African Journal of Urology (2018) **24**, 54–55

African Journal of Urology

Official journal of the Pan African Urological Surgeon's Association
web page of the journal

www.ees.elsevier.com/afju
www.sciencedirect.com

Prostate Diseases
Short Communication

The untapped potential of digital pathology in prostate cancer diagnosis and medical education in sub-Saharan Africa

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Received 3 April 2017; accepted 14 July 2017
Available online 7 February 2018

KEYWORDS
Prostate cancer;
Digital pathology;
Africa

Abstract
Introduction: Prostate cancer exerts a significant burden of disease in sub-Saharan Africa. Late clinical presentation with metastatic disease at diagnosis and the lack of structured national screening programs are unsolved issues. The delay in prostate cancer diagnosis is in part due to the severe shortage of African pathologists with inadequate or inaccessible diagnostic infrastructure playing a contributory role to this problem.
Discussion: Digital pathology platforms could offer new solutions to the diagnostic and educational challenges facing pathologists practicing in Africa. For prostate cancer, they could provide several advantages including the assessment of biopsy cores, measurement of tumor volumes and second opinion consultation of difficult cases. They may also be an outstanding tool in developing Gleason tutorials for educational and standardization purposes.
Conclusion: A transition to digital pathology in sub-Saharan Africa could yield incremental benefits to the quality of pathology diagnosis and highlight the growing capacity of digital pathology as a sub-speciality educational tool in the training of African pathologists both in prostate pathology and other pathology sub-specializations.

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Peer review under responsibility of Pan African Urological Surgeons' Association.

https://doi.org/10.1016/j.afju.2017.07.003

We found the paper by Abdulkadir et al. – "Facial nerve palsy as a primary presentation of advanced carcinoma of the prostate: An unusual occurrence" – stimulating in several aspects. We noted with interest the unusual presentation of an isolated facial nerve palsy as the presenting symptom in a 65-year-old Nigerian man with Grade Group 3 (Gleason score 4 + 3 = 7) prostatic adenocarcinoma [1].

As in this case, late clinical presentation of prostate cancer with advanced, metastatic disease at diagnosis is a frequent occurrence in sub-Saharan Africa. PSA screening, which may contribute to early diagnosis of prostate cancer, is often officially recommended by African governments. However, in the absence of structured national screening programs, it is predominantly used diagnostically and is also costly to the patient as most patients rely on out-of-pocket spending.

The severe shortage of African pathologists and inadequate infrastructure contributes to the delay in prostate cancer diagnosis. In many sub-Saharan African countries, less than 1 pathologist per 1 000 000 population is available, whereas the United States has an estimated one clinical or anatomical pathologist for every 20 000 people. Most African pathologists are underpaid and work in tertiary hospitals and academic institutions, where they usually evaluate routine hematoxylin-eosin stains with low availability of ancillary techniques [2].

Digital pathology has matured and it is now technically possible to offer novel digital solutions to the diagnostic and educational challenges facing pathologists practicing in Africa. Whole slide scanning and virtual microscopy hold the capacity to transform the nature of second opinion consultations as well as undergraduate and postgraduate pathology education.

For prostate cancer, the high resolution images made available by these platforms provide users with several advantages including the reliable assessment of biopsy cores, measurement of tumour volume, and double reading of difficult cases for consensus diagnosis [3]. Digital pathology may also be an outstanding tool in developing Gleason grading tutorials for educational and standardization purposes, as prostate pathology is generally challenging and the variable inter-agreement between pathologists in Gleason scoring remains a point of diagnostic concern and ongoing research [4].

It is now technically viable to routinely use digital pathology in clinical diagnosis of not only prostatic biopsies but of all surgical specimens. Indeed, a few fully digitized pathology laboratories in Europe already use digital pathology systems in primary diagnosis and sign-out. Unlike Europe however, digital pathology in the USA is largely used in consultations, medical education and research [5].

Currently, most sub-speciality training in histopathology requires an African pathologist to travel abroad for months or years. This kind of training is expensive and often competitive thus limiting the number of pathologists who may benefit from such programmes. Digital pathology implemented with affordable scanners and virtual microscopes could provide experienced uropathologists with opportunities to hold remote consultations on difficult cases and even train pathologists through structured digital training programmes.

We believe a transition to digital pathology in sub-Saharan Africa could yield significant benefits including improved quality of diagnosis and increased capacity to train pathologists not only in prostate pathology but also in other pathology sub-specializations. This would go a long way in addressing the perennial shortage of pathologists on the continent.

Authors' contribution

X. Farré: Concept, collecting the literature, writing the letter, critically reviewing the letter, submitting the letter (xfarre@fulbrightmail.org).

J. Kibera: Collecting the literature, writing the letter, critically reviewing the letter, grammar correction (chege.joshua@gmail.com).

Conflict of interest

None.

Source of funding

None.

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