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CLINICAL & BASIC RESEARCH

Synoptic Versus Narrative Reporting of Prostate Biopsies at a Tertiary Healthcare Institution

Challenges, successes and expectations

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التقارير المختصرة والمبوَّبة في مقابل التقارير السردية عن نتائج خزعات البروستاتة في مؤسسة رعاية صحية ثالثية

التحديات والنجاحات والتوقعات

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abstract: ***Objectives:*** Cancer pathology reports are expected to contain all information required for patient management and disease surveillance. Moreover, reports for patients with prostate cancer have become increasingly complex with the addition of more pathological details. This study aimed to compare narrative and synoptic prostate cancer reports for core needle biopsies received at a tertiary hospital in Nigeria in order to determine which form was most complete according to international standards. ***Methods:*** This study was conducted from January 2010 to December 2015 at the Lagos University Teaching Hospital, Lagos, Nigeria. All malignant prostate cancer histopathology reports received during this period were analysed for the presence of important clinicopathological parameters, including the numbers of cores taken and those involved by the tumour, percentage of tumour involvement, Gleason score and the presence of high-grade prostatic intraepithelial neoplasms (HGPINs) and perineural and lymphovascular invasion. ***Results:*** A total of 83 reports were reviewed, of which 27 were in narrative and 56 in synoptic format. The documentation of clinicopathological characteristics in narrative reports was significantly incomplete compared to synoptic reports in recording the number of cores (33.3% versus 96.4%), number of cores involved by the tumour (11.1% versus 94.6%), percentage of cores involved by the tumour (3.7% versus 100.0%) and the presence of HGPINs (7.4% versus 100.0%) and perineural (59.3% versus 98.2%) and lymphovascular (48.1% versus 100.0%) invasion (P <0.001 each). ***Conclusion:*** Synoptic reports of malignant prostate cancer biopsies received at the Lagos University Teaching Hospital were found to contain more complete information than narrative reports.

Keywords: Pathology; Biopsy; Prostate Cancer; Prostatic Intraepithelial Neoplasia; Nigeria.

الملخص: الهدف: يتوقع أن تشتمل تقارير باثولوجيا السرطان على كل المعلومات المطلوبة لعلاج المريض وترصد المرض. وبالإضافة لذلك غدت التقارير التي تكتب عن مرضى سرطان البروستاتة أكثر تعقيدا بسبب إضافة المزيد من التفاصيل الباثولوجية فيها. وتهدف هذه الدراسة لمقارنة التقارير المختصرة والمبوّبة في مقابل التقارير السردية عن نتائج خزعات اللب بالإبرة، والتي وردت لمستشفى ثالثي في نيجيريا، وذلك لتحديد أي نوع من تلك التقارير أقرب للكمال بحسب المعايير الدولية. **الطريقة:** أجريت الدراسة بين يناير 2010 وديسمبر 2015م في مستشفى جامعة لاجوس التعليمي بنيجيريا. وتم تحليل كل التقارير الهيستوباثلوجية التي كتبت عن عينات سرطان البروستاتة الخبيث في تلك الفترة، وتقييم احتوائها على المتثابتات الباثولوجية-السريرية، والتي تشمل أعداد الألباب التي أخذت، وأعداد تلك التي لها علاقة بالسرطان، والنسبة المئوية لتلك العلاقة، واستخدم حرز جليسون، ووجود أورام بدرجة عالية في داخل ظهارة البروستاتة، ووجود غزو لمفاوي وعائي وغزو محيط بالعصب. **النتائج:** تم تحليل 83 تقريرا، كان 27 منها تقريرا سرديا، و56 تقريرا مختصرا مبوبا. وكان توثيق الخواص الباثولوجية-السريرية في التقارير السردية أقل كمالا بصورة معنوية مقارنة مع التقارير المختصرة والمبوّبة فيما يتعلق عدد الألباب (33.3% في مقابل96.4%)، وكان عدد الألباب التي لها علاقة بالسرطان (11.1% في مقابل94.6%) وكانت النسبة المئوية لعدد الألباب التي لها علاقة بالسرطان (3.7% في مقابل 100.0%) ووجود أورام بدرجة عالية في داخل ظهارة البروستاتة (7.4% في مقابل 100.0%)، ووجود غزو محيط بالعصب (59.3% في مقابل 98.2%) وغزو لمفاوي وعائي (48.1% في مقابل 100.0%) (P <0.001 في كل حالة). **الخلاصة:** وجدنا أن التقارير المختصرة والمبوّبة عن نتائج خزعات البروستاتة المصابة بسرطان خبيث التي تلقاها مستشفى لاجوس التعليمي تحتوي على معلومات أكثر شمولا من تلك التي وردت في التقارير السردية.

الكلمات المفتاحية: الباثولوجيا؛ خزعة؛ سرطان البروستاتة؛ أورام بداخل ظهارة البروستاتة؛ نيجيريا.

Advances in Knowledge

- *The findings of this study confirm the significant advantage of synoptic over narrative report formats in ensuring the completeness of histopathology reports for prostate cancer biopsies.*
- *Recommendations are suggested to facilitate the adoption of the synoptic reporting template at other healthcare institutions.*

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Application to Patient Care

- *Complete prostate cancer biopsy reports should document the various clinicopathological parameters required for prognostication purposes. As such, the usefulness of certain reporting styles over others in highlighting significant parameters may contribute to management decisions, thereby improving the quality of patient care.*

In Nigeria, prostate cancer is the most common form of male cancer and the highest cause of cancer-related deaths among men.[1] Prostate cancer management requires a multidisciplinary approach which brings together both clinicians and pathologists. Currently, histological assessments remain the gold standard for making a diagnosis of prostate cancer.[2] Therefore, the precise and thorough documentation of histological findings is important to ensure an accurate diagnosis, determine patient prognosis and inform patient management decisions.[3]

The need for increased details and standardisation in histology reports has led to the development of various checklists; accordingly, both the College of American Pathologists (CAP) and the Royal College of Pathologists (RCPath) have developed specific formats and protocols for histopathology reporting.[3,4] For prostate cancer, the necessary information in a pathology report includes the presence and type of cancer, Gleason score, neural involvement, lymphovascular invasion, periprostatic fat and seminal vesicle involvement (where applicable) and the presence of high-grade prostatic intraepithelial neoplasms (HGPINs). In addition, the RCPath documentation also includes a microscopic count of the number of cores and the percentage of cores involved by the tumour.[4] However, these details depend on whether the biopsy sample was taken via core needle or radical prostatectomy.

At the Lagos University Teaching Hospital, a tertiary healthcare centre in Lagos, Nigeria, the synoptic form of reporting prostate cancer specimens was adopted in 2015, with a gradual transition from the former narrative style between 2015 and 2016. This study aimed to compare narrative versus synoptic forms of prostate cancer histopathology reports received at the Lagos University Teaching Hospital according to established international standards. In addition, the benefits of synoptic reporting are discussed as well as solutions to offset possible challenges that may arise during the transition to a synoptic style of reporting.

Methods

This study was conducted from January 2010 to December 2015 at the Lagos University Teaching Hospital. All reports of malignant core needle prostate cancer biopsy specimens received during this period were reviewed. As per the CAP and RCPath protocols for reporting prostate cancer, inclusion of the following parameters in the reports was noted: microscopic count of the number of cores, nature of the tumour, number of cores involved, total percentage of cores involved by the tumour, Gleason score and the presence of high-grade prostatic intraepithelial neoplasms (HGPINs) and lymphovascular and neural invasion.[3,4]

Data were analysed using descriptive statistics. Statistical significance was determined using Fisher's exact test with the level of significance set at $P < 0.005$. Ethical approval for the study was granted by the Health Research and Ethics Committee of the Lagos University Teaching Hospital. The names of the patients were blinded and only biopsy numbers were used for the purposes of identification.

Results

A total of 83 malignant prostate biopsies were received during the study period. Of these, 27 (32.5%) were reported narratively and 56 (67.5%) were reported synoptically. Synoptic reports documented the number of cores in 96.4% of cases, while narrative reports contained this information in only 33.3% of cases. The number of cores involved by the tumour and percentage of core involvement was described in 94.6% and 100.0% of synoptic reports, respectively, and 11.1% and 3.7% of narrative reports,

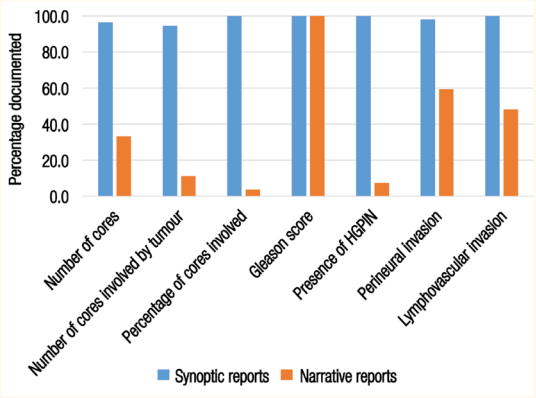

Figure 1: Comparison of parameters documented in synoptic versus narrative reports of malignant prostate cancer biopsies received at the Lagos University Teaching Hospital, Lagos, Nigeria (N = 83).
HGPIN = high-grade prostatic intraepithelial neoplasia.

Table 1: Parameters documented in narrative versus synoptic reports of malignant prostate cancer biopsies received at the Lagos University Teaching Hospital, Lagos, Nigeria (N = 83)

Parameter	n (%)				*P* value*
	Narrative reports (n = 27)		Synoptic reports (n = 56)		
	Documented	Not documented	Documented	Not documented	
Number of cores†	9 (33.3)	18 (66.7)	54 (96.4)	2 (3.6)	<0.001
Number of cores involved by tumour	3 (11.1)	24 (88.9)	53 (94.6)	3 (5.4)	<0.001
Percentage of cores involved	1 (3.7)	26 (96.3)	56 (100.0)	0 (0.0)	<0.001
Gleason score	27 (100)	0 (0.0)	56 (100.0)	0 (0.0)	>0.999
Presence of high-grade PIN	2 (7.4)	25 (92.6)	56 (100.0)	0 (0.0)	<0.001
Perineural invasion	16 (59.3)	11 (40.7)	55 (98.2)	1 (1.8)	<0.001
Lymphovascular invasion	13 (48.1)	14 (51.9)	56 (100.0)	0 (0.0)	<0.001

PIN = prostatic intraepithelial neoplasia.
**Using Fisher's exact test. †As observed microscopically.*

respectively. Gleason scores were recorded in all reports, regardless of format. Only 7.4% of narrative reports noted the presence of HGPINs as compared to 100.0% of synoptic reports. Finally, perineural and lymphovascular invasion was documented in 98.2% and 100.0% of synoptic reports, respectively, and 59.3% and 48.1% of narrative reports, respectively [Figure 1]. Apart from Gleason score, documentation of all clinicopathological parameters was significantly greater in synoptic compared to narrative reports (*P* <0.001 each) [Table 1].

Discussion

In prostate cancer biopsy reports, recording the number of cores is important as this count is subsequently correlated with the number of biopsies taken, processed and present on the histology slide; this approach serves as an internal quality control measure to ensure that all tissues submitted for biopsy are duly processed. Moreover, the number of cores involved by the tumour and the total percentage of cores involved are major determinants of prognosis as they are both indicative of the overall size of the tumour.[5–7] As per the CAP protocols, it is imperative that the number of positive cores out of the total number of cores are invariably reported for needle core biopsy specimens, except in cases where a precise count is impossible due to fragmentation.[5] Freedland *et al*. reported that the percentage of the area of biopsy tissue with cancer was the strongest predictor of biochemical recurrence, seminal vesicle invasion and non-organ-confined disease.[6] In addition, Brimo *et al*. reported that the portion of cores involved by the tumour, total percentage of tumour involvement and both the total and greatest tumour lengths in millimetres were the variables most closely linked with pathological stage and treatment failure.[7] Critically, there was a vast difference between the documentation of these parameters in the synoptic and narrative reports reviewed in the current study.

Another remarkable discrepancy between synoptic and narrative reports in the present study was in the documentation of HGPINs. According to the CAP, the documentation of HGPINs in a prostate cancer specimen is optional.[5] However, this factor may be important in benign cases in which widespread HGPINs could signify the potential development of an adenocarcinoma and therefore warrant close follow-up; for example, Netto *et al*. found that 40 out of 41 patients with widespread HGPINs developed prostate cancer within two years of diagnosis.[8] The presence of perineural invasion is similarly important in determining treatment strategy. After a two-year follow up of patients treated with external beam radiotherapy, Yu *et al*. demonstrated that perineural invasion was more prevalent in higher-risk groups and was associated with an increased risk of biochemical recurrence.[9] However, this factor did not result in significantly different long-term PSA recurrence rates in a study by O'Malley *et al*., nor was there any significant difference in final Gleason scores or pathological staging among cohorts.[10]

In contrast, Vargas *et al*. found that perineural invasion was a likely predictor of extraprostatic extension in prostatectomy samples.[11] In the current study, Gleason score was the only factor which was emphasised in both synoptic and narrative reports. This finding might be connected with longstanding and irrefutable evidence indicating that Gleason

score is a major determinant of prognosis in prostate cancer.[12]

In general, there are numerous benefits to synoptic in comparison to narrative biopsy reporting. With narrative reports, clinicians must comb through a large amount of macroscopic, microscopic, diagnostic and other information in order to unearth the essential knowledge required for clinical decision-making.[3] In contrast, the uniform template of synoptic reports facilitates research and decision-making by highlighting significant diagnostic and prognostic findings; this also lessens the likelihood of misinterpreting results or making clinical errors.[13] Moreover, the reporting of results in a synoptic format is useful for tumour registries, government agencies, health planners and researchers by ensuring the uniformity of documentation received from various sources.[13] Previous studies evaluating various formats for reporting head and neck, colorectal and breast cancer specimens have concluded that synoptic reporting is associated with significantly higher rates of information completeness.[14–16] Overall, the implementation of standard synoptic reporting criteria will lead to the production of uniform high-quality prostate cancer biopsy reports.

Nevertheless, the transition from narrative to synoptic reporting standards can be challenging. At the Lagos University Teaching Hospital, ultrasound-guided prostate biopsies are not routinely received and sometimes all biopsies taken from one patient are transported in a single container due to financial constraints. Such practices make synoptic reports less valuable as the cores involved cannot be traced to one particular zone of the prostate. Suggestions that may be helpful to ensure compliance with CAP standards include financial incentives to participating institutions for producing a complete pathology report and grading the performance of an individual centre with regards to their adoption of the CAP checklist.[13] In particular, a constructive feedback loop should be established between surgeons and pathologists, of which the latter should be encouraged to comply with synoptic reporting methods and train resident doctors in their use. The involvement of surgeons during the transition to a synoptic checklist is one factor that cannot be overemphasised, particularly as they are the final recipient of the biopsy report in most cases.[13] These strategies were implemented at the Lagos University Teaching Hospital and, although constraints still exist in terms of surgical equipment and patient costs, the institution has witnessed a gradual adoption of the synoptic style of reporting.

Conclusion

Synoptic reporting of malignant prostate cancer biopsies received at the Lagos University Teaching Hospital produced significantly more complete reports than those documented in a narrative format. The adoption of synoptic reporting standards is highly recommended to ensure the production of complete and uniform biopsy reports.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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