

Epidemiological and Pathological Aspects of Cervical Cancer in Ivory Coast

K.J. N'Dah^{1,*}, E. Troh¹, B. Doukouré¹, K.E. Koffi², M. Kouyaté², B.S. Kouï², N.A. Aman³, A.D. Abouna¹, K.D. Koffi³, B. Traoré¹, A.B. Effi³ and M.I.J.M. Diomandé¹

¹Department of Pathology of the University Teaching Hospital of Cocody - Abidjan, Ivory Coast

²Department of Pathology of the University Teaching Hospital of Treichville - Abidjan, Ivory Coast

³Department of Pathology of the University Teaching Hospital of Bouake, Ivory Coast

Abstract: Cervical cancer is the most common and the leading cause of women death in developing countries.

Purpose: To specify the epidemiological and pathological characteristics of cervical cancers in Ivory Coast.

Material and methods: This was a retrospective and descriptive study on the cervical cancers histologically confirmed and identified from the registers for recording laboratory of pathological anatomy of Abidjan teaching hospital. The study period was 24 years (January 1984 to December 2007). The parameters analyzed were: frequency, age, socio-demographic status, macroscopic and histological aspects and the prognosis.

Results: The cervical cancer represented 78.78% (2064 cases) of gynecological cancers, 42.71% of woman cancer and 17.41% of all cancers. The average age was 48.36 years ranging from 2 to 88 years and a peak incidence between 45-54 years (29%). Multiparity was observed 57.04% (n = 231) and the low socioeconomic level was predominant (70.41%). Concerning pathological examination, the tumor lesions were predominantly budding (51.52%). Squamous cell carcinomas (92.88%) were the most frequent of histological types with 95.1% (n = 1823) of invasive carcinomas. The average age of patients with squamous cell carcinoma was 49 years with 41.5 years for intraepithelial carcinomas and 46.8 years for invasive carcinomas. At the prognosis, squamous cell carcinomas were diagnosed most often in stage pT2 (57.41%) and with extra-cervical represented 66.4% (n = 519).

Conclusion: Cervical cancer is the most common cancer in Ivory Coast taking into account male and female together. Its poor prognosis associated with late diagnosis should encourage the establishment of a cytology screening program.

Keywords: Cervix, Epidemiology, Squamous cell carcinoma, Ivory Coast.

INTRODUCTION

Cancer of the cervix uteri is a major public health problem. Globally, it represents 10% of female cancers and occupies the second place behind breast cancer of women [1,2]. According to WHO, there was in 2002 worldwide 500,000 new cases over 90% in developing countries [3]. Sub-Saharan Africa alone reported 72,000 new cases and 56,000 deaths [3]. In high-income countries, policies of systematic screening of precancerous lesions have permitted a strong decrease in morbidity and mortality [3]. At the present time, it is well established that the human papilloma virus (HPV) is the main agent of cervical cancer. Other sexual and nonsexual factors also act as cofactors in the progression of HPV infection to cervical cancer [4]. In Ivory Coast, the absence of screening policy and difficulties in the management of the single cancer registry of Abidjan make particularly complex the assessment of mortality and morbidity of cervical

cancer in the country. In addition from the independence in 1960 until 1990, only two laboratories practiced pathology exams in Abidjan. A study in these structures from 1974 to 1984 by Diomandé and al [5] showed that the cervical cancer represented 29.12% of cancer of women and 13.87% of all cancers. The aim of our study was to clarify the epidemiological, socio-demographic and pathological aspects of cervical cancer over the past twenty years to adopt a strategy of care.

I. MATERIAL AND METHODS

This was a retrospective and descriptive study conducted in the laboratories of pathology of Cocody and Treichville (University) Teaching Hospital which are the two public facilities of the Ivory Coast receiving the essential samples of the country. The records of consignments of pathologic examination results were the study material. The study period was 24 years (January 1984 to December 2007). Databases reported in these records included the patient's identity (name, surname, age, sex and address), clinical information, the personal and family history, origin, type of samples. Cytologic, macroscopic descriptions and different

*Address corresponding to this author at the Lecturer in the University of Cocody, Department of Pathology of Cocody - Abidjan (Ivory Coast), Faculty of Medical Sciences (University of Cocody - Abidjan), Bingerville BP147, Ivory Coast; Tel: (225) 07 70 18 58; E-mail: docteurnkj@yahoo.fr

histological types were also reported. The biopsies (n=440) and surgical specimens (n=1118) were previously fixed in 10% formalin. Then they had undergone the usual techniques of paraffin embedding, microtome cutting, staining with hematoxylin-eosin and in need additional staining (Alcian Blue, slow Giemsa and Perls) were indispensable to refine the diagnosis. The cases included in our study were histologically confirmed cervical cancers. The cytological samples were attached to hairlacquer and stained with Harris Shorr or Papanicolaou. Were excluded, the diagnoses and the cytology not confirmed by histopathological examination. Statistical processing and data analysis were performed using SPSS software (2004).

II. RESULTS

1. Epidemiology

a) Frequency

From January 1984 to December 2007, we examined 139,542 samples and diagnosed 11,854 cancers that is to say a frequency of 8.5% of cases. The cervical cancer represented 78.78% (n =2064) of gynecological cancers, 36.61% of woman cancers and 17,41% of all cancers. They ranked first of cancer in Ivory Coast. The annual incidence was 86 cases / year with a peak incidence in 1988 (110 cases). The frequencies breakdown by year is illustrated by Figure 1.

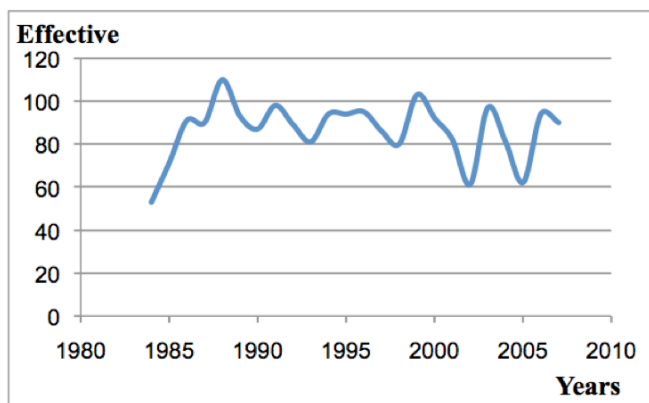


Figure 1: Breakdown of frequencies by year.

b) Socio-Demographic Status

Age

The average patient age at diagnosis was 48.36 years ranging from 2 years to 88 years. The breakdown of ages is illustrated in Figure 2. The peak incidence was observed in the range of 45 to 54 years with 29% (n = 613). The subjects under 30 years represented

5.04% (n = 104), women from 30 to 64 years 83.58% (n = 1725) and older patients 11.38% (n = 235).

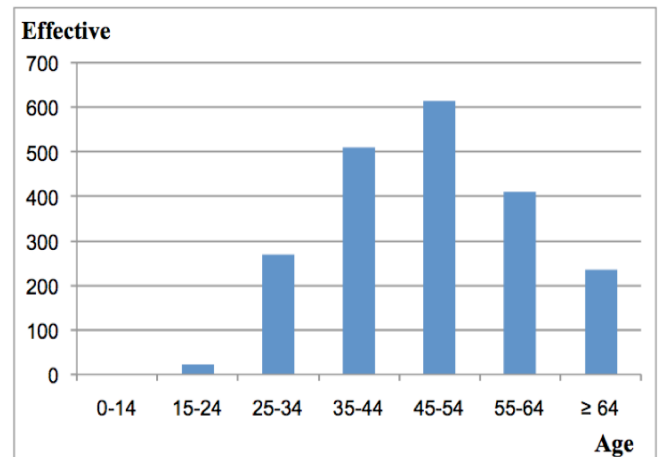


Figure 2: Breakdown of age.

Origin

The medical reference samples were (University) Teaching Hospital of Treichville (n=395), the (University) Teaching Hospital of Cocody (n=312), the (University) Teaching Hospital of Yopougon (n=125), the (University) Teaching Hospital of Bouake (n=98), private clinics of Abidjan (n=379) and other provincial hospitals (n=303). Women from the economic capital (Abidjan) represented 75.12% (n=1211) and those of the provinces 12.47% (n=201).

Parity

Multiparous represented 57.04% (n=231), the pauciparous 33.82% (n=137) and nulliparous 9.14% of cases (n=37).

Socio-Professional Status

Their frequency is reported in Table 1. Women with low socioeconomic status represented 70.41% (n=1280), women of the middle class 28.1% (n=511) pupils and students with 1.49% of cases (n=27).

Table 1: Breakdown of Socio-Professional

Socio-economic status	Effective	Percentage
Pupils and students	27	1,47
Officials	312	17,16
Housewife	1079	59,35
Women shopping	201	11,06
Retired officials	199	10,94
Total	1818	100

Table 2: Breakdown of Macroscopic

Macroscopy	Effective	Percentage
Budding tumours	576	51,52
Ulcerative and budding tumours	312	27,91
Polypoid tumours	103	9,21
Colitis Tumours	69	6,17
Indurated and firm tumours	58	5,19
Total	1118	100

2. Pathology

a) Cytological Data

The cytological samples were observed in 19.67% of cases (n = 406). The average age of patients was 28.53 years, ranging from 18 to 63 years. Ages 30 to 39 years represented 42.85% of cases (n=174).

b) Macroscopic Surgical Specimens

Budding tumors were predominant with a frequency of 51.52% of cases (n=576). Ulcerative budding aspects 27.91% (n=312), polypoid 9.21% of cases (n=103), ulcerative bleeding 6.17% (n=69) and indurated and firm tumour 5.19% of cases (n=58). Data are reported in Table 2.

c) Correlation Between Histological Types and Age

The histological types are reported in Table 3. Squamous cell carcinomas were observed in 92.88% (n = 1917) of histological types followed by Adenocarcinomas with 5.08% (n = 105). Invasive squamous cell carcinomas represented 95.1% of squamous cell carcinoma (n = 1577) and were diagnosed at an average age of 49 years ranging from 16 to 88 years. Precancerous lesions associated with

invasive carcinomas were low grade in 44.8% and high grade in 55.2% of cases. Microinvasive carcinomas had a frequency of 0.5% of cases (n = 9) and the average age of patients was 41.5 years. As for intra-epithelial carcinomas (in situ), they represented 4.4% of cases (n = 72) and the average patient age at diagnosis was 46.8 years. 10 cases of squamous cell carcinomas were diagnosed before 20 years old and were associated with HIV / AIDS. Other histological types were varied. Mixed malignant tumors (0.98%), rhabdomyosarcoma (0.58%), lymphomas (0.24%), Kaposi's sarcoma (0.19%), melanoma (0.05%) and 'malignant hemangiopericytoma (0.05%) were also observed.

3. Prognosis

Squamous cell carcinomas were studied according to the classification pTNM of WHO (2003). Rates are reported in Table 4. Tumours with extension ectopic represented 66.4% of cases (n = 519).

III. DISCUSSION

Although the data of pathology laboratories in Teaching Hospitals of Abidjan only partially reflect the

Table 3: Correlation Between Histological Types and Age

Age Histological types	0-14	15-24	25-34	35-44	45-54	55-64	≥64	Total
Squamous cell carcinoma	-	19	242	477	562	392	219	1917
Adenocarcinoma	-	-	15	26	37	13	13	105
Malignant mixed	-	-	2	4	7	4	2	19
Rhabdomyosarcoma	3	2	3	1	1	1	1	12
Lymphoma	1	1	1	1	1	-	1	5
Kaposi's sarcoma	-	-	3	-	1	-	-	5
Melanoma	-	-	1	-	-	-	-	1
Hemangiopericytoma malignant	-	-	1	-	-	-	-	1
Total	4	22	259	510	613	411	235	2064

Table 4: pTNM Classification of Squamous Cell Carcinomas

Stages	Effective	Percentage
pT1	263	33,6
pT2	450	57,4
pT3	51	6,6
pT4	18	2,4
Total	792	100

extent of the situation of cervical cancer in the Ivorian population, they help to notice that the cancer of the cervix is increasing in frequency. In this series as in the decades from 1970 to 1980, cancer of the cervix remains the most common cancer in our country [1,5,6]. At the present time, it is impossible to assess the incidence and prevalence of cervical cancer at the national level. Indeed, present data are not exhaustive due to the complete lack of diagnostic facilities within the country. The only cancer registry of Abidjan opened in 1994 experienced a big problem in the management of statistics data like the two laboratories of Teaching Hospitals of Abidjan (Cocody and Treichville) who remain under-equipped. Also, the successive crises since the 1990s and 2000s with the impoverishment of Ivorian society and disorganization of health facilities have contributed to lower samples from the provinces to our laboratories.

However, our data show the extent of cervical cancer in the general Ivorian female population. Our frequency of 17.41% of cancers compared to that of Diomandé and al (13.87% of cancers) [5] has risen sharply and is the first gynecological cancer with a frequency of 78.78% of cases. Sangaret and al in Ivory Coast [6] found a frequency of 75.68% of gynecological cancers. As for Toure and *et al.* [7] in Senegal Muteganya and al. [8] in Burundi, their respective frequencies of 31.23% and 33.8% represented equally at home the first gynecological cancer. Although all these authors note the first place occupied by this cancer, we find a disparity between the rates of occurrence. This shows that there is a problem of identification of patients and especially the absence of cancer registry in most of these countries.

In some North African countries and developed countries where cancer registries are well kept and regularly updated the values vary not much. Thus Ben Youssef and al [9] found a frequency of 17% of cervical cancers and occupies the second place after breast cancer (27%) [9]. According to WHO, there was in

2002 worldwide 500,000 new cases over 90% in developing countries [3]. Sub-Saharan Africa alone reported 72,000 new cases and 56,000 deaths [3]. In Western countries on the contrary the incidence remains very low. In France in 2010, the incidence in the general population is estimated at 7.1 cases / 100 000. USA and Canada, rates are respectively 5.7 and 6.6 per 100 000 population [10]. This low incidence is related to screening policies in force at national level and continuous improvement programs, management of dysplastic lesions. The average age of patients was 48.36 years old with extremes of 2 and 88 and a peak incidence between 45 and 54 corroborating the writings of N'Guessan and al. [1] whose average age was 48.5 years with a peak between 45 and 54 as for Toure and al. (46 years) [7]. This shows the development of cancer at a relatively young age in Africa compared to Western countries [10-12]. The occurrence of cervical cancer at an early age in our study (10 cases under 20 years old) is related to the increase in risk factors such as poor socioeconomic conditions, early sexual relations, multiple sexual partners that expose to Human Papilloma Virus (HPV), to sexually transmitted infections and many pregnancies [11]. The increase in juvenile forms was observed in all institutes of reference [13]. According to Mainen and al. [14], cervical cancer among young women is explained by the fact that HIV infection among young people is associated with a prevalence of severe dysplasia of the cervix and a severe evolution of lesions because of the serious immune deficiency. Other reports of the sub-Saharan Africa show that women living with HIV develop cancer of the cervix at an earlier age than women who are HIV negative [15]. In our study, most patients were multiparous, as in many other African studies [16,17]. Indeed, multiparity is a real risk factor in the occurrence of cervical cancer. It accounts for repetitive trauma causing alterations of the cervical mucosa which evolve into a major dysplastic state. According to Banka and al. [16], multiparous over 35 are the most exposed to the risk of cervical cancer and the frequency of this cancer increases with parity and appears six times higher among them than among the pauciparous. In our book, the patients also had low socio-economic status thereby the real ignorance of the disease as well as information on reproductive health. Concerning pathology, the lesions observed are mostly ulcerated and budding. Such aspects in practice are the sign of an advanced stage of the tumor, sometimes with an important degree of invasion. It is a common fact in developing countries [18]. Squamous cell carcinomas, representing the majority of cervical

malignant tumors are often invasive because of the lack of a screening of precancerous lesions of low and high grade. Early age of women with squamous cell carcinoma is not trivial, because they are often victims of co-infection of HIV and Human Papilloma Virus responsible for early lesions by a synergistic action [19]. Adenocarcinomas are rare in the literature [21] and represent approximately 5% of cervical cancers in Ivory Coast with a frequency peak between 45 and 54 years old as for squamous cell carcinomas. Indeed, the pathogenesis of cervical Adenocarcinomas is related on the one hand with di-ethyl-stilboestrol used in the 1940s to prevent abortions in the first quarter. This medicine would have negative impact on the female baby whose mother was user of the medicine during pregnancy. This would result in depression of immune system with relapse of the Killer cells response involved in immunological surveillance of the organ. This would be responsible for cell damage during the foetogenesis or embryogenesis with increased higher risk of malignant transformation [21]. Moreover, the hypothesis of viral infection with HPV, the most plausible, would be responsible for this pathology of the cervix with the highest rates that coincide with those of squamous cell carcinomas in our study. Kaposi's sarcoma are most often related to the high incidence of HIV infection / AIDS in our country [18]. Among children, embryonal tumors and Burkitt's lymphoma were observed. This is the usual case in the literature of Ivory Coast [20]. The prognosis of cervical cancers is pejorative in developing countries [18]. Our findings do not differ from this reality that is more and more worrying in Ivory Coast.

CONCLUSION

In Ivory Coast, cervical cancer remains a major public health problem. The disease is often diagnosed in the advanced stages. Women of low socioeconomic level and the most active are the most affected. In addition, the pathology is still unknown and control methods and the means to fight against it are still insignificant. Despite efforts made by the Ivorian League of fighting against cancer in recent years, the disease continues to gain ground. It therefore appears urgent that efforts to educate women and the competent authorities be organized quickly. On one hand it will be question to take care of the patients and on the other hand set up a strategy against the recrudescence of risk factors. It will also be compulsory to improve the diagnostic and therapeutic platform and especially the establishment of an efficient policy of screening for precancerous lesions among women

aged from 20 to 65 years old and vaccination against HPV for females adolescent aged from 12 to 19 years old.

REFERENCES

- [1] N'Guessan K, Kouakou F, Praise V, *et al.* Cancer of the cervix: epidemiological aspects and management in the African environment. *Mali Med* 2009; XXIV(3): 27-30.
- [2] Philippe M, Damienne C. *Cervical cancer, gynecological and obstetrical practice* Masson 2005.
- [3] Ferlay J, Bray F, Pisani P, Parkin DM. *GLOBOCAN 2002: Cancer Incidence, Mortality and Prevalence Worldwide*. IARC Cancer Base No. 5 Version 2.0., Lyon: IARC Press 2004.
- [4] Thomas L. Evolution of radiotherapy in cervical cancers located. *Lett Gynecol* 2001; 260: 21-4.
- [5] Diomandé I, D'Horpock AF, Heroin P, *et al.* Evolution of cancer in Côte d'Ivoire. *Ivory Coast Rev Med* 1988; 75: 81-4.
- [6] Sangaret M, Kone N, Houphouet K, *et al.* Cervical cancer in Africa: Epidemiological aspects. *Med J Ivory Coast* 1986; 75: 112-8.
- [7] Toure P, Corre P, Diaby A. Cervical cancer in African environment at Dakar. A retrospective study of 411 cases observed at the Cancer Institute. *Med Dakar* 1981; 26: 59-70.
- [8] Muteganya D, Bigayi T, Bigirimana V, Sindyirwanza JB, Marerwa G. The cervical cancer at the University Hospital of Kamenge about 35 cases. *Med Afr Noire* 1999; 46(3): 153-6.
- [9] Ben Youssef R, Maalej M, Ben Abdallah M, *et al.* Cervical cancer in Tunisia. Clinical presentation and evolution during a period of 10 years. *J Gynecol Obstet Biol Reprod* 1987; 16: 63-7.
- [10] The cancer situation in France in 2010. www.e-cancers.fr/.../6035-la-status-of-cancer-in-France-in-2010.pdf. Accessed on 03/04/2012.
- [11] Banza K, Kizonde J, Unga M, Muiach K, Kabila B, Kalenga MK. Cancer of the cervix: Problems in management. About 40 cases seen at the hospital in Lubumbashi. *Lub Med* 1999; 2.
- [12] Abboud J, Attieh E, Germanos A. Invasive cervical cancer. Treatment tailored to the available therapeutic means. *J Gynecol Obstet Biol Reprod* 1992; 21: 19-22.
- [13] Dargent D, Kouakou F, Cholmier M, Adeline P. Cervical cancer in women under 35 years of age: a new disease. *Rev Fr Obstet Gynecol* 1991; 86: 635-38.
- [14] Maiman M, Fruchter RG, Sedlis A, *et al.* Prevalence, risk factors, and accuracy of cytologic screening for cervical intraepithelial neoplasia in women infected with human immunodeficiency virus. *Gynecol Oncol* 1998; 68: 233-39. <http://dx.doi.org/10.1006/gyno.1998.4938>
- [15] Moodley M, Moodley J, Kleinschmidt I. The invasive cervical cancer and human immunodeficiency virus (HIV): a perspective from South Africa. *Int J Gynecol Cancer* 2001; 11(3): 194-7. <http://dx.doi.org/10.1046/j.1525-1438.2001.01022.x>
- [16] Buga GA. Cervical cancer awareness and risk factors among female university students. *East African Med J* 1998; 75(7): 411-6.
- [17] Moscicki AB, Ellenberg JH, Vermund SH. Prevalence and risk for cervical human papillomavirus infection and squamous lesions in intraepithelial teen girls: impact of infection with human immunodeficiency virus. *Arch Ediat Adolesc Med* 2000; 154: 127-34.
- [18] Raharisolo Vololonantenaina CR, Rabarijaona LP, Soares JL, *et al.* Assessment of cervical cancers diagnosed at the

- Pasteur Institute of Madagascar from 1992 to 2002. Arch Inst Pasteur Madagascar 2003; 69(1 & 2): 77-81.
- [19] Effi AB, N'Dah KJ, N'Guissan AA, *et al.* Epidemiology and Pathology of carcinoma in Ivory Coast. Afr J Cancer 2012; 4: 41-7.
<http://dx.doi.org/10.1007/s12558-011-0189-2>
- [20] Lellan Mc RMC, Dillon MB, Woodruff JD, Heatley GJ, Field AL, Osenshein BR. Long term follow our stage I cervical adenocarcinoma of treated fish by radical surgery. Gynecol Oncol 1994; 52(2): 253-9.
<http://dx.doi.org/10.1006/gyno.1994.1041>
- [21] Kaufman RH, Korhonen MO, Strama T, Adam E, Kaplan A. Development of clear cell adenocarcinoma in off spring of exposed under observation. Obstet Gynecol 1982; 59: 68S-72S.

Received on 17-10-2012

Accepted on 09-11-2012

Published on 01-12-2012

<http://dx.doi.org/10.6000/1927-7229.2012.01.02.8>