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Letter to Editor

Paneth cell-like change in benign prostate can account for P504S (AMACR) reactivity

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Abstract: Paneth cell-like neuroendocrine metaplasia of benign and cancerous prostate was described in 1992. Here, we note that P504S (AMACR), the cytoplasmic marker for prostate cancer used alone or in concert with basal cell markers, can be strongly reactive in benign prostatic acini with Paneth cell-like change.

Keywords: Paneth, prostate, P504S, AMACR

Paneth cell-like neuroendocrine metaplasia of benign and cancerous prostate was described in 1992 by Weaver et al. and Frydman et al [1, 2]. With one exception, the few additional reports on Paneth cell-like change since then have focused solely on the phenomenon in prostate cancer. Extensive benign Paneth cell-like change has been reported following radiation therapy [3]. Neoadjuvant hormonal ablation was associated with this change in cancer [4]. Here, we note that P504S (AMACR), the cytoplasmic marker for prostate cancer used alone or in concert with basal cell markers, can be strongly reactive in benign prostatic acini with Paneth cell-like change.

A 49 year-old man underwent biopsy of two cores per sextant site for elevated serum prostate specific antigen (PSA) of 4.8 ng/mL. One core in each of two sites showed high-grade prostatic intraepithelial neoplasia (HGPIN), but none of the cores showed cancer. A separate focus of 4 benign acini in the right apex had abundant pink cytoplasm with supranuclear granules in the manner of Paneth cells (**Figure 1**). A combined P504S and basal cell markers immunostain to evaluate the HGPIN disclosed intense red P504S signal in these 4 acini (**Figure 2**), but focal brown-staining basal cells surrounded these acini. Reactivity was much stronger than the reactivity in the HGPIN on another core. PAS + diastase stain was positive in the cytoplasmic granules of the 4 acini in

question (**Figure 3**). This is in agreement with prior observations on Paneth cell-like change,¹ in which benign Paneth-like cells were PAS-positive, diastase resistant, but negative for neuroendocrine markers, unlike their malignant counterparts which were positive for chromogranin and other neuroendocrine markers.

In a second patient, a 52 year-old man, serum PSA was 4.3 ng/mL, and 12-core biopsy was benign with acute and chronic inflammation. The left mid biopsy showed focal Paneth cell-like change, again intensely P504S-reactive.

P504S reactivity has been noted in the majority of neuroendocrine or carcinoid lung cancers [5] as well as in prostatic malignant neuroendocrine cells, but not benign ones [6]. False-positive reactivity for P504S has been described in certain benign proliferations in the prostate, notably, nephrogenic adenoma [7]. Intense P504S signal has not been previously attributed to Paneth cell change in benign acini, but now this can be added to the list of causes of false-positive P504S reactivity.

Disclosure of conflict of interest

None.

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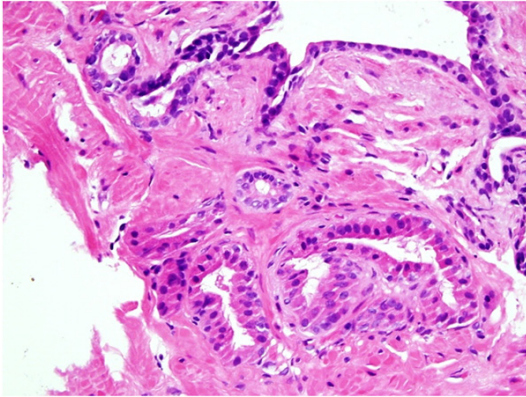


Figure 1. Metaplastic Paneth cells in 4 acini have bright pink supranuclear granular cytoplasm.

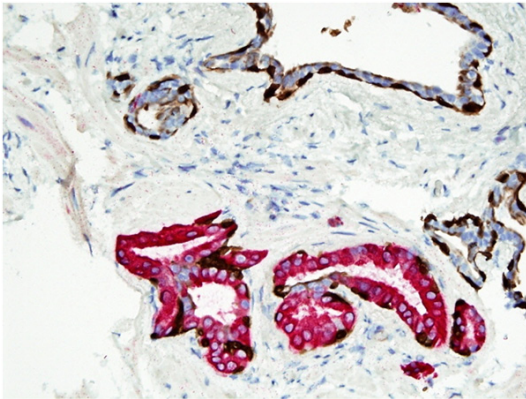


Figure 2. These acini react intensely with P504S (racemase, red) but have focal basal cells present (brown).

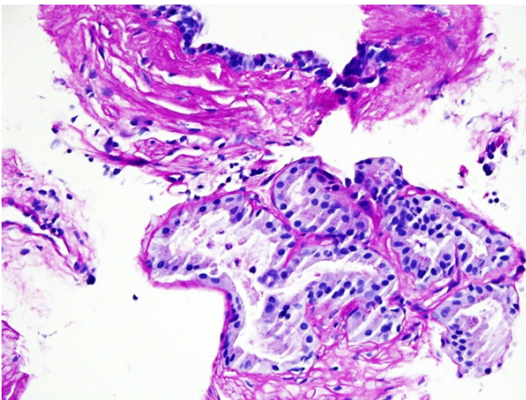


Figure 3. PAS-positive, diastase-resistant granules are present in the involved acini, as described in benign Paneth cell metaplasia.

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