Utility of Alpha-Methylacyl-CoA Racemase and P63 Cocktail in the Diagnosis of Prostatic Carcinoma

Introduction and Objective: The diagnosis of prostatic carcinoma, and especially minimal prostatic carcinoma, can sometimes be challenging on needle core biopsies. Immunohistochemistry represent a further aid for the pathologist in setting up the diagnosis. The aim of this study was to assess the utility of alpha-methylacyl-CoA racemase (AMACR)/P63 antibody cocktail for prostate cancer diagnosis. A prospective analysis of 50 consecutive radical prostatectomy specimens and 50 prostate needle biopsy samples was performed to select histological sections showing foci of prostatic carcinoma and/or minimal prostatic carcinoma, high grade prostatic intraepithelial neoplasia (HGPIN) as well as common benign mimickers of prostatic carcinoma to include atrophy and adenosis, especially with prominent nucleoli.
Materials and Methods: Serial histological sections from the corresponding paraffin blocks were stained with hematoxylin and eosin (HE), Van Gieson and by immunostains for AMACR and P63 using a prediluted antibody cocktail comprising both. To extend the utility of these markers for prostate cancer we combined stained for cytoplsmic AMACR with staining for the nuclear protein P63, a basal cell marker in the prostate that is absent in prostate cancer.
Results: Expression of AMACR was negative in the vast majority of normal tissues. The cocktail was very useful in highlighting prostatic carcinoma associated with HGPIN, flat and cribriform HGPIN and distorted foci of minimal prostatic carcinoma. AMACR was positive with moderate and strong staining in almost all cases for which the immunohistochemical result converted the expert review atypical diagnosis to a final cancer diagnosis. The cases whose diagnosis was changed from “atypical” to cancer were all highly suspicious for cancer based on HE histology and negative basal cell markers.
Conclusions: This cocktail would be of diagnosis utility when only limited tissue is available for immunohistochemical evaluation of small diagnostically difficult foci on both prostate needle biopsy tissue and surgical specimens. Combined staining for AMACR and P63 resulted in a staining pattern that greatly facilitated the identification of malignant prostate cells.