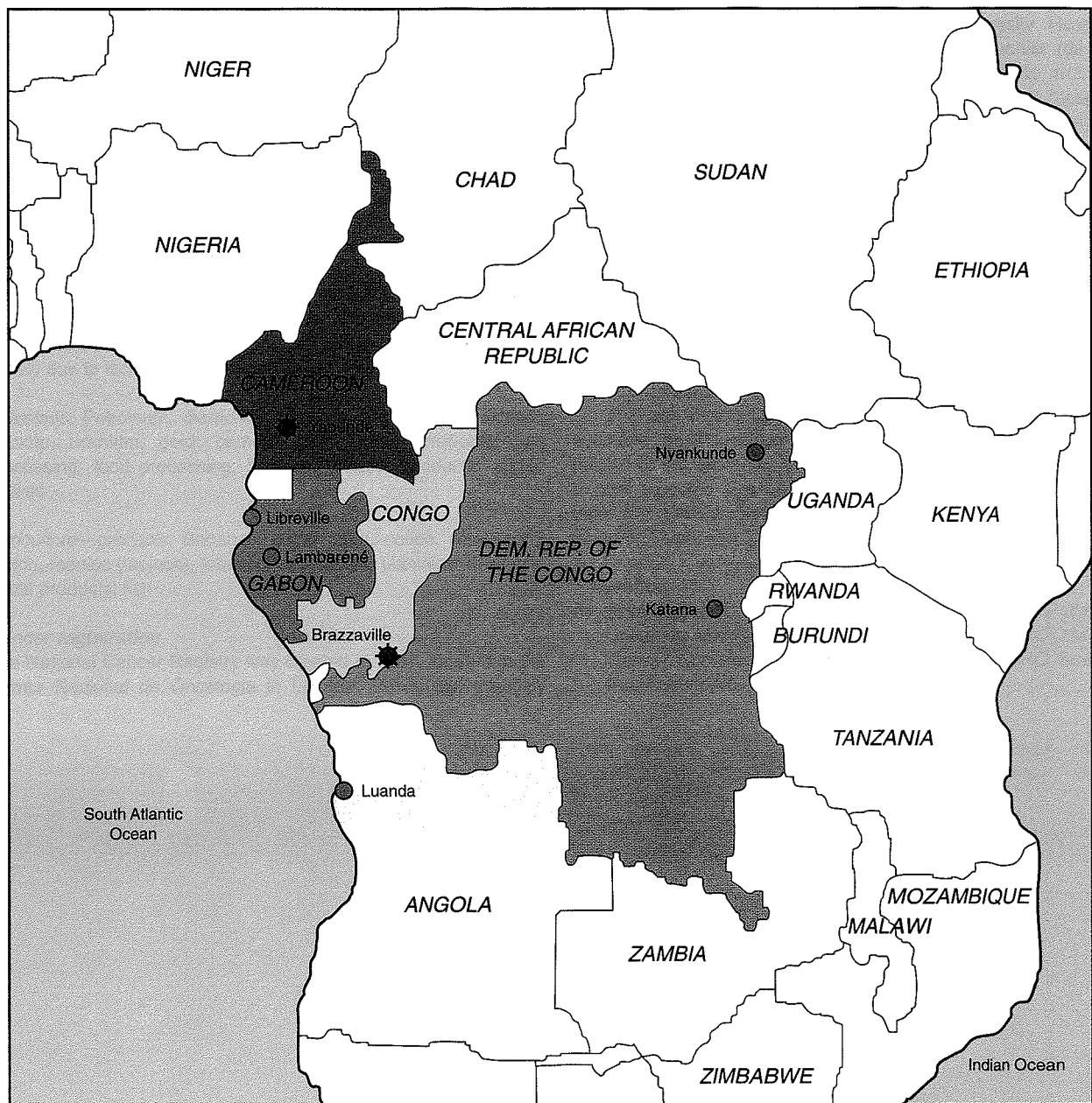


3.3 Central Africa



3.3.1 Angola

Background

Climate: Semiarid in south and along coast to Luanda; north has cool, dry season (May to October) and hot, rainy season (November to April)

Terrain: Narrow coastal plain rises abruptly to vast interior plateau

Ethnic groups: Ovimbundu 37%, Kimbundu 25%, Bakongo 13%, mestico (mixed European and native African) 2%, European 1%, other 22%

Religions: Indigenous beliefs 47%, Roman Catholic 38%, Protestant 15% (1998 est.)

Economy—overview: Angola has an economy in disarray because of more than 20 years of nearly continuous warfare. Despite its abundant natural resources, output per capita is among the world's lowest. Subsistence agriculture provides the main livelihood for 85% of the population. Oil production and the supporting activities are vital to the economy, contributing about 50% to GDP. Notwithstanding the signing of a peace accord in November 1994, sporadic violence continues, millions of land mines remain, and many farmers are reluctant to return to their fields. As a result, much of the country's food must still be imported. Despite the high inflation and political difficulties, total output grew an estimated 9% in 1996, largely due to increased oil production and higher oil prices.

Industries: Petroleum, diamonds, iron ore, phosphates, feldspar, bauxite, uranium, gold; cement; basic metal products; fish processing; food processing; brewing; tobacco products; sugar; textiles

Agriculture—products: Bananas, sugar cane, coffee, sisal, corn, cotton, manioc (tapioca), tobacco, vegetables, plantains; livestock; forest products; fish

Cancer registration

The National Cancer Registry was created in 1987, located in the Centro Nacional de Oncologia in Luanda. Previously, the only

available statistics on cancer were derived from the Department of Pathology in the major university hospital (Americo Boavida). A report of the first four years of registration (1987–90) was published in 1990. The major source of notification to the registry remains the pathology departments of three hospitals in Luanda (including the Oncology Centre) (85% of recorded cases with histology), and the other cases registered are primarily from the same hospitals. Only 2% of registrations come from laboratories outside Luanda Province.

Review of data

Data from the Department of Pathology, University Hospitals, Luanda for the years 1977–1980 were published earlier (da Silva Lopes, 1986). The more recently published results from the National Cancer Registry are shown in Table 1, and it is these that have been used in preparing national estimates of incidence.

There is a small excess of cases in females, in whom cervix cancer is the major cancer (23.3%), followed by cancer of the breast (15.6%), skin (8.2%), stomach (5.1%) and non-Hodgkin lymphomas (4.5%). In men, the principal cancers are skin (10.2%), stomach (9.5%), non-Hodgkin lymphomas (6.9%), liver (5.6%) and Kaposi sarcoma (5.0%).

These results have to be interpreted cautiously, because of the high percentage of cases derived from pathology departments. Nevertheless, the high frequency of stomach cancer is noteworthy (85% with histology). Liver cancer (61% of cases with histology) is probably underestimated.

The age distribution of the Kaposi sarcoma cases was not available, so it is difficult to be certain whether they are AIDS-related or not. However, the high sex ratio (37:6) and the fact that Kaposi sarcoma was observed to be 'frequent' in the 1977–80 data (da Silva Lopes, 1986) suggests that many are of the 'endemic' type.

Reference

da Silva Lopes, C.A. (1986) Angola. Department of Pathology, University Hospitals, Luanda, 1977–1980. In: Parkin, D.M., ed., *Cancer Occurrence in Developing Countries* (IARC Scientific Publications No. 75), Lyon, IARC, pp. 33–35

Table 1. Angola 1987–90: frequency data

| Site | Male | | Female | | %HV |
|----------------------------|------|--------|--------|--------|-----|
| | No. | % | No. | % | |
| Oral cavity | 35 | 4.7% | 20 | 2.5% | 93 |
| Nasopharynx | 4 | 0.5% | 6 | 0.7% | 70 |
| Other pharynx | 15 | 2.0% | 11 | 1.4% | 77 |
| Oesophagus | 32 | 4.3% | 3 | 0.4% | 77 |
| Stomach | 71 | 9.5% | 41 | 5.1% | 85 |
| Colon/rectum | 22 | 3.0% | 15 | 1.9% | 86 |
| Liver | 42 | 5.6% | 17 | 2.1% | 61 |
| Pancreas | 9 | 1.2% | 1 | 0.1% | 90 |
| Larynx | 19 | 2.6% | 4 | 0.5% | 74 |
| Lung | 30 | 4.0% | 9 | 1.1% | 67 |
| Melanoma | 15 | 2.0% | 17 | 2.1% | 100 |
| Other skin | 76 | 10.2% | 66 | 8.2% | 97 |
| Kaposi sarcoma | 37 | 5.0% | 6 | 0.7% | 100 |
| Breast | 3 | 0.4% | 126 | 15.6% | 82 |
| Cervix uteri | | | 188 | 23.3% | 87 |
| Corpus uteri | | | 25 | 3.1% | 88 |
| Ovary etc. | | | 34 | 4.2% | 76 |
| Prostate | 30 | 4.0% | | | 93 |
| Penis | | | | | |
| Testis | 5 | 0.7% | | | 80 |
| Bladder | 28 | 3.8% | 9 | 1.1% | 89 |
| Kidney etc. | 8 | 1.1% | 12 | 1.5% | 90 |
| Eye | | | | | |
| Brain, nervous system | 3 | 0.4% | 4 | 0.5% | 57 |
| Thyroid | 7 | 0.9% | 16 | 2.0% | 96 |
| Non Hodgkin lymphoma | 51 | 6.9% | 36 | 4.5% | 98 |
| Hodgkin disease | 12 | 1.6% | 1 | 0.1% | 100 |
| Myeloma | 2 | 0.3% | 0 | 0.0% | 100 |
| Leukaemia | 12 | 1.6% | 9 | 1.1% | 100 |
| ALL SITES | 744 | 100.0% | 808 | 100.0% | 86 |
| ALL SITES excl. other skin | 668 | | 742 | | |

Source: Relatorio Annual, Centro Nacional de Cancro, Registro Nacional de Cancro, 1990

3.3.2 Cameroon

Background

Climate: Varies with terrain, from tropical along coast to semiarid and hot in north

Terrain: Diverse, with coastal plain in southwest, dissected plateau in centre, mountains in west, plains in north

Ethnic groups: Cameroon Highlanders 31%, Equatorial Bantu 19%, Kirdi 11%, Fulani 10%, Northwestern Bantu 8%, Eastern Nigritic 7%, other African 13%, non-African less than 1%

Religions: Indigenous beliefs 51%, Christian 33%, Muslim 16%

Economy—overview: Because of its oil resources and favourable agricultural conditions, Cameroon has one of the best-endowed primary commodity economies in sub-Saharan Africa. Still, it faces many of the serious problems facing other under-developed countries, such as a top-heavy civil service and a generally unfavourable climate for business enterprise. The development of the oil sector led to rapid economic growth between 1970 and 1985. Growth came to an abrupt halt in 1986, precipitated by steep declines in the prices of major exports: petroleum, coffee and cocoa. Export earnings were cut by almost one third, and inefficiencies in fiscal management were exposed. Inflation, which rose to 48% after the devaluation of 1994, has been brought under control.

Industries: Petroleum production and refining, food processing, light consumer goods, textiles, lumber

Agriculture—products: Coffee, cocoa, cotton, rubber, bananas, oilseed, grains, root starches; livestock; timber

Cancer registration

A cancer registry was established in the Anti-Cancer Centre in the Central Hospital, Yaounde, in 1994. The objective was to collect data on cancer cases for the resident population of the city (estimated as 561 600 males and 517 300 females in mid-1995).

Review of data

The results of the first two years of operation in the Anti-Cancer Centre, Yaounde are shown in Table 1. The great majority of cases

(80%) were identified in the two principal hospitals of the city (Central Hospital and University Teaching Hospital), and all had a histologically-based diagnosis. Calculation of incidence rates for this two-year period suggests a very low crude rate (24.1 per 100 000 in males and 33.7 per 100 000 in women). These figures imply considerable underascertainment, notably of cancer cases not diagnosed via the pathology laboratory, so that the calculated incidence rates are not presented.

The most common cancer in males is liver cancer (38.2%) followed by prostate (15.5%). In females, the most common cancers are cervix (30.7%), breast (27.1%), liver (10.3%) and ovary (6.7%). The category "skin" includes Kaposi sarcoma—it comprises 12.1% of cancers in men and 5.4% in women.

Previously, the most comprehensive picture of the cancer profile of Cameroon was the description of the series from the pathology laboratory of the Institut Pasteur, Yaounde, from the years 1969–73 (Table 2) (Jensen *et al.*, 1978). During these years, this was the only pathology laboratory in the country, and it recorded 3077 cancer cases (Table 2). As in all pathology series, superficial cancers are very evident (skin cancers and, in men, Kaposi sarcoma). Other than these, non-Hodgkin lymphoma (11.5%) and cancers of the liver (9.6%) are the most frequent in men, and cancers of the cervix (18.4%), breast (11.7%) and non-Hodgkin lymphoma (6.7%) in women.

Mbakop *et al.* (1992) provides some later information about histologically diagnosed cancers from 1986–91 (presumably from the authors' laboratory in Yaounde). This paper gives no breakdown by sex, but the most common sites are reported as liver (20%), skin (15%), cervix (11%), breast (11%) and lymph nodes (8%). The equality of the frequency of breast and cervix cancers is noteworthy.

References

- Jensen, O.M., Tuyns, A.J. & Ravisse, P. (1978) Cancer in Cameroon: a relative frequency study. *Rev. Epid. Santé Publ.*, **26**, 147–159
Mbakop, A., Essame Oyono, J.L., Ngbangako, M.C. & Abondo, A. (1992) Épidémiologie actuelle des cancers au Cameroun (Afrique Centrale). *Bull. Cancer*, **79**, 1101–1104

Table 1. Cameroon, Yaounde (1995-1996)

NUMBER OF CASES BY AGE GROUP - MALE

| SITE | ALL AGES | AGE UNK | MV (%) | 0- | 15- | 25- | 35- | 45- | 55- | 65+ | % | ICD (10th) |
|--|----------|---------|--------|----|-----|-----|-----|-----|-----|-----|-------|----------------|
| Mouth | 10 | 0 | 100 | - | 1 | 1 | 1 | 3 | 2 | 2 | 4.2 | C00-06 |
| Salivary gland | 3 | 0 | 100 | 1 | - | - | 2 | - | - | - | 1.3 | C07-08 |
| Nasopharynx | 7 | 0 | 100 | 1 | 2 | 1 | 2 | 1 | - | - | 2.9 | C11 |
| Other pharynx | 4 | 0 | 100 | - | - | 1 | 1 | 1 | 1 | - | 1.7 | C09-10, C12-14 |
| Oesophagus | 2 | 0 | 100 | 1 | - | - | - | 1 | - | - | 0.8 | C15 |
| Stomach | 1 | 0 | 100 | - | - | - | - | 1 | 1 | - | 0.4 | C16 |
| Colon, rectum and anus | 11 | 0 | 100 | - | 2 | 2 | 1 | 5 | 1 | - | 4.6 | C18-21 |
| Liver | 91 | 2 | 100 | 6 | 5 | 9 | 15 | 15 | 18 | 21 | 38.2 | C22 |
| Gallbladder etc. | 7 | 0 | 100 | - | - | 1 | 1 | - | 5 | - | 2.9 | C23-24 |
| Pancreas | 1 | 0 | 100 | - | - | - | - | - | 1 | - | 0.4 | C25 |
| Larynx | 8 | 0 | 100 | - | - | - | 1 | - | 3 | 4 | 3.4 | C32 |
| Trachea, bronchus and lung | 6 | 0 | 100 | - | - | 1 | - | - | 5 | - | 2.5 | C33-34 |
| Bone | 2 | 0 | 100 | 1 | 1 | - | - | - | - | - | 0.8 | C40-41 |
| Melanoma of skin | 1 | 0 | 100 | - | - | - | - | - | 1 | - | 0.4 | C43 |
| Other skin | 33 | 2 | 100 | 1 | 2 | 5 | 7 | 6 | 7 | 3 | - | C44 |
| Mesothelioma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C45 |
| Kaposi sarcoma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C46 |
| Peripheral nerves | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C47 |
| Connective and soft tissue | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C49 |
| Breast | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C50 |
| Penis | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C60 |
| Prostate | 37 | 1 | 100 | - | - | - | - | - | 3 | 12 | 21 | C61 |
| Testis | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C62 |
| Kidney | 1 | 0 | 100 | 1 | - | - | - | - | - | - | 0.4 | C64 |
| Renal pelvis, ureter and other urinary | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C65-66, C68 |
| Bladder | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C67 |
| Eye | 2 | 0 | 100 | 2 | - | - | - | - | - | - | 0.8 | C69 |
| Brain, nervous system | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C70-72 |
| Thyroid | 2 | 0 | 100 | - | - | - | 1 | 1 | - | - | 0.8 | C73 |
| Hodgkin disease | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C81 |
| Non-Hodgkin lymphoma | 1 | 0 | 100 | - | - | - | - | - | - | 1 | 0.4 | C82-85, C96 |
| Multiple myeloma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C90 |
| Lymphoid leukaemia | 1 | 0 | 100 | 1 | - | - | - | - | - | - | 0.4 | C91 |
| Myeloid leukaemia | 1 | 0 | 100 | - | - | 1 | - | - | - | - | 0.4 | C92-94 |
| Leukaemia, unspecified | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C95 |
| Other and unspecified | 39 | 0 | 100 | 8 | 2 | 5 | 3 | 6 | 4 | 11 | 16.4 | O&U |
| All sites | 271 | 5 | 100 | 23 | 15 | 27 | 33 | 44 | 61 | 63 | - | ALL |
| All sites but C44 | 238 | 3 | 100 | 22 | 13 | 22 | 26 | 38 | 54 | 60 | 100.0 | ALLbC44 |

Table 1. Cameroon, Yaounde (1995-1996)

NUMBER OF CASES BY AGE GROUP - FEMALE

| SITE | ALL AGES | AGE UNK | MV (%) | 0- | 15- | 25- | 35- | 45- | 55- | 65+ | % | ICD (10th) |
|--|----------|---------|--------|----|-----|-----|-----|-----|-----|-----|-------|----------------|
| Mouth | 6 | 0 | 100 | 1 | 1 | - | 3 | 1 | - | - | 1.8 | C00-06 |
| Salivary gland | 1 | 0 | 100 | 1 | - | - | - | - | - | - | 0.3 | C07-08 |
| Nasopharynx | 1 | 0 | 100 | - | - | 1 | - | - | - | - | 0.3 | C11 |
| Other pharynx | 3 | 1 | 100 | - | 1 | 1 | - | - | - | - | 0.9 | C09-10, C12-14 |
| Oesophagus | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C15 |
| Stomach | 8 | 0 | 100 | - | - | 2 | 1 | 2 | 2 | 1 | 2.4 | C16 |
| Colon, rectum and anus | 12 | 0 | 100 | - | - | 1 | - | 7 | 4 | - | 3.6 | C18-21 |
| Liver | 34 | 1 | 100 | 6 | 2 | 1 | 4 | 3 | 11 | 6 | 10.3 | C22 |
| Gallbladder etc. | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C23-24 |
| Pancreas | 1 | 1 | 100 | - | - | - | - | - | - | - | 0.3 | C25 |
| Larynx | 3 | 0 | 100 | - | - | - | - | - | 3 | - | 0.9 | C32 |
| Trachea, bronchus and lung | 1 | 0 | 100 | - | - | - | - | - | 1 | - | 0.3 | C33-34 |
| Bone | 5 | 0 | 100 | - | - | - | 2 | - | 2 | 1 | 1.5 | C40-41 |
| Melanoma of skin | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C43 |
| Other skin | 19 | 0 | 100 | - | 2 | - | 3 | 4 | 5 | 5 | - | C44 |
| Mesothelioma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C45 |
| Kaposi sarcoma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C46 |
| Peripheral nerves | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C47 |
| Connective and soft tissue | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C49 |
| Breast | 89 | 2 | 100 | - | 3 | 18 | 20 | 18 | 19 | 9 | 27.1 | C50 |
| Vulva | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C51 |
| Vagina | 6 | 1 | 100 | - | - | - | 1 | - | 4 | - | 1.8 | C52 |
| Cervix uteri | 101 | 3 | 100 | - | 4 | 9 | 14 | 36 | 27 | 8 | 30.7 | C53 |
| Uterus | 5 | 0 | 100 | - | - | 2 | - | 1 | 2 | - | 1.5 | C54-55 |
| Ovary | 22 | 1 | 100 | - | 4 | 3 | 5 | 7 | 2 | - | 6.7 | C56 |
| Placenta | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C58 |
| Kidney | 1 | 0 | 100 | - | - | - | - | - | - | 1 | - | C64 |
| Renal pelvis, ureter and other urinary | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C65-66, C68 |
| Bladder | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C67 |
| Eye | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C69 |
| Brain, nervous system | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C70-72 |
| Thyroid | 2 | 0 | 100 | - | - | - | - | 2 | - | - | 0.6 | C73 |
| Hodgkin disease | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C81 |
| Non-Hodgkin lymphoma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C82-85, C96 |
| Multiple myeloma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C90 |
| Lymphoid leukaemia | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C91 |
| Myeloid leukaemia | 1 | 0 | 100 | - | - | - | - | 1 | - | - | 0.3 | C92-94 |
| Leukaemia, unspecified | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | C95 |
| Other and unspecified | 27 | 2 | 100 | 3 | 5 | 1 | 1 | 3 | 7 | 5 | 8.2 | O&U |
| All sites | 348 | 12 | 100 | 11 | 22 | 39 | 54 | 85 | 90 | 35 | - | ALL |
| All sites but C44 | 329 | 12 | 100 | 11 | 20 | 39 | 51 | 81 | 85 | 30 | 100.0 | ALLbC44 |

Table 2. Cameroon: case series

| Site | Pasteur Institute, Yaounde, 1968-73 (Jensen <i>et al.</i> , 1978) | | | | %HV |
|-----------------------|---|-----------|---------------|-------------|-----|
| | Male No. | Male % | Female No. | Female % | |
| Oral cavity | 66 | 4.4% | 31 | 2.0% | 100 |
| Nasopharynx | 6 | 0.4% | 4 | 0.3% | 100 |
| Other pharynx | 23 | 1.5% | 8 | 0.5% | 100 |
| Oesophagus | 5 | 0.3% | 0 | 0.0% | 100 |
| Stomach | 41 | 2.7% | 37 | 2.4% | 100 |
| Colon/rectum | 49 | 3.2% | 30 | 1.9% | 100 |
| Liver | 146 | 9.6% | 45 | 2.9% | 100 |
| Pancreas | 6 | 0.4% | 4 | 0.3% | 100 |
| Lung | 34 | 2.2% | 8 | 0.5% | 100 |
| Melanoma | 55 | 3.6% | 73 | 4.7% | 100 |
| Other skin | 288 | 19.0% | 240 | 15.4% | 100 |
| Kaposi sarcoma | 157 | 10.4% | 14 | 0.9% | 100 |
| Breast | 28 | 1.8% | 182 | 11.7% | 100 |
| Cervix uteri | | | 287 | 18.4% | 100 |
| Corpus uteri | | | 58 | 3.7% | 100 |
| Ovary etc. | | | 83 | 5.3% | 100 |
| Prostate | 44 | 2.9% | | | 100 |
| Penis | 10 | 0.7% | | | 100 |
| Bladder | 36 | 2.4% | 14 | 0.9% | 100 |
| Kidney etc. | 15 | 1.0% | 15 | 1.0% | 100 |
| Eye | 22 | 1.5% | 13 | 0.8% | |
| Brain, nervous system | 7 | 0.5% | 4 | 0.3% | 100 |
| Thyroid | 4 | 0.3% | 22 | 1.4% | 100 |
| Non-Hodgkin lymphoma | 174 | 11.5% | 104 | 6.7% | 100 |
| Hodgkin disease | 31 | 2.0% | 13 | 0.8% | 100 |
| Myeloma | 5 | 0.3% | 3 | 0.2% | 100 |
| Leukaemia | 10 | 0.7% | 3 | 0.2% | 100 |
| ALL SITES | 1515 | 100.0% | 1562 | 100.0% | 100 |

3.3.3 Central African Republic

Background

Climate: tropical; hot, dry winters; mild to hot, wet summers

Terrain: vast, flat to rolling, monotonous plateau; scattered hills in northeast and southwest

Ethnic groups: Baya 34%, Banda 27%, Sara 10%, Mandjia 21%, Mboum 4%, M'Baka 4%, Europeans 6500 (including 3600 French)

Religions: indigenous beliefs 24%, Protestant 25%, Roman Catholic 25%, Muslim 15%, other 11%. Note: animistic beliefs and practices strongly influence the Christian majority

Economy—overview: Subsistence agriculture, together with forestry, remains the backbone of the economy of the Central African Republic, with more than 70% of the population living in

outlying areas. The agricultural sector generates half of the GDP. Timber has accounted for about 16% of export earnings and the diamond industry for nearly 54%.

Industries: diamond mining, sawmills, breweries, textiles, footwear, assembly of bicycles and motorcycles

Agriculture—products: cotton, coffee, tobacco, manioc (tapioca), yams, millet, corn, bananas, timber

Cancer registration

There has been no organized cancer registration in the country.

Review of data

We could trace no description of the cancer profile in the country.

3.3.4 Chad

Background

Climate: Tropical in south, desert in north

Terrain: Broad, arid plains in centre, desert in north, mountains in northwest, lowlands in south

Ethnic groups: Muslims (Arabs, Toubou, Hadjerai, Fulbe, Kotoko, Kanembou, Baguirmi, Boulala, Zaghawa, and Maba), non-Muslims (Sara, Ngambaye, Mbaye, Goulaye, Moundang, Moussei, Massa), non-indigenous 150 000 (of whom 1000 are French)

Religions: Muslim 50%, Christian 25%, indigenous beliefs (mostly animism) 25%

Economy—overview: Landlocked Chad's economic development suffers from its geographic remoteness, drought, lack of

infrastructure, and political turmoil. About 85% of the population depends on agriculture, including the herding of livestock.

Industries: Cotton textiles, meat packing, beer brewing, natron (sodium carbonate), soap, cigarettes, construction materials

Agriculture—products: Cotton, sorghum, millet, peanuts, rice, potatoes, manioc (tapioca); cattle, sheep, goats, camels

Cancer registration

There has been no organized cancer registration in the country.

Review of data

We could trace no description of the cancer profile in the country.

3.3.5 Congo

Background

Climate: Tropical; rainy season (March to June); dry season (June to October); constantly high temperatures and humidity; particularly enervating climate astride the Equator

Terrain: Coastal plain, southern basin, central plateau, northern basin

Ethnic groups: Kongo 48%, Sangha 20%, M'Bochi 12%, Teke 17%

Religions: Christian 50%, animist 48%, Muslim 2%

Economy—overview: The economy is a mixture of village agriculture and handicrafts, and an industrial sector based largely on oil and related support services. Oil has supplanted forestry as the mainstay of the economy, providing about 90% of government revenues and exports. In the early 1980s, rapidly rising oil revenues enabled the government to finance large-scale development projects with GDP growth averaging 5% annually, one of the highest rates in Africa. Subsequently, falling oil prices cut GDP growth by half

Industries: Petroleum extraction, cement kilning, lumbering, brewing, sugar milling, palm oil, soap, cigarette making

Agriculture—products: Cassava (tapioca) accounts for 90% of food output, sugar, rice, corn, peanuts, vegetables, coffee, cocoa; forest products

Cancer registration

A population-based cancer registry was established in 1995, in the Department of Medical Oncology, situated in the largest hospital in the capital, Brazzaville. The registry aimed to register cases among the population of the city of Brazzaville. Before 1995, a register of cases attending the medical oncology service had been maintained. The registry functions by active case-finding through visits to all hospitals in the city, and collection of all pathology reports mentioning cancer. A few cases are notified by private practitioners.

The outbreak of civil war in 1997 caused a major disruption to medical and laboratory services, and a cessation of registry activity. However, this was able to restart towards the end of the year. The results presented in Table 1 are for three years, 1996 and 1998–99.

Review of data

1449 cases were registered in the three-year period, 51% of which had microscopically verified diagnosis. Table 1 presents incidence data based on the estimated population of Brazzaville. The calculated incidence rates are likely to be underestimates, given the social and political instability and consequent disruption to medical services.

In males, liver cancer is the most commonly registered tumour (26.4%) with 34% microscopic verification, followed by prostate (7.9%) non-Hodgkin lymphoma (6.9%) and Kaposi sarcoma (6.5%). In women, cervix cancer predominates (32.8% cancers). The age-standardized incidence, even though an underestimate, is rather high (31.7 per 100 000). Breast cancer is second in frequency (24.1%) with an estimated (minimum) ASR of 22.5 per 100 000. Liver is third in frequency (8.9%) and ovary (5.9%) fourth.

It is interesting to compare these results with the series compiled in 1965–66 from various hospitals and the Department of Pathology at the Institut Pasteur. There were 505 cases, most (70%) from Brazzaville, and 53% had a pathological diagnosis (Tuyns & Ravisse, 1970) (see Table 2).

At that time, the most frequently diagnosed cancers were, in males, liver (40.7%), prostate (9.5%), skin (9.1%), non-Hodgkin lymphoma (7%), and in women, cervix (21.8%), breast (14.1%), liver (13.4%) and skin (9.2%). The profile is similar to the more recent one, with the exception of the high apparent relative frequency of skin cancer. Burkitt's lymphoma was noted to be 'infrequent'.

Reference

Tuyns, A.J. & Ravisse, P. (1970) Cancer in Brazzaville, the Congo. *J. Natl Cancer Inst.*, **44**, 1121–1127

Table 1. Congo, Brazzaville (1996-1999)

NUMBER OF CASES BY AGE GROUP AND SUMMARY RATES OF INCIDENCE - MALE

| SITE | ALL AGES | AGE UNK | MV (%) | 0- | 15- | 25- | 35- | 45- | 55- | 65+ | CRUDE RATE | % | CR 64 | ASR (W) | ICD (10th) |
|--|----------|---------|--------|----|-----|-----|-----|-----|-----|-----|------------|-------|-------|---------|---------------|
| Mouth | 9 | 0 | 44 | - | - | - | 3 | - | 4 | 2 | 0.7 | 1.6 | 0.10 | 1.2 | C00-06 |
| Salivary gland | 5 | 0 | 60 | 1 | - | 1 | - | 2 | 1 | - | 0.4 | 0.9 | 0.05 | 0.5 | C07-08 |
| Nasopharynx | 3 | 0 | 100 | - | - | - | - | 2 | 1 | - | 0.2 | 0.5 | 0.04 | 0.4 | C11 |
| Other pharynx | 13 | 0 | 62 | - | - | 1 | 1 | 5 | 3 | 3 | 1.1 | 2.3 | 0.13 | 1.7 | C09-10,C12-14 |
| Oesophagus | 4 | 0 | 75 | - | - | - | 1 | 1 | 1 | 1 | 0.3 | 0.7 | 0.04 | 0.5 | C15 |
| Stomach | 15 | 0 | 47 | - | - | 2 | 1 | 3 | 5 | 4 | 1.2 | 2.6 | 0.15 | 2.0 | C16 |
| Colon, rectum and anus | 34 | 0 | 38 | - | - | 1 | 10 | 7 | 4 | 12 | 2.8 | 6.0 | 0.25 | 4.4 | C18-21 |
| Liver | 150 | 0 | 34 | 1 | 17 | 33 | 35 | 21 | 20 | 23 | 12.4 | 26.4 | 1.23 | 17.2 | C22 |
| Gallbladder etc. | 1 | 0 | 0 | - | - | - | - | - | 1 | - | 0.1 | 0.2 | 0.02 | 0.2 | C23-24 |
| Pancreas | 16 | 0 | 6 | - | - | 2 | 2 | 3 | 6 | 3 | 1.3 | 2.8 | 0.17 | 2.1 | C25 |
| Larynx | 15 | 0 | 67 | - | - | - | 1 | 2 | 6 | 6 | 1.2 | 2.6 | 0.15 | 2.2 | C32 |
| Trachea, bronchus and lung | 28 | 0 | 36 | - | - | - | 3 | 6 | 11 | 8 | 2.3 | 4.9 | 0.29 | 3.9 | C33-34 |
| Bone | 22 | 0 | 73 | 1 | 2 | 11 | 4 | 2 | 2 | - | 1.8 | 3.9 | 0.18 | 2.2 | C40-41 |
| Melanoma of skin | 8 | 0 | 75 | - | - | 1 | - | 2 | 3 | 2 | 0.7 | 1.4 | 0.09 | 1.1 | C43 |
| Other skin | 12 | 0 | 33 | 1 | - | 1 | 3 | 3 | 3 | 1 | 1.0 | - | 0.12 | 1.4 | C44 |
| Mesothelioma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C45 |
| Kaposi sarcoma | 37 | 0 | 76 | 1 | 1 | 4 | 15 | 10 | 3 | 3 | 3.1 | 6.5 | 0.34 | 4.3 | C46 |
| Peripheral nerves | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C47 |
| Connective and soft tissue | 24 | 0 | 63 | 3 | 2 | 2 | 5 | 7 | 2 | 3 | 2.0 | 4.2 | 0.20 | 2.8 | C49 |
| Breast | 4 | 0 | 25 | - | - | - | 2 | - | 1 | 1 | 0.3 | 0.7 | 0.03 | 0.5 | C50 |
| Penis | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C60 |
| Prostate | 45 | 0 | 58 | - | - | 1 | - | 3 | 18 | 23 | 3.7 | 7.9 | 0.36 | 6.4 | C61 |
| Testis | 4 | 0 | 50 | 1 | - | - | - | 2 | 1 | - | 0.3 | 0.7 | 0.04 | 0.4 | C62 |
| Kidney | 8 | 0 | 0 | 4 | - | 2 | 1 | - | 1 | - | 0.7 | 1.4 | 0.05 | 0.7 | C64 |
| Renal pelvis, ureter and other urinary | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C65-66,C68 |
| Bladder | 3 | 0 | 33 | - | - | - | - | - | 1 | 2 | 0.2 | 0.5 | 0.04 | 0.4 | C67 |
| Eye | 6 | 0 | 50 | 3 | - | - | 1 | - | - | 2 | 0.5 | 1.1 | 0.02 | 0.6 | C69 |
| Brain, nervous system | 2 | 0 | 0 | - | 1 | - | 1 | - | - | - | 0.2 | 0.4 | 0.01 | 0.2 | C70-72 |
| Thyroid | 2 | 0 | 50 | - | - | 1 | - | 1 | - | - | 0.2 | 0.4 | 0.02 | 0.2 | C73 |
| Hodgkin disease | 2 | 0 | 100 | - | - | - | - | - | - | - | 0.2 | 0.4 | 0.02 | 0.3 | C81 |
| Non-Hodgkin lymphoma | 39 | 0 | 92 | 8 | 4 | 3 | 8 | 9 | 5 | 2 | 3.2 | 6.9 | 0.32 | 4.1 | C82-85,C96 |
| Multiple myeloma | 9 | 0 | 56 | - | - | - | - | 4 | 2 | 3 | 0.7 | 1.6 | 0.08 | 1.2 | C90 |
| Lymphoid leukaemia | 18 | 0 | 94 | 5 | 3 | 1 | 5 | 1 | 2 | 1 | 1.5 | 3.2 | 0.13 | 1.8 | C91 |
| Myeloid leukaemia | 9 | 0 | 100 | - | 3 | 4 | - | - | 1 | 1 | 0.7 | 1.6 | 0.06 | 0.9 | C92-94 |
| Leukaemia, unspecified | 9 | 0 | 100 | 1 | 2 | 2 | 1 | - | 2 | 1 | 0.7 | 1.6 | 0.06 | 0.9 | C95 |
| Other and unspecified | 25 | 0 | 32 | 2 | 3 | 10 | 3 | 3 | 3 | 1 | 2.1 | 4.4 | 0.21 | 2.6 | O&U |
| All sites | 581 | 0 | 52 | 32 | 38 | 83 | 107 | 101 | 114 | 106 | 48.0 | 4.99 | 69.2 | ALL | |
| All sites but C44 | 569 | 0 | 52 | 31 | 38 | 82 | 104 | 98 | 111 | 105 | 47.1 | 100.0 | 4.87 | 67.7 | ALLbC44 |

Average annual population

130895

59256

37934

26555

21572

14490

11606

Table 1. Congo, Brazzaville (1996-1999)

NUMBER OF CASES BY AGE GROUP AND SUMMARY RATES OF INCIDENCE - FEMALE

| SITE | ALL AGES | AGE UNK | MV (%) | 0- | 15- | 25- | 35- | 45- | 55- | 65+ | CRUDE RATE | % | CR 64 | ASR (W) | ICD (10th) | |
|--|----------|---------|--------|----|-----|-----|-----|-----|-----|-----|------------|-------|-------------|-------------|---------------|--|
| Mouth | 13 | 0 | 31 | - | - | - | 3 | 6 | 4 | 1.1 | 1.5 | 0.12 | 1.6 | C00-06 | | |
| Salivary gland | 5 | 0 | 20 | 1 | - | 1 | 2 | 1 | - | 0.4 | 0.6 | 0.04 | 0.5 | C07-08 | | |
| Nasopharynx | 2 | 0 | 100 | 1 | - | - | 1 | - | - | 0.2 | 0.2 | 0.01 | 0.2 | C11 | | |
| Other pharynx | 5 | 0 | 60 | 1 | - | - | - | 1 | 2 | 1 | 0.4 | 0.6 | 0.04 | 0.5 | C09-10,C12-14 | |
| Oesophagus | 1 | 0 | 100 | - | - | - | - | - | - | 0.1 | 0.1 | 0.00 | 0.1 | C15 | | |
| Stomach | 11 | 0 | 64 | - | - | - | 1 | 4 | 3 | 3 | 0.9 | 1.3 | 0.10 | 1.3 | C16 | |
| Colon, rectum and anus | 25 | 0 | 24 | - | - | 6 | 4 | 7 | 5 | 3 | 2.1 | 2.9 | 0.23 | 2.8 | C18-21 | |
| Liver | 76 | 0 | 37 | 1 | 4 | 9 | 17 | 19 | 11 | 15 | 6.3 | 8.9 | 0.61 | 8.4 | C22 | |
| Gallbladder etc. | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C23-24 | |
| Pancreas | 9 | 0 | 0 | - | - | 1 | 2 | 1 | 2 | 3 | 0.7 | 1.1 | 0.07 | 1.1 | C25 | |
| Larynx | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C32 | |
| Trachea, bronchus and lung | 4 | 0 | 0 | - | - | - | - | 1 | 1 | 2 | 0.3 | 0.5 | 0.03 | 0.5 | C33-34 | |
| Bone | 12 | 0 | 42 | - | 3 | 2 | 2 | 2 | 2 | 1 | 1.0 | 1.4 | 0.09 | 1.2 | C40-41 | |
| Melanoma of skin | 9 | 0 | 100 | - | - | - | 2 | 1 | 1 | 5 | 0.7 | 1.1 | 0.04 | 1.1 | C43 | |
| Other skin | 17 | 0 | 41 | - | - | 7 | 5 | 1 | - | 4 | 1.4 | 0.10 | 0.18 | 1.8 | C44 | |
| Mesothelioma | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C45 | |
| Kaposi sarcoma | 14 | 0 | 86 | - | 1 | 6 | 4 | 1 | 1 | 1 | 1.2 | 1.6 | 0.11 | 1.4 | C46 | |
| Peripheral nerves | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C47 | |
| Connective and soft tissue | 10 | 0 | 60 | 1 | 2 | 2 | - | - | 2 | 3 | 0.8 | 1.2 | 0.06 | 1.0 | C49 | |
| Breast | 205 | 0 | 48 | - | 10 | 35 | 64 | 54 | 34 | 8 | 17.0 | 24.1 | 1.95 | 22.5 | C50 | |
| Vulva | 4 | 0 | 75 | - | 1 | - | - | 1 | - | 2 | 0.3 | 0.5 | 0.02 | 0.4 | C51 | |
| Vagina | 1 | 0 | 100 | - | - | - | - | 1 | - | - | 0.1 | 0.1 | 0.01 | 0.1 | C52 | |
| Cervix uteri | 279 | 0 | 56 | - | 2 | 19 | 49 | 90 | 77 | 42 | 23.1 | 32.8 | 2.67 | 31.7 | C53 | |
| Uterus | 10 | 0 | 30 | - | 1 | 1 | 2 | 2 | 2 | 2 | 0.8 | 1.2 | 0.08 | 1.1 | C54-55 | |
| Ovary | 50 | 0 | 10 | - | 8 | 10 | 13 | 7 | 7 | 5 | 4.1 | 5.9 | 0.40 | 5.2 | C56 | |
| Placenta | 1 | 0 | 100 | - | - | 1 | - | - | - | - | 0.1 | 0.1 | 0.01 | 0.1 | C58 | |
| Kidney | 6 | 0 | 33 | 3 | - | 1 | 1 | - | - | 1 | 0.5 | 0.7 | 0.03 | 0.5 | C64 | |
| Renal pelvis, ureter and other urinary | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C65-66,C68 | |
| Bladder | 3 | 0 | 0 | - | 1 | - | 1 | - | 1 | - | 0.2 | 0.4 | 0.03 | 0.3 | C67 | |
| Eye | 9 | 0 | 33 | 6 | - | - | 1 | - | 1 | 1 | 0.7 | 1.1 | 0.04 | 0.7 | C69 | |
| Brain, nervous system | 0 | 0 | - | - | - | - | - | - | - | - | 0.0 | 0.0 | 0.00 | 0.0 | C70-72 | |
| Thyroid | 5 | 0 | 80 | - | - | 4 | 1 | - | - | - | 0.4 | 0.6 | 0.04 | 0.5 | C73 | |
| Hodgkin disease | 2 | 0 | 100 | - | - | 1 | - | 1 | - | - | 0.2 | 0.2 | 0.02 | 0.2 | C81 | |
| Non-Hodgkin lymphoma | 26 | 0 | 88 | 10 | 3 | 6 | 3 | 2 | 2 | - | 2.2 | 3.1 | 0.17 | 2.2 | C82-85,C96 | |
| Multiple myeloma | 12 | 0 | 75 | - | - | - | 1 | 4 | 5 | 2 | 1.0 | 1.4 | 0.12 | 1.4 | C90 | |
| Lymphoid leukaemia | 19 | 0 | 100 | - | 1 | 1 | 4 | 3 | 6 | 4 | 1.6 | 2.2 | 0.17 | 2.2 | C91 | |
| Myeloid leukaemia | 6 | 0 | 100 | - | - | - | 1 | 4 | 1 | - | 0.5 | 0.7 | 0.07 | 0.7 | C92-94 | |
| Leukaemia, unspecified | 7 | 0 | 100 | - | 2 | 3 | 1 | - | 1 | - | 0.6 | 0.8 | 0.05 | 0.6 | C95 | |
| Other and unspecified | 10 | 0 | 10 | - | 1 | 4 | 4 | 1 | - | - | 0.8 | 1.2 | 0.08 | 1.0 | O&U | |
| All sites | 868 | 0 | 50 | 24 | 40 | 120 | 186 | 212 | 173 | 113 | 72.0 | 7.60 | 94.9 | ALL | | |
| All sites but C44 | 851 | 0 | 50 | 24 | 40 | 113 | 181 | 211 | 173 | 109 | 70.6 | 100.0 | 7.50 | 93.1 | ALLbC44 | |

Average annual population

123377 57910 38009 26009 24557 17120 14324

Table 2. Congo, 1965–66: case series

| Site | Brazzaville, 1965-66 (Tuyns & Ravisse, 1970) | | | | %HV | |
|-----------------------|--|--------|--------|--------|-----|--|
| | Male | | Female | | | |
| | No. | % | No. | % | | |
| Oral cavity | | | | | | |
| Nasopharynx | 5 | 2.1% | 3 | 1.1% | 64 | |
| Other pharynx | | | | | | |
| Oesophagus | | | | | | |
| Stomach | | | | | | |
| Colon/rectum | | | | | | |
| Liver | 99 | 40.7% | 35 | 13.4% | 28 | |
| Pancreas | | | | | | |
| Lung | 5 | 2.1% | 2 | 0.8% | 14 | |
| Melanoma | 6 | 2.5% | 14 | 5.3% | 91 | |
| Other skin | 22 | 9.1% | 24 | 9.2% | 82 | |
| Kaposi sarcoma | | | | | | |
| Breast | | | 37 | 14.1% | 51 | |
| Cervix uteri | | | 57 | 21.8% | 53 | |
| Corpus uteri | | | 16 | 6.1% | 56 | |
| Ovary etc | | | 12 | 4.6% | 67 | |
| Prostate | 23 | 9.5% | | | 61 | |
| Penis | | | | | | |
| Bladder | | | | | | |
| Kidney etc. | | | | | | |
| Eye | | | | | | |
| Brain, nervous system | | | | | | |
| Thyroid | | | | | | |
| Non Hodgkin lymphoma | 17 | 7.0% | 8 | 3.1% | 72 | |
| Hodgkin disease | | | | | | |
| Myeloma | | | | | | |
| Leukaemia | | | | | | |
| ALL SITES | 243 | 100.0% | 262 | 100.0% | 53 | |

3.3.6 Democratic Republic of the Congo (formerly Zaire)

Background

Climate: Tropical; hot and humid in equatorial river basin; cooler and drier in southern highlands; cooler and wetter in eastern highlands; north of equator – wet season April to October, dry season December to February; south of equator – wet season November to March, dry season April to October

Terrain: Vast central basin is a low-lying plateau; mountains in east

Ethnic groups: Over 200 African ethnic groups of which the majority are Bantu; the four largest tribes—Mongo, Luba, Kongo (all Bantu), and the Mangbetu-Azande (Hamitic) make up about 45% of the population

Religions: Roman Catholic 50%, Protestant 20%, Kimbanguist 10%, Muslim 10%, other syncretic sects and traditional beliefs 10%

Economy—overview: The economy of the Democratic Republic of the Congo—a nation endowed with vast potential wealth—has declined significantly since the mid-1980s. Most individuals and families survive through subsistence farming or petty trade. A barter economy flourishes in all but the largest cities.

Industries: Mining, mineral processing, consumer products (including textiles, footwear, cigarettes, processed foods and beverages), cement, diamonds

Agriculture—products: Coffee, sugar, palm oil, rubber, tea, quinine, cassava (tapioca), palm oil, bananas, root crops, corn, fruits; wood products

Cancer registration

There has been no organized cancer registration in the country.

Review of data

Several case series have been reported, giving an insight into the cancer profile of this vast country. Thijs (1957) published results from the pathology laboratory in Stanleyville (modern Kisangani) from the years 1939–1955. There were 2418 cancer cases, with specimens coming from hospitals all over the country, but mainly from Orientale province (44.6%) and Kivu (16.6%). Since sex was unknown for about one fifth of cases, the relative frequencies are a little difficult to interpret, but there were clearly high frequencies of liver cancer in males (15.9% of cancers), and cervix and breast cancers in females (17.9% and 12% respectively). Kaposi sarcoma was very frequent, 13.4% cancers in men, 2% in women.

Oates *et al.* (1984) and Oates (1986) described a histopathology series, based on biopsies performed in the surgical department of the Centre Médical Evangelique (C.M.E.) hospital, Nyankunde, Orientale Province, taken during 1971–83. The 794 malignant cancers detected (Table 1) showed, as might be expected, a considerable excess of superficial tumours, and deficit of poorly accessible cancers (the authors commented that the low frequency of liver cancer was surely an underestimate of true frequency). Of interest is the high relative frequency of Kaposi

sarcoma (16.4% cancers in males); the authors noted that these occurred at younger ages than melanomas (the median age appears to be about 35 years), and that no increase in frequency was noted in the 13-year period. Breast cancer (17.9%) was more common than cervix cancer (10.8%) in women. Of interest too were the 25 eye cancers, 15 of which were squamous cell cancers, and 14 cases of Burkitt lymphoma (10 male, 4 female) among the 70 cases of non-Hodgkin lymphoma.

A more representative series was reported from a hospital at Katana, on the western shores of Lake Kivu (Kivu province), representing all cancer cases diagnosed in 1983–1986 (Bourdeaux *et al.*, 1988). In all, there were 494 cancer cases (six with sex not recorded) (Table 1); 73% were diagnosed with histology. Liver cancer is the most common cancer in both sexes, followed by Kaposi sarcoma in men (17.4%) and cervix cancer in women (12.1%). Stomach cancer was the third most common cancer in both sexes. The authors also provide tabulations for the 272 cases diagnosed among the residents of the four health districts served by the hospital (a total population of 204 000). For males, the profile is similar to that of the total series, while for females, stomach cancer appeared to be the most frequent (17.8%), followed by liver (16.8%) and cervix (13.1%). The crude incidence rate (all sites) for the resident cases was 40.7 per 100 000 for males and 26.4 per 100 000 for females. The authors note that the high frequency of stomach cancer had been noted previously in this region (Ceuterick, 1960), while Gigase *et al.* (1984) had drawn attention to the high frequency of Kaposi sarcoma. At the time this case series was collected (1983–1986), very few cases of Kaposi sarcoma were associated with HIV infection.

In a study of liver cancer, Kashala *et al.* (1992) observed the familiar association with chronic carriage of hepatitis B virus (HBV) (56.7% of 40 liver cancer cases HBsAg-positive, compared with 7.4% of 68 controls), and also noted higher levels of serum alpha-fetoprotein in the HBV-positive cases, compared with those HBV-negative.

Childhood cancer

A report from the C.M.E. hospital, Nyankunde, described 73 biopsied cancers among children from 1983–1988 (Fischer *et al.*, 1990). Lymphomas were the most common malignant tumour (38.4%), of which just over half were Burkitt lymphoma (Table 2).

References

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Table 1. Democratic Republic of the Congo: case series

| Site | C.M.E. Nyankunde, 1971–83 (Oates <i>et al.</i> , 1984) | | | | | Katana, 1983–86 (Bourdeaux <i>et al.</i> , 1988) | | | | |
|-----------------------|---|--------|--------|--------|-----|---|--------|--------|--------|-----|
| | Male | | Female | | %HV | Male | | Female | | %HV |
| | No. | % | No. | % | | No. | % | No. | % | |
| Oral cavity* | 22 | 6.1% | 27 | 7.1% | 100 | 5 | 1.8% | 3 | 1.5% | 88 |
| Nasopharynx | 18 | 5.0% | 10 | 2.6% | 100 | 2 | 0.7% | 0 | 0.0% | 100 |
| Other pharynx | 0 | 0.0% | 0 | 0.0% | 100 | 1 | 0.4% | 0 | 0.0% | 100 |
| Oesophagus | 1 | 0.3% | 0 | 0.0% | 100 | 1 | 0.4% | 0 | 0.0% | 100 |
| Stomach* | 19 | 5.3% | 9 | 2.4% | 100 | 32 | 11.3% | 24 | 11.7% | 64 |
| Colon/rectum* | 11 | 3.1% | 8 | 2.1% | 100 | 2 | 0.7% | 5 | 2.4% | 100 |
| Liver | 9 | 2.5% | 11 | 2.9% | 100 | 76 | 27.0% | 35 | 17.0% | 54 |
| Pancreas* | 2 | 0.6% | 1 | 0.3% | 100 | 3 | 1.1% | 7 | 3.4% | 60 |
| Lung | 0 | 0.0% | 0 | 0.0% | 100 | 0 | 0.0% | 0 | 0.0% | |
| Melanoma | 28 | 7.8% | 22 | 5.8% | 100 | 5 | 1.8% | 3 | 1.5% | 100 |
| Other skin | 51 | 14.2% | 26 | 6.8% | 100 | 16 | 5.7% | 18 | 8.7% | 91 |
| Kaposi sarcoma | 59 | 16.4% | 6 | 1.6% | 100 | 49 | 17.4% | 9 | 4.4% | 84 |
| Breast | 3 | 0.8% | 68 | 17.9% | 100 | 2 | 0.7% | 16 | 7.8% | 89 |
| Cervix uteri | | | 41 | 10.8% | 100 | | 0.0% | 25 | 12.1% | 76 |
| Corpus uteri | | | 1 | 0.3% | 100 | | 0.0% | 4 | 1.9% | 100 |
| Ovary etc. | | | 31 | 8.2% | 100 | | 0.0% | 5 | 2.4% | 80 |
| Prostate | 17 | 4.7% | | 0.0% | 100 | 20 | 7.1% | | 0.0% | 75 |
| Penis | 6 | 1.7% | | 0.0% | 100 | 4 | 1.4% | | 0.0% | 75 |
| Bladder | 9 | 2.5% | 1 | 0.3% | 100 | 2 | 0.7% | 0 | 0.0% | 100 |
| Kidney etc. | 6 | 1.7% | 5 | 1.3% | 100 | 6 | 2.1% | 5 | 2.4% | 54 |
| Eye* | 11 | 3.1% | 14 | 3.7% | 100 | 2 | 0.7% | 3 | 1.5% | 80 |
| Brain, nervous system | 0 | 0.0% | 0 | 0.0% | 100 | 1 | 0.4% | 0 | 0.0% | 0 |
| Thyroid | 6 | 1.7% | 11 | 2.9% | 100 | 3 | 1.1% | 3 | 1.5% | 83 |
| Non-Hodgkin lymphoma | 42 | 11.7% | 28 | 7.4% | 100 | 17 | 6.0% | 16 | 7.8% | 88 |
| Hodgkin disease | 6 | 1.7% | 2 | 0.5% | 100 | | | | | |
| Myeloma* | 1 | 0.3% | 2 | 0.5% | 100 | | | | | |
| Leukaemia | 3 | 0.8% | 2 | 0.5% | 100 | 3 | 1.1% | 2 | 1.0% | 40 |
| ALL SITES | 359 | 100.0% | 380 | 100.0% | 100 | 282 | 100.0% | 206 | 100.0% | 73 |

* Distribution between males and females estimated from subtotals

Table 2. Democratic Republic of the Congo: childhood case series

| Cancer | Nyankunde, 1983–88 (Fischer <i>et al.</i> , 1990) | |
|-----------------------------|---|--------|
| | No. | % |
| Leukaemia | 0 | 0.0% |
| Acute lymphocytic leukaemia | | 0.0% |
| Lymphoma | 28 | 38.4% |
| Burkitt lymphoma | 15 | 20.5% |
| Hodgkin disease | 3 | 4.1% |
| Brain and spinal neoplasms | 0 | 0.0% |
| Neuroblastoma | 2 | 2.7% |
| Retinoblastoma | 5 | 6.8% |
| Wilms tumour | 6 | 8.2% |
| Bone tumours | | 0.0% |
| Soft-tissue sarcomas | | 0.0% |
| Kaposi sarcoma | 5 | 6.8% |
| Other | 27 | 37.0% |
| Total | 73 | 100.0% |

3.3.7 Equatorial Guinea

Background

Climate: Tropical; always hot, humid

Terrain: Coastal plains rise to interior hills; islands are volcanic

Ethnic groups: Bioko (primarily Bubi, some Fernandinos), Rio Muni (primarily Fang), Europeans less than 1000, mostly Spanish

Religions: Nominally Christian and predominantly Roman Catholic, pagan practices

Economy—overview: The discovery and exploitation of large oil reserves have contributed to dramatic economic growth in recent years. Farming, forestry, and fishing are also major components of GDP. Subsistence farming predominates.

Undeveloped natural resources include titanium, iron ore, manganese, uranium and alluvial gold.

Industries: Fishing, sawmilling

Agriculture—products: Coffee, cocoa, rice, yams, cassava (tapioca), bananas, palm oil nuts, manioc; livestock; timber

Cancer registration

There has been no organized cancer registration in the country.

Review of data

We could trace no description of the cancer profile in the country.

3.3.8 Gabon

Background

Climate: Tropical; always hot, humid

Terrain: Narrow coastal plain; hilly interior; savanna in east and south

Ethnic groups: Bantu tribes including four major tribal groupings (Fang, Eshira, Bapounou, Bateke), other Africans and Europeans 154 000, including 6000 French and 11 000 persons of dual nationality

Religions: Christian 55–75%, Muslim less than 1%, animist

Economy—overview: Gabon enjoys a per capita income four times that of most nations of sub-Saharan Africa. This has supported a sharp decline in extreme poverty, but because of high income inequality a large proportion of the population remains poor. Gabon depended on timber and manganese until oil was discovered offshore in the early 1970s. The oil sector now accounts for 50% of GDP. Gabon continues to face fluctuating prices for its oil, timber, manganese and uranium exports.

Industries: Food and beverages; textile; lumber and plywood; cement; petroleum extraction and refining; manganese, uranium and gold mining; chemicals; ship repair

Agriculture—products: Cocoa, coffee, sugar, palm oil; rubber; okoume (a tropical softwood); cattle; small fishing operations (which provide a catch of about 30 000 metric tons)

Cancer registration

There has been no population-based cancer registration in the country, although there is a pathology-based register in the capital, Libreville, which has published its results (see below).

Review of data

Denes and Munz (1967) published the results of an analysis of the 196 histologically-proved malignancies seen in the Dr Schweitzer Hospital, Lambaréne, between 1950 and 1965 (Table 1). Other than the usual finding in histology series of large numbers of skin cancers, the commonest cancers in men were liver (14.6%), prostate (8.3%) and non-Hodgkin lymphoma (8.3%), and in women, cervix (18%), ovary (11%) and non-Hodgkin lymphoma

(6%). The authors noted that only one case of Burkitt lymphoma was observed among the non-Hodgkin lymphoma cases, a male aged 24 years.

Walter *et al.* (1986) published the results from the Department of Pathology, Centre for Health Sciences, Libreville, for the years 1978–84. The series comprises surgical biopsy results (excluding, therefore, haematological malignancies) (Table 1). Ignoring cutaneous malignancies, the most common cancers in men were prostate (13.2%), non-Hodgkin lymphoma (12.1%), oral cavity (10.8%) and liver (4.8%), and in women, cervix (27.1%), breast (13.8%) and ovary (5.8%). The authors commented that the low frequency of liver cancer reflected reluctance to perform biopsies, rather than a low incidence of this cancer. Burkitt lymphoma comprised 80% of the childhood non-Hodgkin lymphoma (10/13 cases in boys, 2/2 in girls), and accounted for one third of childhood cancers. Kaposi sarcoma was more common in men, affecting mainly the lower limb (25/27 cases), but surprisingly was most frequent in the 25–34-year age group in men (7/30 cancers), and unusual in older men (only 5/167 cancers aged 55 years or more).

Nze-Nguema *et al.* (1996) published a sequential series (1984–93) from the same source (Table 1). The basic profile was unchanged, other than the emergence of oral cavity cancers (tongue and mouth) as the most common cancers in males (9.6% cases) and a rather higher frequency of liver cancers (8.9% in males, 3.9% in females). While the relative frequency of Kaposi sarcoma is much the same in the two series, cancers of the eye are much more frequent in the later period – 34 cases (26 in adults) in men (2.5% of cancers). In a separate analysis of childhood cancers (Table 2), the authors drew attention to the frequency of Burkitt lymphoma.

References

- Denes, A.R.T. & Munz, W. (1967) Malignancies at the hospital of Doctor Albert Schweitzer, Lambaréne, Gabon, 1950–1965. *Int. J. Cancer*, **2**, 406–411
Walter, P.R., Philippe, E., Chamlian, A., Khalil, T. & Minko-mi-Etoua, D. (1986) Gabon. In: Parkin, D.M., ed., *Cancer Occurrence in Developing Countries* (IARC Scientific Publications No. 75), Lyon, IARC, pp. 43–46
Nze-Nguema, F., Sankaranarayanan, R., Barthelemy, M., Nguizi-Ogoula, S., Whelan, S., Minko-Mi-Etoua, D. (1996) Cancer in Gabon, 1984–1993: a pathology registry based relative frequency study. *Bull. Cancer*, **83**, 693–696

Table 1. Gabon: case series

| Site | A. Schweizer Hospital, Lambarene, 1950–65 (Denies & Munz, 1967) | | | | Dept. of Pathology, Centre for Health Sciences, Libreville, 1978–84 (Walter <i>et al.</i> , 1986) | | | | Dept. of Pathology, Centre for Health Sciences, Libreville, 1984–93 (Nze-Nguema <i>et al.</i> , 1996) | | | |
|-----------------------|--|--------|--------|--------|---|-----|--------|-----|---|-----|--------|--------|
| | Male | | Female | | Male | | Female | | Male | | Female | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Oral cavity | 3 | 3.1% | 0 | 0.0% | 100 | 58 | 10.8% | 21 | 3.8% | 100 | 131 | 9.6% |
| Nasopharynx | 0 | 0.0% | 0 | 0.0% | 100 | 7 | 1.3% | 5 | 0.9% | 100 | 3 | 0.2% |
| Other pharynx | 0 | 0.0% | 0 | 0.0% | 100 | 9 | 1.7% | 0 | 0.0% | 100 | 68 | 5.0% |
| Oesophagus | 0 | 0.0% | 0 | 0.0% | 100 | 6 | 1.1% | 2 | 0.4% | 100 | 42 | 3.1% |
| Stomach | 0 | 0.0% | 0 | 0.0% | 100 | 6 | 1.1% | 10 | 1.8% | 100 | 29 | 2.1% |
| Colon/rectum | 6 | 6.3% | 5 | 5.0% | 100 | 11 | 2.0% | 16 | 2.9% | 100 | 57 | 4.2% |
| Liver | 14 | 14.6% | 2 | 2.0% | 100 | 26 | 4.8% | 6 | 1.1% | 100 | 121 | 8.9% |
| Pancreas | 4 | 4.2% | 0 | 0.0% | 100 | 4 | 0.7% | 0 | 0.0% | 100 | 10 | 0.7% |
| Larynx | 1 | 1.0% | 0 | 0.0% | 100 | 21 | 3.9% | 3 | 0.5% | 100 | 57 | 4.2% |
| Lung | 2 | 2.1% | 1 | 1.0% | 100 | 33 | 6.1% | 11 | 2.0% | 100 | 94 | 6.9% |
| Melanoma | 5 | 5.2% | 6 | 6.0% | 100 | 23 | 4.3% | 21 | 3.8% | 100 | 16 | 1.2% |
| Other skin | 7 | 7.3% | 17 | 17.0% | 100 | 36 | 6.7% | 32 | 5.8% | 100 | 90 | 6.6% |
| Kaposi sarcoma | | | | | | | | | | | 61 | 4.5% |
| Breast | 0 | 0.0% | 7 | 7.0% | 100 | 5 | 0.9% | 76 | 13.8% | 100 | 21 | 1.5% |
| Cervix uteri | | | | | | | | | | | 172 | 13.9% |
| Corpus uteri | | | | | | | | | | | 325 | 26.3% |
| Ovary etc. | | | | | | | | | | | | |
| Prostate | 8 | 8.3% | | | 100 | 71 | 13.2% | | | 100 | 106 | 7.8% |
| Penis | 2 | 2.1% | | | 100 | 11 | 2.0% | | | 100 | | |
| Bladder | 4 | 4.2% | 0 | 0.0% | 100 | 13 | 2.4% | 4 | 0.7% | 100 | 22 | 1.6% |
| Kidney etc. | 6 | 6.3% | 1 | 1.0% | 100 | 6 | 1.1% | 6 | 1.1% | 100 | 18 | 1.3% |
| Brain, nervous system | 2 | 2.1% | 0 | 0.0% | 100 | 0 | 0.0% | 0 | 0.0% | 100 | | |
| Eye | 2 | 2.1% | 0 | 0.0% | 100 | 0 | 0.0% | 2 | 0.4% | 100 | 34 | 2.5% |
| Thyroid | 0 | 0.0% | 2 | 2.0% | 100 | 3 | 0.6% | 14 | 2.5% | 100 | 7 | 0.5% |
| Non-Hodgkin lymphoma | 8 | 8.3% | 6 | 6.0% | 100 | 65 | 12.1% | 20 | 3.6% | 100 | 119 | 8.7% |
| Hodgkin disease | 4 | 4.2% | 1 | 1.0% | 100 | 3 | 0.6% | 2 | 0.4% | 100 | | |
| Myeloma | 0 | 0.0% | 0 | 0.0% | 100 | 4 | 0.7% | 0 | 0.0% | 100 | | |
| Leukaemia | 1 | 1.0% | 0 | 0.0% | 100 | 0 | 0.0% | 2 | 0.4% | 100 | 13 | 1.0% |
| ALL SITES | 96 | 100.0% | 100 | 100.0% | 100 | 539 | 100.0% | 550 | 100.0% | 100 | 1367 | 100.0% |
| | | | | | | | | | | | | 1235 |
| | | | | | | | | | | | | 100.0% |
| | | | | | | | | | | | | 100 |

* Distribution between males and females estimated from subtotals

Table 2. Gabon: childhood case series

| Cancer | Dept of Pathology, Libreville, 1984-93 (Nze-nguema <i>et al.</i> 1996) | |
|-----------------------------|---|--------|
| | No. | % |
| Leukaemia | 11 | 7.7% |
| Acute lymphocytic leukaemia | | |
| Lymphoma | 61 | 43.0% |
| Burkitt lymphoma | 47 | 33.1% |
| Hodgkin disease | 5 | 3.5% |
| Brain and spinal neoplasms | 0 | 0.0% |
| Neuroblastoma | 2 | 1.4% |
| Retinoblastoma | 10 | 7.0% |
| Wilms tumour | 27 | 19.0% |
| Bone tumours | | |
| Soft-tissue sarcomas | | |
| Kaposi sarcoma | 3 | 2.1% |
| Other | 28 | 19.7% |
| Total | 142 | 100.0% |