

Unusual and potentially important finding in a prostatic needle biopsy

Sanjay A Pai ,¹ Sanjeev V Katti²

¹Pathology and Laboratory Medicine, Columbia Asia Referral Hospital, Bangalore, India

²Pathology, Columbia Asia Hospital- Whitefield, Bangalore, India

Correspondence to

Dr Sanjay A Pai, Pathology and Laboratory Medicine, Columbia Asia Referral Hospital Yeshwanthpur, Bangalore 560 055, India; sanjayapai@gmail.com

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CLINICAL QUESTION

What is unusual or unique about this transrectal ultrasound-guided left midzone prostatic biopsy in a 66-year-old Asian Indian with a raised serum prostate-specific antigen (1278 ng/mL)? Review the high quality, interactive digital Aperio slide at <http://virtualacp.com/JCPCases/jclinpath-2020-206537/> and consider your diagnosis.

WHAT IS YOUR DIAGNOSIS?

- The spaces are an artefact of fixation.
- The spaces represent an artefact of sectioning.
- The spaces represent extraprostatic fat infiltration by prostatic adenocarcinoma.
- Intraprostatic adipose tissue involved by adenocarcinoma.

The correct answer is after the discussion.

DISCUSSION

Until fairly recently, it was believed that there was no intraprostatic fat. Thus, a comment that there was infiltration of fat by a prostatic carcinoma implied that it was extraprostatic fat and hence, a pT3 disease. Invasion of fat by prostatic carcinoma is an important prognostic factor and may dictate patient management. Thus, it is essential to document the presence of infiltration of fat by tumour in biopsies.

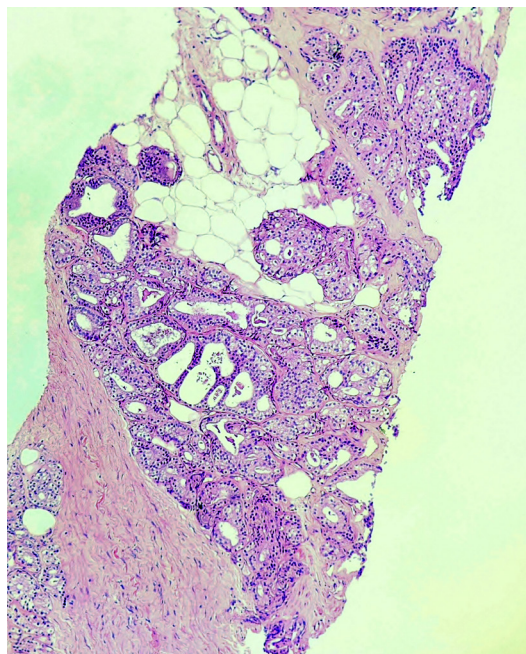


Figure 1 Needle biopsy of the prostate at low power.

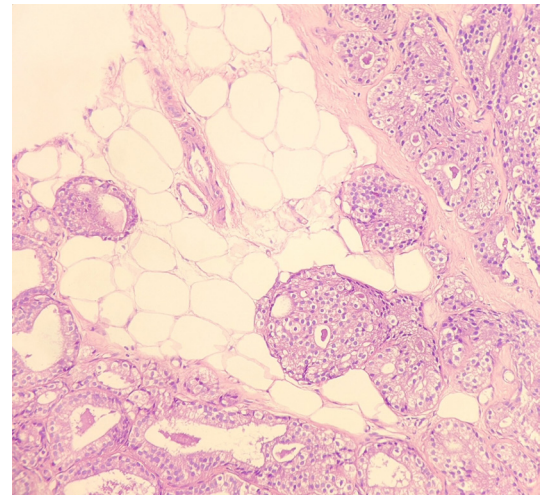


Figure 2 Higher power of the prostatic core.

However, Cohen and Stables reported intraprostatic fat in two of 27 autopsies of Maori and Pacific island men, but not in the 127 prostates of white men in their series¹. They hypothesised that it may represent a racial variation.¹ Nazeer *et al* evaluated radical prostatectomy specimens in 377 white men and 50 black/Spanish/Asian men and found intraprostatic fat in 17 cases, all of whom were in white men, suggesting a possible racial variation.² Histological differences have been shown in the hyperplastic prostate between geographically diverse peoples as well.³

Our own study showed only one case with intraprostatic fat (of 138 consecutive cases in 131 patients). The cases included transurethral resection of prostate/holmium laser enucleation of the prostate (n=103), transrectal ultrasound guided biopsies (n=24), combined transrectal ultrasound-guided biopsies and transurethral resection of prostate (n=2) and radical prostatectomies (n=9). The number of slides per case ranged from 1 to 119 (total=1656 slides, median=10). The patients were Asian Indians (n=115), South/Southeast Asians (n=2), West Asians (10), Africans (n=3) and Caucasian (n=1).

Care must be taken not to misinterpret loose spaces within the prostatic parenchyma as adipose tissue. These spaces may be the result of surgical trauma or may represent processing artefact or may be the result of holmium laser artefact. If the pathologist overcalls a biopsy with intraprostatic fat involvement as extraprostatic fat involvement, the patients' (and possibly the pathologists' and urologists') fat may well be in the fire.



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Virtual case of the month

The biopsy shows an adenocarcinoma, Gleason score $4+3=7$, with a focus of invasion of the fat. However, the fat was distinctly intraprostatic, as evidenced by the fact that there was prostatic tissue on all sides (figures 1 and 2). The focus consisted of about 40 adipocytes.

CORRECT ANSWER

D. Intraprostatic adipose tissue involved by adenocarcinoma.

Learning points

- It is important to document the presence of tumour infiltration into fat in a prostatic biopsy.
- Intraprostatic fat exists, and hence, all fat in a biopsy must not be assumed to be extraprostatic fat.
- Use of holmium laser may result in retraction of tissues and may be mistaken for fat.

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ORCID iD

Sanjay A Pai <http://orcid.org/0000-0002-7102-3096>

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