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Minute (≤ 1 MM) Foci of Gleason Score 8-10 Prostate Cancer on Needle Biopsy: Histologic Features and Clinical Significance

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Background:

Needle biopsy of high grade prostate cancer typically contains abundant tumor. The histologic features and significance of the rare case with minute high grade cancer on needle biopsy is unknown.

Design:

From 1992-2004, 29,388 cases of prostate cancer diagnosed on needle biopsy were identified from the consult service of one of the authors. Of these, 110 patients had a minute (≤ 1 mm) focus of high grade prostate cancer, defined as Gleason score (GS) 8 (4+4 only), 9, or 10.

Results:

Slides from 100 of 110 patients were re-reviewed. Of the 100 cases, 29 were GS8 with cribriform glands (n=15), poorly-formed glands (n=6), fused glands (n=3), or combinations of the three (n=5). 38 of 100 cases were GS 9 with single cells and poorly-formed glands (n=20), and combinations of single cells, sheets of cells and poorly-formed, cribriform, nested, or fused glands (n=18). 33 of 100 cases were GS 10 with single cells (n=20) and combination of single cells with cellular nests, extremely poorly-formed glands, and sheets of cells (n=13). Clinical data was obtained for all 110 patients. Patients underwent radical prostatectomy [RP] (n=45), radiation therapy [RT] (n=45), hormonal therapy [HT] (n=15), or surveillance (n=5). Statistically significant correlations were noted between: 1: Age and choice of therapy, with median ages of 62.5 for RP, 71.5 for RT, and 75.6 for HT, and 2: PSA and choice of therapy, with median PSA of 6.6 for RP, 10.2 for RT, and 20.8 for HT. Logistic regression analysis demonstrated that age was the most influential factor in treatment selection. 31/45 (68.9%) of patients undergoing RP were pT2, while 14/45 (31.1%) showed extraprostatic extension (pT3), including one case of seminal vesicle invasion and two cases with lymph node metastases. No significant correlation between age, PSA, or biopsy GS and pathologic stage was noted.

Conclusion:

Over the last ten years, we have seen an increased incidence of minute high grade cancers on needle biopsy, possibly as a result of aggressive PSA screening and more extensive sampling. Despite the limited nature of such cancers, pathologists must be attuned to the complex and varied patterns of high grade cancer. Among patients with small foci of high grade cancer who undergo radical prostatectomy the majority have organ-confined disease. Additional follow-up is being obtained to determine whether favorable pathologic stage in this group of unique cases translates to cure or still carries a significant risk of progression.