

Histopathological Profile of Prostatic Lesions and the Role of Gleason Score in Surgical Treatment Decision-Making

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Abstract

Introduction: The Gleason score plays a key role in risk stratification and surgical treatment selection for prostate cancer. This study evaluates the correlation between Gleason score, patient age, and tumor aggressiveness, with implications for medical practice.

Methods: This retrospective study included 215 patients from Sf. Apostol Andrei Clinical Emergency Hospital of Constanta County (2023-2024) with histopathologically confirmed prostate lesions. Demographic variables (age), Gleason score (classified according to ISUP 2019), and histological grade were analyzed. Data were statistically analyzed using t tests, ANOVA, and logistic regression. While international guidelines provide a standardized framework for management, local and regional variations in healthcare access, diagnostic pathways, and patient preferences significantly influence real-world clinical practice. This study aims to describe the histopathological spectrum of prostatic lesions and evaluate the prognostic relevance of the Gleason score in surgical decision-making within the specific context of a Romanian tertiary care center. By highlighting regional particularities, such as the high burden of aggressive disease and the challenges in implementing active surveillance, our findings contribute to a more nuanced understanding of global prostate cancer care.

Results: Benign prostatic hyperplasia (BPH) accounted for 42.8% of cases, PCa for 44.7%, and urothelial carcinoma for 8.4%. Among prostate cancers, 87.5% had clinically significant disease (Gleason ≥ 7), with 29.2% high-risk (Gleason 8–10). Gleason 7 was most frequent (58.3%), predominantly 3+4. A significant correlation was observed between advanced age (>70 years) and tumor aggressiveness (OR = 2.3; 95% CI: 1.4-3.8). Radical prostatectomy was primarily chosen for Gleason scores ≥ 7 , with higher complication rates in older patients.

Conclusions: Advanced age and a high Gleason score are independent factors of tumor aggressiveness. Early surgical intervention in patients with Gleason ≥ 7 improves oncological outcomes. Integrating histopathology with multiparametric MRI and molecular biomarkers could optimize management of these patients.

Keywords: prostate cancer, Gleason score, radical prostatectomy, oncological risk