

METHODS AND RESULTS: We evaluated 2529 patients who underwent biopsy and prostatectomy in our institution from 2005 to 2014. A global grade group (GR)/Gleason score (GS) was used. Factors associated with GR1/GS ≤6 upgrades and GR2/GS3 + 4 downgrades were analysed by multivariable logistic regression. The final GR/GS was identical with the biopsy GR/GS in 59.3% of cases, with the highest concordance for GR2 and GR5 and lowest for GR4. In GR1-5, identical grades were found in GR: (i) 47.6%, (ii) 73.6%, (iii) 52.8%, (iv) 21.4% and (v) 68.3%, respectively. Final GR was upgraded in 32.3% cases; in GR1-4: (i) 52.4%, (ii) 19.0%, (iii) 16.4% and (iv) 32.9%. Most frequent upgrades occurred from biopsy GR1 to prostatectomy GR2. A final GR downgrade was found in 8.3% cases. For individual GR2-5 the downgrades were found in GR: (i) 7.4%, (ii) 30.8%, (iii) 45.7% and (iv) 31.7%. Upgrades of biopsy GR1 were associated with: age ≥60 years, PSA density ≥0.2, ≥2 positive cores, ≥5% core tissue involvement and perineural invasion [area under receiver operating characteristic (ROC) curve 0.699]. Downgrades of biopsy GR2 correlated inversely with: age ≥60 years, PSA >10 ng/ml and ≥2 positive core (area under ROC curve 0.623).

CONCLUSIONS: We found highest concordance for GR2 and GR5 and lowest for GR4. The baseline clinical variables associated with GR1 upgrades and GR2 downgrades may play a role in clinical decision-making.

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KEYWORDS: Gleason score; grade group; needle biopsy; prostate cancer; radical prostatectomy

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