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## EPIDEMIOLOGICAL AND HISTOLOGICAL ASPECTS OF CANCERS: FIRST DATA FROM THE PATHOLOGY LABORATORY OF SAINT-LOUIS SENEGAL

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### ABSTRACT

Background: In Senegal, overall cancer incidence and mortality are still based on estimates. The absence of epidemiological data is linked to the lack of cancer population registers and the precariousness of the technical platform. Study: The installation of the first pathology laboratory in Saint-Louis made it possible to carry out a retrospective epidemiological study of cancers over a period of 4 years. Results: We identified 458 cases of cancer or 13.8% of histological laboratory examinations. Among these cases, 42.6% of patients (n = 195) were male and 57.4% (n = 263) female with a sex ratio of 1.35. The average age was 52.3 years and pediatric cancers were rare (2%). Breast and cervical cancers were the leading cancers in women with 26.62% (n=70) and 17.11% (n=45) respectively. In men, prostate and stomach cancers were the most common with 27.69% (n = 54) and 14.87% (n = 29) respectively. Depending on the type, carcinomas were the most frequent with 87.6% (n=401), followed by hematopoietic cancers (n=22) with 4.8%. Conclusion: These first epidemiological data improve knowledge and visibility at the global level on the cancer situation in Senegal.

Keywords: cancer, Senegal, epidemiology, histology, Saint-Louis

## Introduction

According to the WHO, cancer causes nearly one in six deaths worldwide and approximately 70% of cancer deaths occur in low- and middle-income countries [5]. In Senegal, overall cancer incidence and mortality are still based on estimates. The absence of epidemiological data is linked to the lack of cancer population registers and the precariousness of the technical platform. This situation is an obstacle to the fight against cancer. The Saint-Louis pathology laboratory is the first in this specialty to be installed in a rural hospital structure in Senegal. This study was conducted with the aim of studying the epidemiological aspects of cancer data and comparing it with data from the literature.

## Methodology

This is a retrospective study that was conducted over 4 years. The study population concerned all cases of cancer diagnosed by histological examination. Cases of recurrence and cancers confirmed on surgical specimen with prior diagnosis on biopsy specimen were not collected. Data were collected from archives of pathology reports. The variables studied were age, gender, nature of samples, histological aspects and immunohistochemical profiles. Data

**Cancers location:** the results are set out in the table below (Table 1).

were entered into Epi Info 7 and analysis was performed in Microsoft Excel.

## Results

### At the socio-demographic level

458 cases of cancer have been recorded in the pathological anatomy laboratory of the CHR of Saint-Louis, which represented 13.8% of all histological diagnoses. Primary tumors represented 94.8% while tumors of secondary location were 5.2% of the total number of cancers. The diagnosis of cancer was made in 336 cases on biopsy specimens and in 122 cases on surgical specimens.

**Age:** The average age of the patients was 52.3 years with a minimum of 3 years and a maximum of 90 years. The most affected age group was between 45-64 years old with a rate of 21.2%.

**Gender:** there was a female predominance (57.4%), was observed aggravated by a younger average age of cancer onset in women, which was 48.5 years, while in men, it was 57.3 years. Pediatric cancers accounted for 2% of registered cancer cases.

<i>Location</i>	<i>Females</i>	<i>Males</i>	<i>Total Number</i>	<i>Percentage</i>
<i>Breast</i>	70		70	15,3%
<i>Prostate</i>		54	54	11,8%
<i>Esophagus</i>	24	21	45	9,8%
<i>Cervix</i>	45		45	9,8%
<i>Stomach</i>	12	29	41	9,0%

<i>Ganglion</i>	11	14	25	5,5%
<i>Skin</i>	9	10	19	4,1%
<i>Colon</i>	10	7	17	3,7%
<i>Body of the uterus</i>	16		16	3,5%
<i>Rectum</i>	9	6	15	3,3%
<i>Ovary</i>	14		14	3,1%
<i>Thyroid</i>	11	2	13	2,8%
<i>Tongue</i>	8	2	10	2,2%
<i>soft tissue</i>	4	5	9	2,0%
<i>Hypopharynx</i>	1	6	7	1,5%
<i>Anus</i>	3	3	6	1,3%
<i>Bladder</i>	1	4	5	1,1%
<i>Larynx</i>		5	5	1,1%
<i>Lip</i>		5	5	1,1%
<i>Knee</i>		3	3	0,7%
<i>small intestine</i>	1	2	3	0,7%
<i>Bone</i>	2	1	3	0,7%
<i>Cavum</i>	1	2	3	0,7%
<i>Vulva</i>	3		3	0,7%
<i>Testicle</i>		2	2	0,4%
<i>Kidney</i>	1	1	2	0,4%
<i>Urethra</i>	2		2	0,4%
<i>Nasal cavity</i>		2	2	0,4%
<i>Perineum</i>		1	1	0,2%
<i>Duodenum</i>		1	1	0,2%
<i>White line</i>		1	1	0,2%
<i>Oral mucosa</i>	1		1	0,2%

Penis		1	1	0,2%
Palace		1	1	0,2%
Liver		1	1	0,2%
Peritoneum	1		1	0,2%
Glottis	1		1	0,2%
Abdominal mass	1		1	0,2%
Epiploon		1	1	0,2%
Armpit mass		1	1	0,2%
Pelvic mass	1		1	0,2%
Suprapubic mass		1	1	0,2%
<b>Grand total</b>	<b>263</b>	<b>195</b>	<b>458</b>	<b>100,0%</b>

According to gender, the most common locations in women were the breast with 26.62% followed by the cervix and esophagus with 17.11% and 9.13% respectively.

In men, the prostate ranks first with 27.69%, stomach and esophageal cancers came respectively in 3rd and 4th place with respectively 14.87% and 10.77%.

surgical specimens. Malignant epithelial tumors were the most frequent with 87.6%. These carcinomas were mainly represented by adenocarcinomas and squamous cell carcinomas with respectively 51.09% and 29.91%. Next came hematological malignancies with 4.8% (20 lymphomas and two cases of plasmacytomas). Hodgkin's disease accounted for 22.7% of lymphomas. Sarcomas ranked third with 4.6%.

**Histologically**

The diagnosis of cancer was made on biopsies in 336 of the cases and on 122

**Table 2: Distribution of cancers according to histological type**

Histology Types	Frequency	Percentage
Epithelial tumors	401	87,6%
Hematopoietic tumors	22	4,8%
Connective tumors	21	4,6%
Germ cell tumors	5	1,1%
Stromal and sex cord tumors	4	0,9%
Melanocytic tumors	4	0,9%
Tumors of the digestive stroma	1	0,2%
<b>Total</b>	<b>458</b>	<b>100,0%</b>

Discussion

The malignant or cancerous tumor pathology represents 13.8% of the histopathological activity of the laboratory against 17% in Cotonou [1] and 19.05% in Rwanda [10]. In Senegal, the exploitation of data from the Dakar oncology service reported 835 cases over a period of 12 months, 542 cases [2]. The low demographics and the absence of certain medical specialties in our rural study area could justify the difference in frequency compared to those in the literature.

A female predominance was observed with 57.4% of recorded cases. Our observation matches that of Niger with 58.4% [8] and 56% in Cotonou [7]. It is close to the results of Dakar with 53% [2]. On the other hand, other authors have reported a relative male predominance in developed countries. This is the example of France (197,500 men versus 149,000 women) [9] and GLOBOCAN (9.5 million men versus 8.6 million women). The sex difference could be explained by the impact of cancer of the cervix, which represents the first cancer in developing countries, while in developed countries, lung and prostate cancer are at the forefront [4]. However, in this present study, it is breast cancer associated with cervical cancer, which seems to explain the female predominance.

The age group from 45 to 64 years of all sexes combined was the most affected by cancer, according to data from Dakar [2] which found the same age group. Indeed, the average age of cancer patients in Africa is often around the age of 50, while in developed countries it is around 60 [5]. In developing countries, the link between cancer and many infectious factors has been put forward as responsible for this precocity while cancers are often linked to the aging of the population in Western countries [11].

Our study reports that the first cancer in women is breast cancer in correlation with GLOBOCAN [4], Niger [8] and Cotonou [7].

The frequency of 11.9% of prostate cancers is low compared to that of Cotonou 23.2% [7] and the USA 20% [6]. The discrepancy with those of countries with a black population could be explained by the weak technical platform of the Hospital at the time of our study.

Histologically, as in Dakar [2], we noted a predominance of carcinomas mainly represented by adenocarcinomas with 51.09% and squamous cell carcinomas with 29.91%.

In addition, hematological malignancies accounted for 4.8% of all cases with 4.4% lymphomas. Similar figures are found in the literature with 4.09% [3] in Dakar and 6% in South Africa [12].

Cancers among 0-15 years old accounted for 2% of the total number of cancers. The literature reports a rate of 0.5% in high-income countries compared to 4.6% in sub-Saharan Africa [6]. The low percentage in our study reflects the difficulties in the diagnostic and therapeutic management of pediatric cancers in the northern zone of Senegal.

#### Conclusion

In Africa, cancer control strategies are weakened by the lack of epidemiological data. It is necessary to set up registers of cancer populations, which requires the installation of a pathological anatomy laboratory, which has a central place in oncology. These epidemiological data obtained thanks to the pathology laboratory of Saint-Louis is a contribution for a better knowledge and visibility of cancer in sub-Saharan Africa throughout the world.

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