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A Nationwide Study of Breast Cancer Histopathology in Cameroon (Central Africa)

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Abstract

Background and objectives: Breast cancer is the commonest cancer in Africa. Like other countries in that continent, Cameroon has very week pathology and health information services. This study was conducted to determine the histopathologic features of breast cancer all over Cameroon.

Methods: The study was retrospective and cross-sectional. Data were collected in the 10 regional hospitals and in national referral hospitals. We included complete files of patients diagnosed with breast cancer from January 1, 2008 to December 31, 2015. Doubloons were avoided for patients seen both at regional and national hospitals. Files with conflicting pathology results were excluded.

Results: Of the 1666 files included, 180 (12.6%) with conflicting pathology results were excluded and 1486 cases were analyzed. Mean age was 47.9 years (range 17-91 years).Ethnic groups from 3 regions out of 10 accounted for 78.1% of patients. 82.3% of cases were diagnosed in the two regions main towns of the country. Diagnosis was late, with 97.5% of patients already presenting symptoms. Histopathological analysis was performed for 1371 (92.3%) of cases. Pathology specimens were mainly biopsies (79.4%). All male breast cancers (15 cases) and 87.7% of female cases were ductal carcinoma. Grade 2 of Scarff-Bloom-Richardson's classification was the most frequent (51.1%) followed by Grade 3 (303%).

Discussion: Ethnicity seems to have an influence on breast cancer distribution in Cameroon. Pathological diagnosis is mainly done on biopsies and ductal carcinoma is the most frequent type of breast cancer in the country. Pathology services should be evenly distributed around the country.

Keywords: Breast; Cancer; Histopathology; Cameroon; Nationwide

Introduction

Cameroon like other sub-Saharan African (SSA) countries is not prepared to cope with the worsening burden of non-communicable diseases (NCDs) that accounts for 31% (3% due to cancers) of total deaths in the country [1,2]. The country does not meet 6 of the 9 World Health Organization (WHO) targets of health system response to NCDs; this includes the absence of a national population-based cancer registry [2].

In its 2016-2027 health sector strategy Cameroon engaged itself to ensure availability of quality health information at all levels for evidence based decision-making [3]. Breast Cancer (BC) is the commonest cancer in Cameroon [4]. Data on cancers from the Cameroon health system are still incomplete while those from global health partners are obtained after extrapolation [4,5]. Data published by the Ministry of Health revealed that cancers were responsible for 4.5% of deaths in 2016 [5]. In comparison, during the same year the following conditions contributed to the death toll as follows: tuberculosis (2.1%), liver cirrhosis (2.4%), road traffic accidents (4.4%), cardiovascular diseases (11.6%) and neurological diseases (0.9%) [5].

In sub-Saharan Africa, only 10% of histopathology needs are met and this is a major barrier to comprehensive management of cancers [6]. In Cameroon there are 19 pathologists currently in practice for 22,179,707 inhabitants and there is no pathology-oriented clinician [5]. Several authors have described histopathology of BC in Cameroon, but the scope of their data was not national [7-12]. Our objective was to describe histopathologic features of BC all over Cameroon.

Material and Methods

Study design

We carried out a retrospective cross-sectional study from December 1, 2017 to march 31, 2017. The study took place inreferral hospitals of all the ten administrative regions and in all national referral hospitals of Cameroon. Figure 1 shows the administrative map of Cameroon with regional capitals. Clearances were obtained from the institutional ethical committee of the Faculty of Medicine and Biomedical Sciences of the University of Yaounde 1 (Ethical clearance number 0113/UYI/FMSB/vn issued on the 4th January 2017) and from the managers of all those health facilities. We included complete files of patients managed

for breast cancer from January 1, 2008 to December 31, 2015. Files with conflicting pathology results were excluded (180 files).

Figure 1: Map of Cameroon showing its administrative regions and neighboring countries.
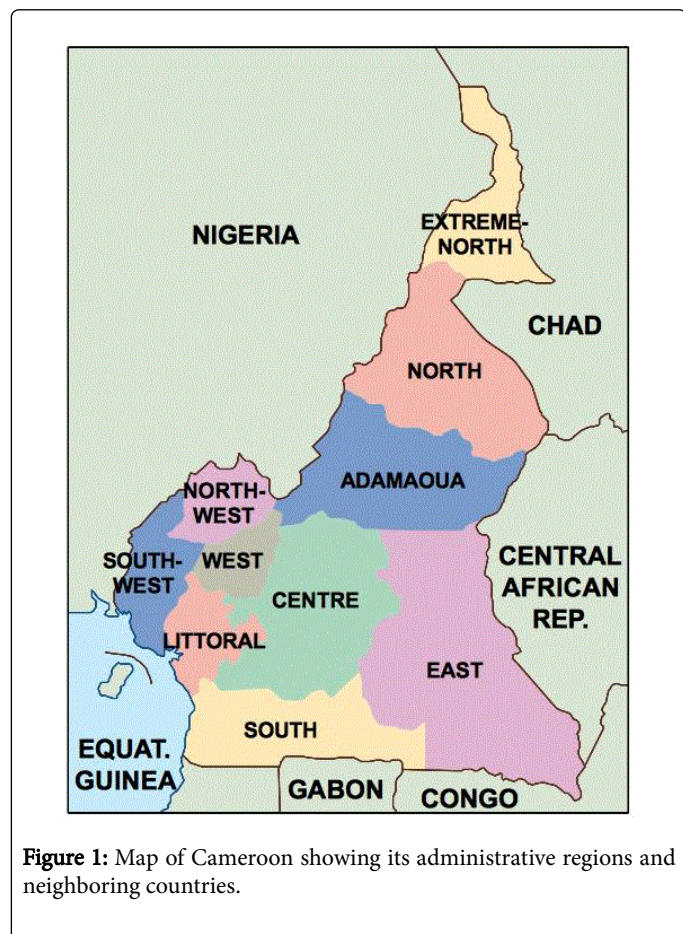
Data collection and management

Data were collected under three subheadings: sociodemographics (age, sex, education, occupation, marital status, regions of origin and recruitment), clinical features (diagnostic circumstances and clinical involvement of axillary lymph nodes) and histopathologic features (type of specimens, histologic type, Scarff-Bloom-Richardson's grade and axillary lymph nodes involvement). Files of patients referred from regional to national referral hospitals were recruited only once (at regional level).

All data were collected on paper forms then computerized using the version 6.3.2 of the software Census and Survey Processing System. Descriptive statistics were computed with the version 23 of the Software Statistical Package for Social Sciences (SPSS°).

Results

For the 8 year-period under scrutiny, 1666 files were included (208.3 cases/year). Those with conflicting pathology results were excluded (180) and the remaining 1486 were analyzed.

Sociodemographic characteristics

Women accounted for 1470 (98.9%) of cases. Most patients were married (70.4%). An overwhelming majority of cases were found in the centre and littoral regions (43.6% and 38.7% respectively). Mean age (standard deviation) at diagnosis was 47.9 (13.3) years, with extremes of 17 and 91 years. Distribution of patients according to occupation was: government employee (11.6%), private corporations' employee (11.6%), the professions (7.4%) and jobless (69.4%). The distribution of cases by age, education and region of origin is presented in Table 1.

Characteristics	Frequencies (N=1486)	Proportions (%)
Age (years)		
<18	3	0.2
18-19	4	0.
20-39	374	25.2
41-69	866	58.2
≥70	107	7.2
NA	132	8.9
Level of education		
Illiterate	333	22.4
Primary	385	25.9
Secondary	435	29.3
Higher	333	22.4
Region of origin		
Centre	543	36.5
West	377	25.4
Littoral	240	16.2
South-West	127	8.5
Adamaoua	44	2.9
North-west	43	2.9
Far-north	32	2.2
North	32	2.2
South	30	2.0
East	18	1.2

Table 1: Distribution of cases by age, education and region of origin.

Clinical features

Diagnosis was made under the following circumstances: consultation for symptoms (all men and 97.5% of women), ad-hoc screening campaign (0.8% of women) and breast self-examination (1.7% of women). Axillary lymph nodes were clinically involved in 3 (18.8%) men and 872 (59.3%) women.

Histopathological features

Diagnosis was mostly made by pathologists (1371 (92.3%)) but also on clinical features only (115 cases (7.7%)). Out of the 1371 cases with

pathological diagnoses, 1089 (79.4%) were made on biopsies and 282 (20.6%) on resection specimens. Male BCs were all (15) ductal invasive carcinomas and had the following Scarff-Bloom-Richardson distribution: 2 of grade 1; 8 of grade 2 and 1 of grade 3 (1 result with regard to grade not available). Table 2 shows the distribution of female BCs by histologic types and Scarff-Bloom-Richardson's grades.

Characteristics	Frequencies (N=1356)	Proportions (%)
Histologic type		
Ductal carcinoma	1190	87.8
Lobular carcinoma	117	8.6
Medullary carcinoma	26	1.9
Papillary carcinoma	10	0.7
Mucinous carcinoma	6	0.4
Sarcoma	4	0.3
Primary breast lymphoma	2	0.1
Neuroendocrine carcinoma	1	0.009
SBR's grade		
Grade 1	243	17.9
Grade 2	693	51.1
Grade 3	410	30.3
NA	10	0.7

Table 2: Distribution of female breast cancers by histologic types and SBR's grades.

Discussion

Sociodemographic and clinical features

The male/female breast cancer ratio in our series (1.1%) is close to that of 1% observed elsewhere than in Africa thougha meta-analysis found a much higher figure (4.2%) in Africa [13].

Over the 8-year period (2008-2015) under scrutiny we identified 1666 cases of BC; this contrasts with the 5-year prevalence in 2012 estimated at 8082 cases all over the Cameroon by the WHO after extrapolation [4]. Though our study systematically reviewed BCs in all the regions of Cameroon, it did not go beyond central and intermediate levels of the health system thus failing to include cases that remained peripheral (level of health district and inside the community). Another plausible explanation is that many cases (taken into account in WHO population extrapolations) never attended modern health facilities as it has been reported for other cancers in sub-Saharan Africa [1,14-17].

Several factors explain why Yaounde and Douala accounted for more than 80% of cases. Firstly, the hospitals we included in those towns serve as referral facilities for the center and littoral regions which together account for 33.7% of the country population, both cities accounting for 24.7% [18]. Secondly, as the political and economic capital cities, those towns are characterized by higher proportions of educated and employed citizens more prone to attend modern hospitals. Thirdly, with 17 out of the 19 pathologists currently in practice in the country working in these two towns, access to pathology services is easier than in other regions.

It is quite striking that 78.1% of patients belonged to ethnic groups from three regions (Center, West and Littoral). It is known that incidence and mortality from BC depends on race and ethnicity but such atremendous disparity in Cameroon has not yet been reported [19,20]. Specific studies should be carried out to confirm and better characterized these finding in view of informing BC control strategies.

Mean age at diagnosis of BC in our series is within the range of previously reported figures (33-46 years) in Cameroon and neighboring countries [1,7-12,21-23]. Like other researchers we found that diagnosis was very late (97.5% of cases were discovered following symptoms including clinical involvement of axillary lymph nodes). That result was foreseeable given the absence of screening (neither systematic nor opportunistic). Reasons for lateness in seeking modern cancer care in sub-Saharan are known and were out of the scope our study but high joblessness and illiteracy rates among patients (22.4% and 69.4% respectively) may have contributed [1,15-17]. Late diagnosis and barriers to optimal holistic management of overt cases of BCs explain the ever depicted poor survival of patients in Cameroon [7-12].The tremendous scarcity of cancer-oriented clinicians and public health specialists that has been acknowledged by the ministry of health should to be tackled urgently in view of reversing the fast rising incidence of breast and other cancer in Cameroon [5].It is almost certain that such a human resource shall conceive and start a much more effective nationwide cancer control policy.

Histologic features

More than nine tenths of diagnosis was made by pathology services and archives were usable at the intermediate level of health system. Despite numerous challenges in implementing pathology services at national level in Cameroon, this can be considered as a promising step to be considered by policymakers when drawing national strategies for cancer control. Indeed6 of the 10 regions don't have a pathologist, meaning that there is already an effective mechanism for dispatching of specimens and results. In comparison, only 37.5% of BCs in Niger are confirmed by pathologists and there is only one pathology unit in the Central African Republic [22,23].

Invasive ductal carcinoma was by far the most frequent histologic type in our series. This is a classical feature of breast malignancies commonly reported by Cameroonian and other sub-Saharan African researchers [7-13,19-23].

A major function of pathology in the management of BC is to establish the prognosis and guide surgical and adjuvant therapies (6). Unfortunately the histological prognosis has been based only on histological type and the Scarff-Bloom-Richardson's grade. There is a great need for an interdisciplinary strategy to foster a much more detailed histopathological analysis of cancer specimens. A wide range of specialists should intervene (surgical oncologists, medical oncologists, radiation oncologist and pathologists) in the frame of routine tumor boards at institutional levels. This will generate request and relevant use of more histoprognostic details. At the national level, the ministry of health and other policymakers must intervene by allocating the necessary funds to equip pathology units with the necessary technology and (further) train pathologists.

Conclusion

The novelty in this study is the nationwide coverage which is an (initial) answer to the information gap on characteristics of BCs in Cameroon. The retrospective collection of data has certainly limited the scope but prospective collection of such data all over the country is the role of a national cancer registry. Another aspect to explore is how pathology results are used in managing BC patients in Cameroon.

Acknowledgement

References

1. Price AJ, Ndom P, Atenguena E, Mambou Nouemssi JP, Ryder RW (2012) Cancer challenges in developing countries. Cancer 118: 3627-3635.

2. World Health Organization (2014) Non communicable diseases country profiles 2014. WHO Document Production Services, Geneva.

3. Ministry of Public Health-Cameroon (2016) Health sector strategy 2016-2027. Ministry of Public Health, Cameroon, Yaounde.

4. World Health Organization (2014) Globocan: Estimated cancerincidence, mortality and prevalence worldwide in 2012. WHO Document Production Services, Geneva.

5. Ministry of Public Health (2017) Health analytical profile 2016 Cameroon. Ministry of Public Health, Cameroon, Yaounde.

6. Adesina A, Chumba D, Nelson AM, Orem J, Roberts DJ, et al. (2013) Improvement of pathology in sub-Saharan Africa. Lancet Oncol 14: e152-157.

7. Kemfang Ngowa JD, Yomi J, Kasia JM, Mawamba Y, Ekortarh AC, et al. (2011) Breast cancer profile in a group of patients followed up at the radiation therapy unit of the Yaounde General Hospital, Cameroon. Obstet Gynecol Int.

8. Sando Z, Fouogue JT, Fouelifack FY, Fouedjio JH, Mboudou ET, et al. (2014) Profile of breast and gynecological cancers in Yaoundé-Cameroon. Pan Afr Med J 17: 28.

9. Nguefack CT, Biwole ME, Massom A, Kamgaing JT, Njamen TN, et al. (2012) Epidemiology and surgical management of breast cancer in gynecological department of Douala General Hospital. Pan Afr Med J 13: 35.

10. Engbang JP, Essome H, Koh VM, Simo G, Essam JD, et al. (2015) Breast cancer in Cameroon, histo-epidemiological profile: about 3044 cases. Pan Afr Med J 21: 242.

11. Essiben F, Foumane P, Meka EJNU, Tchakounte M, Dohbit SJ, et al. (2017) Descriptive analysis of 192 cases of breast cancer occurring before age 40 in Yaounde, Cameroon. Int J Reprod Contracept Obstet Gynecol 6: 2704-2710.

12. Essiben F, Foumane P, Mboudou E, Dohbit J, Mve Koh V, et al. (2013) Diagnostic et traitement du cancer du sein au Cameroun : à propos de 65 cas. Mali Médical 28: 1-5.

13. Ndom P, Um G, Bell EM, Eloundou A, Hossain NM, et al. (2012) A meta-analysis of male breast cancer in Africa. Breast 21: 237-241.

14. Afungchwi GM, Hesseling PB, Ladas EJ (2017) The role of traditional healers in the diagnosis and management of Burkitt lymphoma in Cameroon: understanding the challenges and moving forward. BMC Complement Altern Med. 17: 209.

15. Brinton L, Figueroa J, Adjei E, Ansong D, Biritwum R, et al. (2017) Factors contributing to delays in diagnosis of breast cancers in Ghana, West Africa. Breast Cancer Res Treat 162: 105-114.

16. Ntirenganya F, Petroze RT, Kamara TB, Groen RS, Kushner AL, et al. (2014) Prevalence of breast masses and barriers to care: results from a population-based survey in Rwanda and Sierra Leone. J Surg Oncol 110: 903-906.

17. Mwaka AD, Okello ES, Orach CG (2015) Barriers to biomedical care and use of traditional medicines for treatment of cervical cancer: an exploratory qualitative study in northern Uganda. Eur J Cancer Care (Engl) 24: 503-513.

18. Central Bureau of the Census and Population Studies (2014) Rapport national sur l'état de la Population Camerounaise. Central Bureau of the Census and Population Studies-Cameroon, Yaounde.

19. Singh E, Joffe M, Cubasch H, Ruff P, Norris SA, et al. (2017) Breast cancer trends differ by ethnicity: A report from the South African National Cancer Registry (1994-2009). Eur J Public Health 27: 173-178.

20. Smigal C, Jemal A, Ward E, Cokkinides V, Smith R, et al. (2006) Trends in breast cancer by race and ethnicity: update 2006. Cancer J Clin, CA 56: 168-183.

21. Essiben F, Foumane P, Meka NUE, Soh SP, Dohbit SJ, et al. (2016) Risk factors for breast cancer: a case-control study of 315 women followed in the gynecology and oncology departments of two university teaching hospitals in Yaounde, Cameroon. OJOG 6: 676-688.

22. Zouladeny H, Dille I, Wehbi NK, Kim J, Soliman AS (2015) Epidemiologic and clinical profiles of breast diseases in Niger. Int J Cancer Oncol 2: 15.

23. Balekouzou A, Yin P, Pamatika CM, Bishwajit G, Nambei SW, et al. (2016) Epidemiology of breast cancer: retrospective study in the Central African Republic. BMC Public Health 16: 1230.