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SHORT COMMUNICATION

Transperineal template-guided prostate saturation biopsies in men with suspicion of prostate cancer: a pilot study from Pakistan

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Abstract

Traditionally, transrectal ultrasound (TRUS)-guided biopsies are done for the diagnosis of prostate cancer (PCa) in Pakistan. The transperineal template-guided saturation biopsy (TTSB) approach has been recently introduced in Pakistan and we share diagnostic yields and pathological findings of specimens taken for PCa diagnosis in men with elevated serum total prostate specific antigen (PSA) and negative TRUS-guided prostate biopsies. In all, 16 patients investigated at the Department of Urology, Sindh Institute of Urology and Transplantation (SIUT), underwent TTSB. The mean age of patients was 67.8 ± 8.8 (range: 55 - 84) years. The median PSA was 9.5 (IQR: 7.9 - 19.8) ng/ml. The duration of symptoms before biopsy ranged from 1 month to 144 months. The prostate was enlarged with mean weight of 73.5 ± 55.5 g. Histopathology revealed PCa in 5 of 16 (31.2%) cases. The Gleason score was 6 (3+3), 7 (3+4) and 8 (4+4) in 1 case each (6.3%) and 10 (5+5) in 2 cases (12.5%). At least two cores were positive in all positive cases. None of the patients required antibiotics post-procedure. In conclusion, the TTSB technique is a promising option for patients with elevated PSA level and negative transrectal prostate biopsies for the detection of PCa in our setting.

Keywords: transperineal biopsy, PSA, prostate cancer, septicaemia

INTRODUCTION

In about one third of cases, repeated prostate biopsies in men with recent negative biopsies taken by the standard approach, reveal prostate cancer (PCa).[1] These repeat biopsies involve taking multiple cores and are known as saturation biopsies.[2] Two approaches are available for saturation biopsies: transrectal and transperineal. Both are equally effective in detecting PCa in men with persistent suspicion of PCa in spite of negative prior standard biopsies.[3-7] Among these, the transperineal template-guided saturation biopsy (TTSB) is the diagnostic option of choice. A diagnostic yield of 12 to 45% for the detection of PCa has been reported by this approach in various reports across the world.[8-14] This procedure is now the standard of care in high-risk men with persistent suspicion of PCa but negative prior standard prostate biopsies.[15-18] In our set up, traditionally, transrectal ultrasound (TRUS)-guided biopsies have been performed with satisfactory diagnostic yield, which is comparable to those from other large series in the world.[19-21]

The TTSB approach has only recently been introduced in Pakistan. This study reports the diagnostic yield of the TTSB approach for the diagnosis of PCa in our centre. Additionally, we also share the pathological characteristics of the tumours detected.

MATERIALS AND METHODS

In all, 16 patients with previous negative transrectal biopsies and elevated serum PSA levels, were referred for saturation biopsy by TTSB approach in this pilot study. The procedure was done during the month of June 2016. Written informed consent was obtained from all participants in the study. Indications for TTSB included men with persistent suspicion of PCa in the face of previously negative TRUS-guided prostate biopsies. None underwent previous transrectal or transperineal saturation biopsies. The research was conducted in accordance with

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the ethical standards of the 1975 Declaration of Helsinki, as revised in 2008.

TTSB procedure was performed in the operation theater under general anesthesia with the patient in the dorsal lithotomy position. All patients received perioperative antibiotics. The setup was the same as used for brachytherapy. Before the actual biopsy procedure, the prostate gland was evaluated thoroughly by TRUS from the base to apex to identify any suspicious areas and to determine the prostate volume (PV). Prostate weight was calculated by ultrasound machine and was used as surrogate marker of PV.[22] Prostate enlargement was arbitrarily divided into mild (26 - 50 g), moderate (51 - 100 g) and marked (>100 g).

The biopsy procedure was performed using 18 G, 20 cm long Pro Mag biopsy needles, which were inserted through template apertures to correspond to the regional biopsy locations. Multiple biopsy cores were obtained from each of the six biopsy regions depending on the size of the gland, extending from the apex towards the base of the gland. After the biopsy procedure, no antibiotics were prescribed unless septicaemia developed.

All biopsies were processed and reported at the Histopathology Department of the Sindh Institute of Urology and Transplantation (SIUT), as described in detail in our previous studies.[19-21] Gleason grading and scoring of carcinomas detected were according to the updated Gleason grading schema.[23]

Data was analyzed by using SPSS version 16 (SPSS Inc., Chicago, IL, US). Mean and standard deviation (SD) or median with interquartile range (IQR) were computed for numerical variables. Frequency and percentages were applied for categorical data.

RESULTS

The mean age of the participants was 67.8 ± 8.8 (range: 55 - 84) years. The median serum PSA level was 9.5 (IQR: 7.9 - 19.8) ng/ml. The mean duration of symptoms before the current biopsy was 23 ± 43.2 months (median: 6, IQR: 3.2 - 24 months). The prostate was enlarged with mean weight of 73.5 ± 55.5 g. It was mildly enlarged in 3 (18.8%) men, moderately in 11 (68.8%) and markedly enlarged in 2 (12.5%).

Prostate adenocarcinoma was diagnosed in 5 of 16 cases (31.2%). Among these, 3 (60%) were located in the anterior/ventral part of the prostate gland. Gleason grade 3 was detected in 2 cases (12.5%), grade 4 in 1 case (6.3%), and grade 5 in 2 cases (12.5%) (Fig. 1). The Gleason score was 6 (3+3), 7 (3+4) and 8 (4+4) in 1 case each (6.3%) and 10 (5+5) in 2 cases (12.5%). At least two cores were positive in all positive cases (Table 1). Active inflammation was found in 6 cases (37.5%). This was found despite a course of pre-procedure antibiotics. Foci of high grade prostate intraepithelial neoplasia (HGPIN) were found in 1 case (6.3%).

The biopsy procedure did not require antibiotic prescription afterwards and no septicaemia was reported**.**

DISCUSSION

The TRUS-guided prostate biopsy has been considered as the standard procedure for obtaining samples from the prostate gland for histopathological examination owing to easy accessibility of the prostate via this route for prostate biopsy. However, this method has some drawbacks including inaccessibility of some regions of the gland and a significant number of false negative results if the number of biopsies taken is around 10 to 12 cores.[1-5] The TRUS-guided biopsy procedure can also incite life-threatening risk of septicaemia. This may need intravenous antibiotics and hospitalization for supportive care. In our set up, the detection rate of TRUS-guided biopsies has been fairly high, mainly due to delayed presentation of patients with large cancer volumes.[19-21]

The TTSB technique of sampling the prostate is a promising option for patients with elevated

TABLE 1: Number of cores involved by prostate cancer in the 5 positive cases

Number of positive cores	Number of cases
2 cores	1
5 cores	1
10 cores	1
12 cores	1
13 cores	1

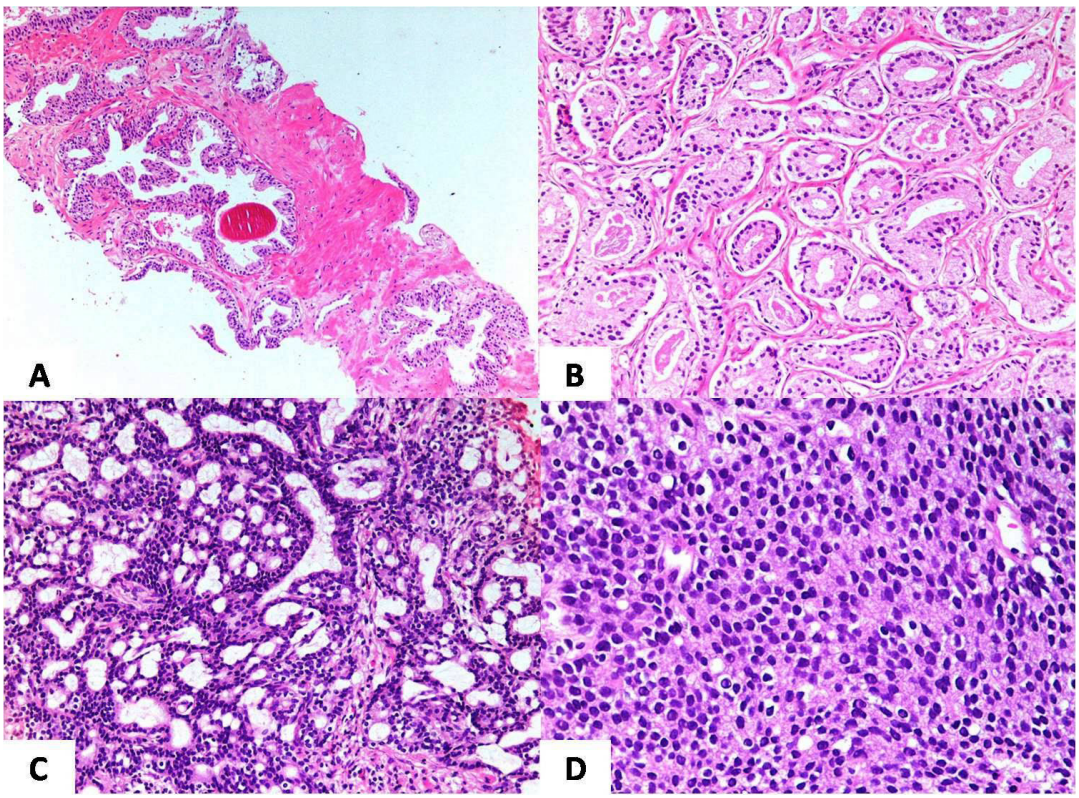

FIG. 1: Microscopical features of representative prostate specimens. A. Low-power view showing benign glands with corpora amylacea in one of the glandular lumen. (H&E, ×50). B. Prostate adenocarcinoma, Gleason grade 3. (H&E, ×200). C. Prostate adenocarcinoma, Gleason grade 4 with fusion of the neoplastic glands. (H&E, ×200). D. Prostate adenocarcinoma, Gleason grade 5 with solid arrangement of neoplastic cells. (H&E, ×200)

serum total PSA level and previous negative TRUS-guided biopsies for the detection of PCa.[1,6-10] Previous studies have shown good accessibility of the anterior/ventral part of the prostate through transperineal biopsy needle, hence facilitating multiple specimens for histopathological analysis from these areas of the prostate for the detection of significant cases of PCa of various grades and stages.[1,11,12] Similar to previous studies, the cancer detection rate was appreciable in our patients with this technique. The tumour was located in 60% of cases in the anterior/ventral aspect of the gland in this study. However, as in our previous studies, the majority of PCa cases detected were significant, high volume and symptomatic cancers requiring therapy.[19-21] This again reflects delay in the presentation of these cases in our country. TTSB technique also carries a low risk of infection. None of our patients developed septicaemia or required antibiotics post-procedure.

There are certain limitations in this study. These include the small sample size, as this was a pilot project. The transperineal biopsy of the prostate is performed under general anesthesia in the operation theater and there is higher risk of voiding difficulty, which is temporary in the majority of cases. We also did not analyze the location of the cancers detected in our patients in this study.

In conclusion, our preliminary experience suggests that the transperineal saturation biopsy technique of the prostate is a promising option for patients with elevated serum PSA levels and previous negative transrectal prostate biopsies for the detection of prostate cancer in our setting.

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