

## Transrectal Biopsy of the Prostate Gland in Ibadan

O. B. Shittu and T. B. Kamara

Urology Division, Department of Surgery, College of Medicine, University of Ibadan and University College Hospital, Ibadan, Nigeria.

Reprint Requests to: Mr. O.B. Shittu, Department of Surgery, University College Hospital, Pmb 5116, Ibadan, Nigeria. E- mail: [Obshittu@Siotel.Com](mailto:Obshittu@Siotel.Com)

### ABSTRACT

**Background:** Transrectal needle biopsy of the prostate gland is considered to be more accurate than the transperineal approach.

**Method:** A review of the problems associated with transrectal biopsy of the prostate gland in our institution over a 5year period.

**Results:** A total of 230 patients had transrectal biopsies of the prostate performed. The procedure was associated with complications in sixty patients. The infective complications seen were bacteraemia, manifesting as fever and rigors, and urinary tract infection. The traumatic complications manifested mainly as rectal bleeding and haematuria. Most of the complications were self- limiting and responded adequately to conservative management.

**Conclusion:** Complications are common and could be fatal. Infective complications could be reduced, by administering antibiotics before and after the procedure.

*KEY WORDS: Prostate, Transrectal biopsy, Complications*

### Introduction

There has been a documented rise in the incidence of carcinoma of the prostate gland in Nigerians in recent times. Carcinoma of the prostate gland is also the leading cause of death from cancer in men in Nigeria. <sup>1, 2</sup> Media reports on the morbidity and mortality of prostate cancer worldwide has raised

the level of awareness of this disease in our people generally, but particularly in those who are educated. In recent times also there has been availability of serum PSA testing for screening for prostate cancer in many hospitals and private laboratories in Nigeria, and more men are presenting themselves for screening on their own and later seek urological advise if the level is higher than normal.

All these facts have resulted in the need for more evaluation of men for prostatic diseases, particularly prostate cancer.

Transrectal and transperineal approaches afford convenient and rapid means of confirming the histological nature of a prostatic enlargement, be it from benign hyperplasia or carcinoma. Transrectal needle biopsy of the prostate gland is considered to be more accurate than the transperineal approach, although the latter is associated with less infective complications.<sup>3, 4, 5</sup> In this report, we have reviewed the problems that were associated with transrectal needle biopsy of the prostate gland over a five-year period in a teaching hospital urology unit and suggest ways that such problems might be reduced.

## Materials and Methods

The case notes of all patients who had transrectal biopsy of the prostate gland done over the period January 1995 and December 1999 were reviewed. The information extracted from the notes included age, presenting urinary symptoms, digital rectal examination (DRE) findings, provisional clinical diagnosis, pre-biopsy packed cell volume (pcv), post-biopsy pcv where available, results of urine and blood cultures where available, history of rectal bleeding or haematuria, need for blood transfusion, fever, irritative urinary symptoms. All the patients were referred on the suspicion of having prostate cancer. The histological diagnosis was also recorded.

Prophylactic antibiotics were given in all cases. The prophylaxis for the biopsy in the unit is a combination

of intravenous gentamycin 80mg and oral metronidazole 400mg, with the latter continued orally thrice daily for another three days. The biopsy was performed with the patients lying in the left lateral position with the hip flexed and knees brought towards the abdomen. The perineal area around the anus was cleaned with an antiseptic lotion and 10-15 ml of 2% Xylocaine® gel was instilled into the anal canal. The gloved right index finger was then introduced into the anal canal to smear the gel over the gland and to identify suspicious areas to be biopsied. The biopsy was done 5-10 minutes after the local anaesthetic gel had been instilled into the anal canal, using a size 14 Tru-Cut® biopsy needle. Three to six biopsies of the suspicious areas were made, but where the gland felt smooth or generally irregular, random biopsies were taken.

The patients were usually followed up and a note made of complications such as fever, haematuria, rectal bleeding, irritative urinary symptoms etc resulting from the procedure. The histological reports were studied and categorized into three, cancer positive, cancer negative, and unrepresentative. The unrepresentative reports were those in which the pathologists did not see any prostate tissue.

## Results

During the period of the review, 230 patients had transrectal prostate biopsies performed. The age range is 52-80 years, with a mean age of 63.6 years and a median age of 65.5 years.

The histological characteristics of the biopsies are shown in table 1. In 13% of the patients, the biopsies were unrepresentative. Sixty of the patients had complications, giving a complication rate of 26 %. The different types of complications encountered are listed in table 2. There were both infective and non-infective complications among which are fever, rigors, haematuria and rectal bleeding. The infective complications usually respond to antibiotics, consisting usually of cephalosporins and metronidazole, unless urine culture indicated otherwise both on inpatient and outpatient basis. The organisms cultured from the urine were mainly coliforms, e.g. *Escherichia coli*, *Klebsiella* species, and *Enterobacter* species. There were no anaerobic organisms grown on culture, but as these were routine cultures, it was possible to miss anaerobic organisms. No blood cultures were performed.

Four patients bled enough to require 2 to 3 units of blood transfusion. Three of these patients had rectal bleeding, while one had haematuria. Most patients with haematuria and rectal bleeding had insignificant bleeding, that is the bleeding was not severe enough to drop the haemoglobin concentration significantly or enough to require blood transfusion. Rectovesical fistula was recorded in one patient who died a few days after from advanced metastatic disease.

## Discussion

Transrectal biopsy of the prostate gland was first described by Astraldi in 1937<sup>6</sup>

and later by Elliot in 1953.<sup>7</sup> These authors were so concerned about the

*Table 1: Histological Findings in 230 Patients Undergoing Transrectal Prostate Biopsy*

Histology	No.(%)
Adenocarcinoma	106 (46)
Benign hyperplasia	94 (41)
Unrepresentative	30 (13)
Total	230 (100)

*Table 2: Complications Seen In 60 Patients Undergoing Transrectal Prostate Biopsy*

Complication.	No.(%) (n=230)
Fever	25 (10.8)
Haematuria	12 (5.2)
Rectal bleeding	12 (5.2)
Urinary tract Infection	10 (4.3)
Rectovesical fistula	1 (0.4)
Total	60 (26.0)

consequences of infective complications that they recommended bowel preparation as part of the procedure. The reported incidence of complications after transrectal biopsy of the prostate ranges from 2 to 79%.<sup>3, 5</sup> These complications are categorized into traumatic and infective. Although many urologists use prophylactic antibiotics to minimize the infective complications after biopsy of the prostate, such an effort does not completely eliminate infection. Also among those who use antibiotic prophylaxis there is a lot of variation in the type of antibiotics used

as well as the period for which the antibiotics are given. In other words most antibiotics use and duration for which they have been given have been empirical, and different studies have suggested different recommendations.<sup>8</sup> There has also been a debate about which organisms play a major role in the cause of infections after biopsy, i.e. whether the anaerobes<sup>9</sup> or the coliforms.<sup>10</sup> Although many studies have recorded a marked reduction in infective complications when antibiotics are used before and after transrectal biopsy of the prostate,<sup>11, 12</sup> it is only recently that Aron et al showed in a randomized study that a combination of ciprofloxacin-tinidazole is an adequate prophylaxis for infective complications after transrectal biopsy of the prostate in some selected patients.<sup>8</sup>

Complications occurred in 60 (26%) of our patients. Of those who developed complications, 59% were infective and 41% were traumatic. These compare favourably with other reports in the literature.<sup>3, 5, 6</sup> In a previous study from this unit by Nkposong and Lawani, 60% non-infective complications were recorded using the Vim-Silverman biopsy needle.<sup>13</sup> The incidence of non-infective complications is reported to be similar between transrectal and transperineal approaches to prostate biopsy.<sup>14</sup> Among the non infective complications that could occur following biopsy of the prostate are injuries to the ureters, bladder and seminal vesicles, resulting in haematuria and haemospermia.<sup>11, 15</sup> Perineal and retropubic haematoma have also been reported after biopsy of the prostate gland.<sup>16</sup> Crawford and associates reported that infective complications are more common in the

transrectal approach<sup>3</sup> and Dowlen recommended the transperineal route for prostatic biopsy to reduce the incidence of infective complications.<sup>4</sup> All our patients had prophylactic antibiotic, consisting of a combination of an aminoglycoside and metronidazole, which is the standard practice in our unit.

Two patients died among those reviewed, but these deaths were probably not due to the biopsy directly, as the patients were reported to be quite ill from advanced metastatic disease.

One patient developed rectovesical fistula, however this patient was quite ill with advanced metastatic disease, which already caused occlusion of the rectum. This patient died shortly afterwards. This unusual complication had been reported previously in the literature by Kaufman et al.<sup>17</sup>

The reported negative result after transperineal and transrectal biopsy of the prostate is between 16.2 and 35%.<sup>12, 14</sup> Our unrepresentative biopsy rate of 13% compared favourably with that of Nkposong and Lawani (16.6%), but seems relatively high when compared with that of Kaufman and Scultz which was 8.8%.<sup>17</sup> The reasons for high unrepresentative biopsy rate may include, lack of cooperation from the patients, blunt biopsy needles and faulty techniques. A wide range of the staff members in the unit performed the biopsies, ranging from consultants to registrars. Our impression is that the relatively inexperienced staff members performed the biopsies when the pathologists could not see any prostatic tissue. It is difficult from this retrospective review however to determine accurately the level of the surgeon who performed the biopsy in all

cases. We still believe however that improved skills on the part of the residents at taking biopsies of the prostate gland through the rectal route may reduce the high negative biopsy rate. Positive biopsy result could be enhanced by guiding the needle to suspicious areas on the prostate with the index finger or by taking at least six random biopsies of the prostate in the absence of palpable nodules or irregularities. This technique has been shown to be as effective as transrectal ultrasound (TRUS)- guided biopsies in the diagnosis of cancer of the prostate.<sup>18</sup> It has also been shown however that the use of TRUS to guide the biopsy needle reduces negative biopsy rates.<sup>19, 20</sup>

Transrectal biopsy of the prostate is one of the most popular methods of making a diagnosis of cancer of the prostate. Complications are common and could be fatal. Infective complications could be reduced, by administering antibiotics before and after the procedure.

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