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Oncology

Prostatic Adenocarcinoma With Hormone Exposure Related Changes in a Patient With Hepatic Cirrhosis — Value of Autopsy in a Case Report

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ABSTRACT

Hepatic cirrhosis is commonly associated with hyperestrogenism. Previous studies have reported morphologic changes in benign and malignant prostate tissue exposed to estrogen or anti-androgens. To our knowledge, histopathologic features of prostatic adenocarcinoma in patients with cirrhosis have not been well-reported. We present a case of incidental, but pathologically significant, prostatic adenocarcinoma detected on autopsy in a 67-year-old male patient with cirrhosis and spider angiomata. The morphologic and immunohistochemical features (including variable ERG expression) of the prostatic adenocarcinoma were consistent with hormone exposure related changes, suggesting that cirrhosis-induced elevated estrogen-to-testosterone ratio and exogenous hormone therapy might induce similar phenotypes.

Introduction

Hepatic cirrhosis is known to be associated with hyperestrogenism; manifestations in males include testicular atrophy, gynecomastia, and decreased libido. Schenken et al described nuclear size reduction, loss of nucleoli, chromatin condensation, nuclear pyknosis, and cytoplasmic vacuolization in prostatic adenocarcinoma after estrogen treatment.[1] Subsequent studies demonstrated these features as well as reduced mitotic activity in prostatic adenocarcinoma, in addition to squamous metaplasia and basal cell hyperplasia in background benign prostate glands. Anti-androgen therapy has been reported to cause similar changes in prostatic adenocarcinoma, and the malignant prostate glands may be largely degenerated, leaving cleft-like spaces with irregular acid mucinous pools and rare carcinoma cells.[2] Importantly, prostatic adenocarcinoma shows variable response to hormone exposure, both within a tumor and between tumors from different patients.

Barr and Sommers reviewed 100 autopsied cases of hepatic cirrhosis and found changes indicative of estrogen effect (squamous metaplasia and/or atrophy) more frequently in prostate tissues of patients with cirrhosis than in controls.[3] The morphology of the identified cancers was not described. The degree of estrogenic effect seen in the prostates of the majority of cirrhotic patients was comparable to that seen with stilbestrol therapy for prostatic cancer.

This report provides the autopsy, clinicopathologic, immunohistochemical and fluorescence in situ hybridization (FISH) description of an incidental, but pathologically significant, prostatic adenocarcinoma identified in a fatal case of cirrhosis.

Case presentation

Our patient was a 67-year-old man with history of cirrhosis secondary to autoimmune hepatitis and one month of progressive

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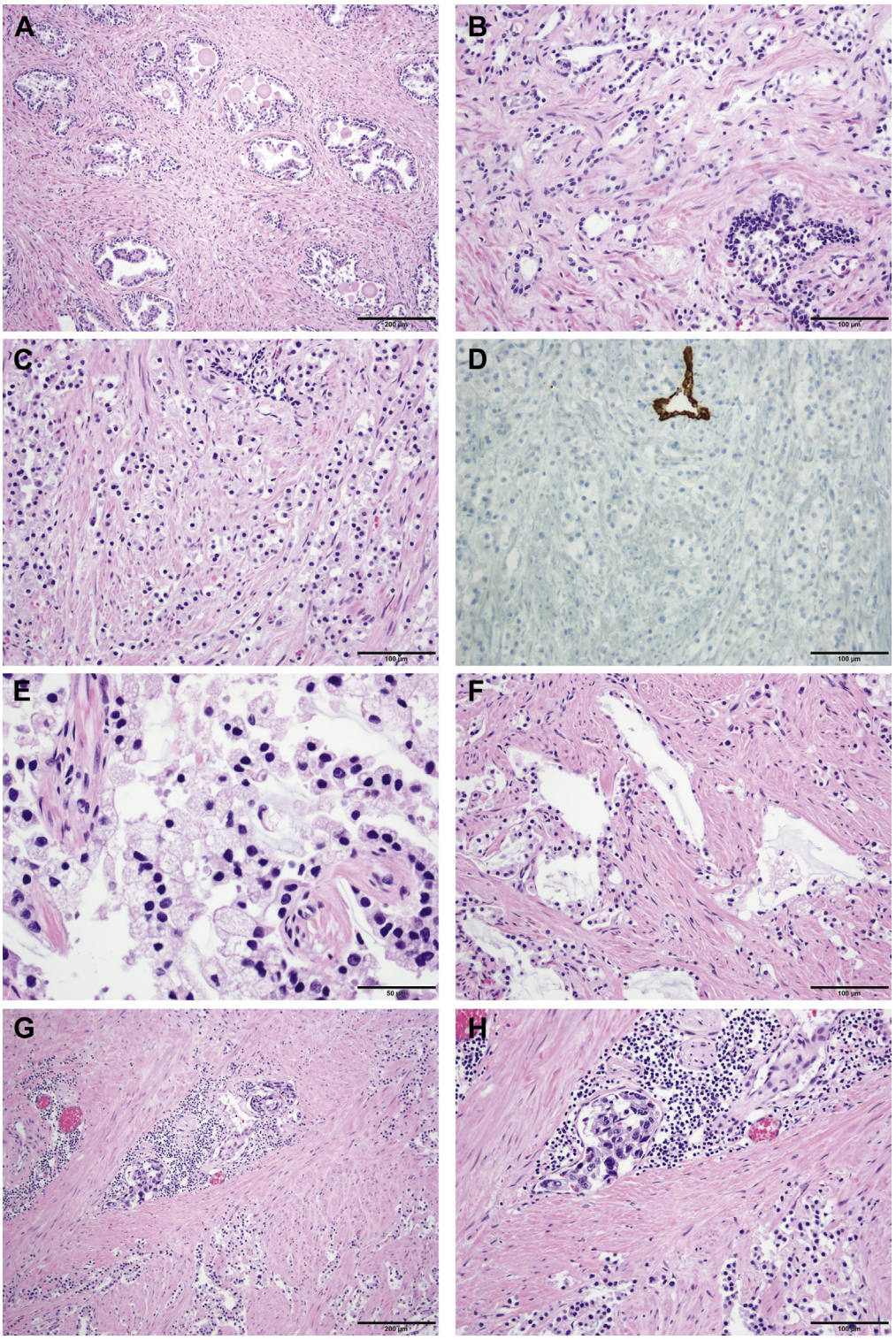

Figure 1. Histologic features of benign and malignant prostate tissue at the time of autopsy in a patient with cirrhosis. **(A)** Benign prostate glands demonstrating a prominent basal cell layer (H&E, 100× with scale bar 200 microns), **(B)** prostatic adenocarcinoma demonstrating small glands with atrophic features (H&E, 200× with scale bar 100 microns), **(C)** prostatic adenocarcinoma with relatively small and pyknotic nuclei infiltrating around a residual benign prostatic gland (toward top of the image, H&E, 200× with scale bar 100 microns), **(D)** PIN4 immunohistochemistry demonstrates loss of basal cell marker expression in the prostatic adenocarcinoma with retained expression in the single benign gland toward top of the image (H&E, 200× with scale bar 100 microns), **(E)** prostatic adenocarcinoma cells resembling histiocytes with small nuclei, indistinct nucleoli, and vacuolated cytoplasm (H&E, 400× with scale bar 50 microns), **(F)** cleft-like spaces filled with mucin and rare carcinoma cells (H&E, 200× with scale bar 100 microns), **(G–H)** prostatic adenocarcinoma adjacent to metastatic poorly differentiated hepatocellular carcinoma within a lymphovascular space (H&E, 100× with scale bar 200 microns, and H&E, 200× with scale bar 100 microns, respectively).