

Stromal microcalcification in prostate

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Abstract

Prostatic calcification is most commonly encountered as calculus or intraluminal calcifications within atypical small glandular proliferations. This study was undertaken to detect stromal microcalcifications in prostate tissue. All slides from 194 needle biopsies were retrospectively reviewed. Six cases (3.1%) had stromal microcalcifications constantly associated with mononuclear inflammatory infiltrate around the each focus. Association with prostatic glands was not seen in any of the microcalcification foci. Three cases had simultaneous adenocarcinoma and one had high-grade prostatic intraepithelial neoplasia, all of which were apart from the microcalcification foci. In conclusion, stromal microcalcification is a dystrophic, inflammation-mediated, benign process.

Key words: prostate, stromal microcalcification, needle biopsy

INTRODUCTION

Calcification in the prostate gland has been most frequently encountered as prostatic calculi or as intraluminal microcalcifications infrequently associated with prostatic carcinoma. However, microcalcifications within the prostatic stroma has not been pathologically focused on as a specific topic. In this study we aimed to clarify the incidence and significance of stromal microcalcifications in both neoplastic and non-neoplastic prostate.

MATERIAL AND METHODS

Consecutive needle biopsies of prostatic tissue from 194 patients were reviewed, and the pattern of stromal microcalcifications was recorded in all specimens. The cases were diagnosed between January 1998 and January 2000. The needle biopsies had been fixed in Holland solution. There were 1329 Haematoxylin-eosin stained slides. (mean = 6.9/case). The number of foci of microcalcification in each case was recorded and the diameter of each focus was measured by an ocular micrometer.

RESULTS

In fifty-eight (29.9%) of the 194 cases studied, there were foci of adenocarcinoma with Gleason scores ranging from 5 to 9. High grade prostatic intraepithelial neoplasia (PIN) was detected in 48 cases (24.7%), either associated with adenocarcinoma or as an isolated finding in the needle

biopsy. In 127 cases (65.5%), varying degrees of acute or mixed inflammatory infiltrate was identified within the glandular epithelium of the prostate tissue.

Stromal microcalcifications were seen in 12 slides belonging to 6 cases (3.1% of cases and 0.9% of slides). The age of the patients ranged from 62 to 84 years (mean = 68 years). All of the cases had symptoms of prostatism. There was no history or laboratory evidence of metabolic disease.

There were 21 foci of stromal microcalcification detected. Microcalcifications were round to oval, non-laminated structures that were unevenly distributed within the biopsies (Fig. 1). One to seven foci for each case were detected (mean = 3.5). The diameter of microcalcifications ranged from 25 to 400µm (mean = 100.1µm) Ultrasonographically, only one case had a hypo-echoic area in the microcalcification region. Serum total prostate specific antigen levels in the cases with stromal microcalcification ranged between 3.8 and 38.2 ng/dl (mean = 12.8 ng/dl).

Histopathologically, the common feature of the cases was the presence of mononuclear inflammatory cells around the foci of microcalcification. In two cases, acute inflammation also accompanied the mononuclear infiltrate. In one case, non-specific granulomatous inflammation was also noted. In four cases, reactive fibrous proliferation was seen peripheral to the foci of microcalcification. Microcalcifications

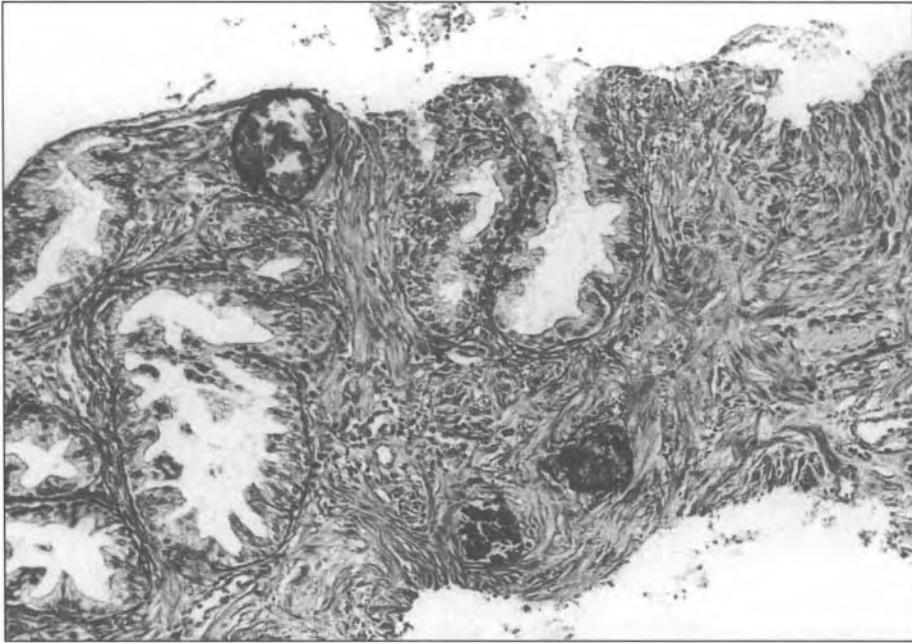


FIG. 1: Stromal microcalcifications adjacent to benign prostatic glands (Haematoxylin-Eosin x 310)

were specifically apart from the glands and located within the inflamed stroma. In the closest glands, no evidence of inflammatory glandular destruction or intraglandular microcalcification was seen. Accompanying glandular lesions in the same sections were adenocarcinoma with Gleason pattern 3 in three cases and high-grade prostatic intraepithelial neoplasia (PIN) in one case, none of which were close to the microcalcification area. Basal cell hyperplasia and collagenous micronodules were not detected in any of the cases. No foci of ossification or chondrocalcification were seen with any of the microcalcifications.

DISCUSSION

Prostatic calculi are present in 70-100% of glands studied at autopsy, most commonly in men over 50 years of age.¹ Calculi form by the consolidation and calcification of corpora amyloacea or by calcification of precipitated prostatic secretions. Calculi are usually asymptomatic and discovered incidentally. They are frequently multiple and small mostly less than 5 mm in diameter. Exceptionally, Taylor reported gross prostatic calculi occupying an area of >3 cm² associated with hyperparathyroidism.²

In atypical small glandular proliferations, intraluminal microcalcifications are uncommonly detected. The significance of intraluminal

microcalcifications was analysed by Woods *et al*³ who concluded that microcalcifications can infrequently occur in foci of prostatic carcinoma. Besides, basal cell hyperplasia was reported as the most common lesion containing laminated calcifications resembling psammoma bodies.¹ A special form of stromal microcalcification is described in the collagenous micronodule, which has been described only in association with prostatic carcinoma, usually of the mucin-producing type.⁴ In our cases, foci of stromal microcalcifications were not associated either with collagenous micronodules or adenocarcinoma. The constant finding was the presence of mononuclear inflammatory cells around the foci of microcalcification. No evidence of glandular destruction was detected in association with microcalcifications.

The coexistence of stromal microcalcifications with malignant and precancerous lesions of the prostate is not uncommon. In half of the cases with stromal microcalcifications, there were foci of adenocarcinoma within the same section but apart from the calcification. This is probably a coincidental finding as patients with high serum PSA levels and in the older age-group constitute the majority of biopsied patients. These are also at risk of prostate cancer.

We conclude that stromal microcalcification is an incidental, asymptomatic, inflammation-

mediated, dystrophic lesion that might be taken as indicative of an independent benign process.

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