Cervical Carcinoma in Surinam

Incidence and Staging of Cervical Carcinoma between 1989 and 1994

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BACKGROUND. Epidemiologic data show a high incidence of cervical cancer throughout the world and a high mortality, particularly in developing countries. The aim of this study was to describe the incidence and stages of cervical carcinoma in Surinam. Results were compared with data from The Netherlands (used as representative of western European countries) because of a medical and patient exchange program.

METHODS. Data for Surinamese patients analyzed in this study were based on the files from the Department of Pathology at the University of Surinam from 1989 through 1994. Cumulative and incidence rates standardized to the World Standard Population were calculated and compared with rates in other South American countries and in The Netherlands. Age distribution and stage of disease (according to the International Federation of Gynecology and Obstetrics) among Surinamese and Dutch women were compared. Furthermore, differences in incidence rates among the multiple ethnicities of the Surinamese population were evaluated.

RESULTS. Age standardized incidence rates for Surinam and The Netherlands were 26.7 and 6.2 per 100,000 women, respectively. The cumulative rate up to age 74 years was 2.9 in Surinam versus 0.6 in The Netherlands. Incidence in Surinam rose sharply with age. More than 40% of the Surinamese women presented with Stage IIB disease or higher compared with 12% in The Netherlands. In Surinam, low stage of disease was highest in the youngest group (48%), whereas only 18% of women 65 years or older presented with Stage I disease. Incidence rates in Surinam varied by ethnic group. Amerindians and Javanese were more likely to develop cervical cancer than were other ethnicities.

CONCLUSIONS. Cervical carcinoma in Surinam was characterized by high incidence rates and relatively advanced stage of disease at presentation. Moreover, incidence was not equally distributed among the different ethnic groups. This may reflect a greater exposure to risk factors and differential access to diagnostic and treatment services. ***Cancer* 1996; 77:1329–33.** © *1996 American Cancer Society.*

KEYWORDS: malignancies, uterine cervix, epidemiology, incidence, racial stocks.

Cervical carcinoma is one of the most common malignancies among women.[1] Throughout the world, there is considerable variation in age-adjusted cervical carcinoma incidence rates and mortality rates. The highest rates have been observed in developing countries.[2] Differences in socioeconomic status are associated with the risk of cervical carcinoma.[3] Among lower socioeconomic classes, cervical carcinoma incidence rates are higher. This is possibly related to differences in sexual behavior.[4,5] The risk of cervical carcinoma is influenced by the number of sexual partners and probably the age at first sexual intercourse. It is now widely accepted that infection with human papillomavirus (HPV), a sexually transmittable agent, is one of the major etiological factors in carcinoma of the cervix.[6-9] Other potential risk factors

are smoking, long-term use of oral contraceptives, multiparity, certain dietary factors, and immunosuppression.[10-13]

Although a number of reports have described the epidemiology of this disease in various regions around the world, including different countries in Latin America, the epidemiologic situation in Surinam has not been described before. Surinam is a former Dutch colony in the north of "Latin America." Collaboration between clinicians in Surinam and The Netherlands resulted in regular referring of cervical cancer patients from Surinam to The Netherlands for treatment not available in Surinam. This provided a situation in which incidence and staging in Surinam could be studied and compared with those in western European countries, i.e., The Netherlands. The aim of the present study is to illustrate the results of such an analysis, including the study of multiple ethnicities, based on the data representative of the period from 1989 through 1994. Characterization of the situation provides a background for further research on improvement of diagnostics, early treatment, and tumor biological studies.

TABLE 1
Age Standardized Incidence Rates of Cervical Carcinoma per 100,000 Women in Selected Countries

Country	WSR	CR 0-74
Peru[2]	54.6	5.8
Brazil[2]	48.9	5.0
Colombia[2]	42.2	4.7
Ecuador[2]	34.0	3.8
Surinam*	26.7	2.9
Costa Rica[2]	26.1	2.7
Martinique[2]	24.3	2.6
Cuba[2]	20.0	2.0
U.K.[2]	13.5	1.3
France[2]	11.4	1.2
Germany[2]	10.8	1.2
Sweden[2]	8.7	0.9
Spain[2]	6.9	0.7
The Netherlands[15]	6.2	0.6
Finland[2]	4.4	0.5

WSR: world standard rate; CR: cumulative risk.
* Data from this study.

MATERIALS AND METHODS

The Department of Pathology at University Hospital of Surinam undertakes the diagnostic histopathology for all hospitals in Surinam. For this study all newly diagnosed cases of invasive cervical carcinoma were drawn from the files of the Department of Pathology for the years 1989 through 1994. In situ lesions were not included in this study. The ethnicity of the patients was recorded in patient charts at the hospitals. Additionally the following data were collected: age, date of diagnosis, and stage of disease at time of diagnosis according to the International Federation of Gynecology and Obstetrics (FIGO).[14] The ethnicity groups were categorized as Creole, Hindustani, Javanese, Chinese, bush Negro, Amerindians, and others.

Population figures were derived from the Central Bureau of Statistics (CBS) of Surinam. As a denominator for the incidence rates, the estimate of the 1991 age distribution of the Surinamese female population was used. To facilitate international comparisons, age-specific rates were calculated and standardized for all ages together to the World Standard Population.[2] Incidence rates for the Surinamese population were compared with rates for other South American countries as described in the latest volume of *Cancer Incidence in Five Continents*.[2] Moreover, rates were compared with rates for the Dutch population, as listed in the report of The Netherlands Cancer Registry,[15] as a representative country for western Europe. To compare stages at presentation between the Surinamese and the Dutch populations, data concerning the Dutch population were drawn from the Department of Oncologic Documentation of the Leiden University Hospital.

Distribution of cervical carcinoma over the different ethnicities in Surinam was performed by calculating incidence rates per 100,000 women per year per ethnic group. Population distribution defined by the CBS of Surinam was used. For this calculation, we considered the patients designated as mixed in the clinical records as belonging to the category of Others in the demographic data. Moreover, trends in incidence over the 6 year period were calculated by calculating incidence rates by year of diagnosis.

RESULTS

From 1989 through 1994, 251 patients were recorded to have invasive cervical carcinoma at the Department of Pathology, Paramaribo, Surinam. The cumulative risk of cervical carcinoma in Surinam up to age 74 years was 2.9 (Table 1), which means that, if current incidence patterns are maintained, approximately 1 of every 35 women in Surinam, by age 75 years, will have developed cervical carcinoma during her lifetime. In The Netherlands, only a 0.6 cumulative rate is observed, yielding a risk that 1 of every 165 women will develop cervical cancer if no other causes of death interfere before age 75 years. The crude incidence rate per 100,000 women per year was 20.5. The age-standardized incidence rates according to the World Standard Population show that Surinam was placed in the middle of the rank order of eight selected Latin American countries (Table 1). In Surinam, the age-standardized incidence rate of 26.7 per 100,000 women exceeds that of The Netherlands, rated at 6.2.

The age of the patients in Surinam ranged from 22.6

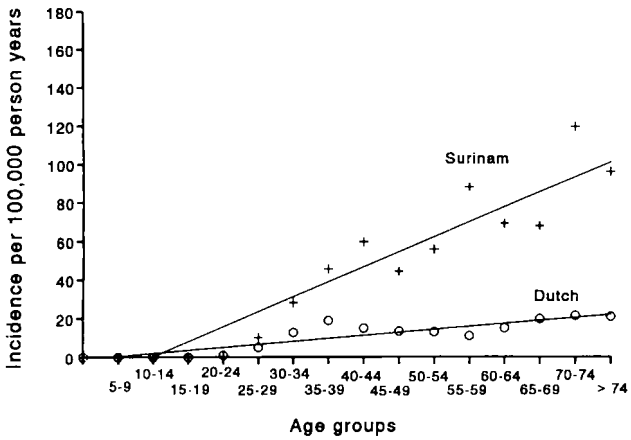

FIGURE 1. Correlation between age and age-standardized incidence rates per 100,000 person-years by country, 1989–1994.

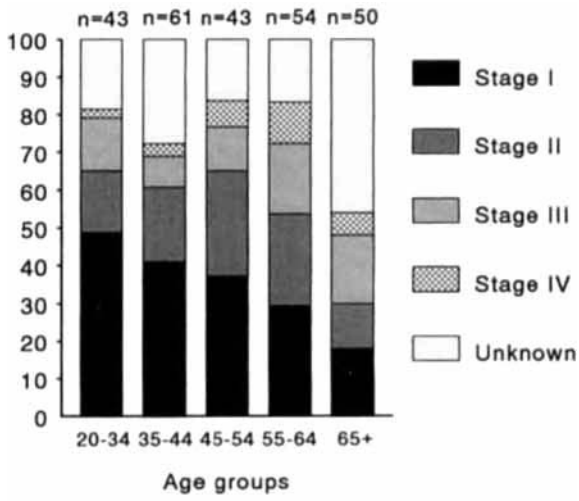

FIGURE 2. Stage distribution of cervical carcinoma by five different age groups in Surinam, 1989–1994.

TABLE 2
Comparison of Clinical Stage at Presentation between Surinam and Dutch Population

	Surinam		Dutch	
Stage	No.	Percentage	No.	Percentage
IA	13	7.0	20	7.8
IB	74	39.6	180	70.0
IIA	23	12.3	27	10.5
IIB	27	14.4	12	4.7
IIIA	18	9.6	4	1.6
IIIB	17	9.1	7	2.7
IVA	14	7.5	5	1.9
IVB	1	0.5	2	0.8
Total	187	100	257	100

to 99.5 (average 51.3) years. Cervical cancer rates in Surinam increase with age (Fig. 1). As is illustrated in Figure 1, this increase with age is greater in Surinam than in The Netherlands, resulting in an incidence rate of 28 per 100,000 women in Surinam versus 13 per 100,000 women in The Netherlands at ages 30–34 years and to incidence rates of 96 per 100,000 women at age 74 years and older in Surinam versus 21 per 100,000 women at age 74 years and older in The Netherlands.

For 75% of patients, stage of disease was known. Among these patients, 46.6% presented with Stage I disease, 26.7% with Stage II, 18.7% with Stage III, and 8% with Stage IV. Information on clinical stage was missing for 25.5% of all diagnosed patients, the major reason being unavailability of medical records or inadequate description of tumor size and dissemination outside the cervix in the patients' medical charts. These numbers were compared with those for the Dutch population (Table 2). Also in this group a majority of patients was diagnosed with Stage IB disease. However, three- to sixfold higher percentages of Stages IIB, IIIA, IIIB, and IV were seen in the Surinamese population.

Figure 2 shows the stage distribution according to age category. The percentage of patients with Stage I disease is highest in the age group 20–34 years (48%), shows a decline at age 35–44 years, and is lowest in the oldest group (18%). The figure shows a trend towards a less favorable stage distribution with increasing age up to 65 years. However, the percentages of unknown stage increase markedly, up to 46% for patients aged 65 years and older.

Figure 3 shows the distribution over the different ethnicities. The CBS of Surinam made an estimation of ethnicity distribution in the total population of Surinam. These figures from 1980 were used to calculate the ethnicity-specific incidence rates per 100,000 women per year among each ethnic group. Twenty patients were recorded with unknown ethnicity. No age-adjustment was possible. Cancer of the cervix appeared not to be equally distributed over the different ethnicities according to the population distribution defined by the CBS, as is illustrated in Figure 3. Two ethnic groups with remarkably high incidence were the Javanese (15.8 new patients per 100,000 Javanese per year) and Amerindians (with 24.2 newly diagnosed cervical carcinoma patients per 100,000 per year).

Figure 4 illustrates the incidence rates for cervical carcinoma from 1989 through 1994. The number of cervical carcinoma cases has slightly increased from 1989 to 1994. In 1989 the number of cases was 34, whereas in 1990, 1991, 1992, 1993, and 1994 the numbers of newly diagnosed cases were 34, 40, 42, 57, and 44, respectively (Fig. 4).

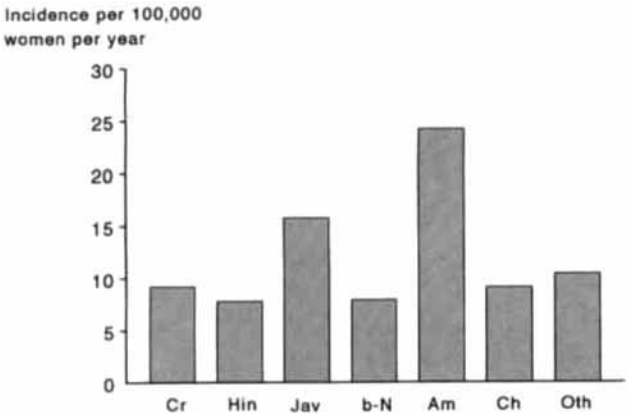

FIGURE 3. Ethnicity-specific incidence rates per 100,000 women per year among Creoles (Cr), Hindustani (Hin), Javanese (Jav), bush Negro (b-N), Amerindians (Am), Chinese (Ch), and others (Oth). Total numbers of cases per ethnic group were 68, 56, 55, 16, 16, 3, and 17, respectively. Twenty patients with unknown ethnicity were not included.

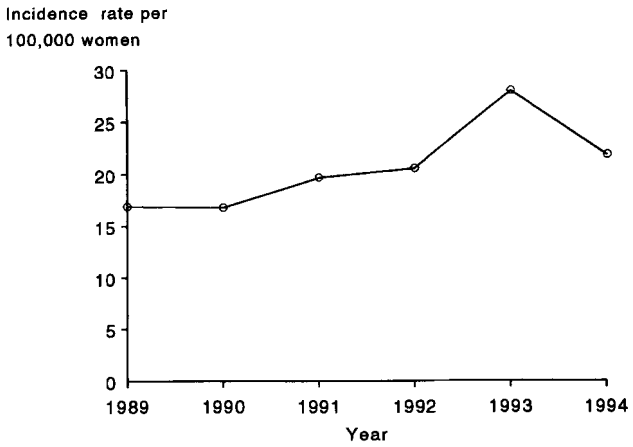

FIGURE 4. Trend in cervical carcinoma incidence per 100,000 women per year in Surinam, 1989–1994.

DISCUSSION

Cervical carcinoma is the most common malignancy diagnosed among women in Surinam. Compared with the incidence rates reported in the most recent volume of *Cancer Incidence in Five Continents*,[2] the incidence rate of this malignancy in Surinam appears to be at least four times the rate in The Netherlands. The high rates in Surinam are in line with figures for other Latin American countries.[2] In comparison with The Netherlands, and by the same criteria, Surinamese women presented with more advanced disease. Moreover, there was a difference in incidence between different ethnic groups.

Geographic differences in the spread of cervical carcinoma could be explained by varying intensity of exposure to etiologic factors. In developing regions of the world, a woman's reproductive life is often characterized by early beginning of sexual contacts, multiple partners (not only by women but also by men), multiple pregnancies, young age at first delivery, absence or insufficient cytologic screening, and inadequate treatment of dysplasia and preinvasive lesions. The factors related to sexual behavior should be considered as determinants of a higher risk of exposure to HPV infection. These factors together with an incomplete screening program may contribute to the observed high rates of incidence in Surinam. In Surinam a minority of the women are screened by a gynecologist. Most of the cervical smears obtained in Surinam were performed by Stichting Lobi. This foundation provides family planning services, including counselling, distribution of contraceptives, and information and education in relation to family planning and sexuality. It was started in 1979 with preventive screening for cervical carcinoma. However, coverage data are not available.

There was a clear increase of incidence rate with age. However, because of the population structure in Surinam, with overrepresented young age groups compared with the population in The Netherlands, incidental cases among the older groups will have a strong influence on the rates per 100,000 women because of the small number of people in those age groups.

Surinam women presented with clinically advanced disease. There are several possible explanations for this. First, the interval before seeking or receiving treatment could be longer, resulting in a longer period of opportunity for tumor spread and consequently a more advanced stage at diagnosis. Second, earlier stages of cervical carcinoma are usually diagnosed by screening, which is generally lacking. Finally, cervical carcinoma occurring in Surinam might run a more aggressive course.

With young patients, early-stage disease predominates. In contrast, older women in Surinam had less early-stage cancer. Younger women may be diagnosed earlier, insofar as they tend to seek medical care more regularly, for instance, for contraceptive purposes, during which cervical diseases can be discovered. A definitive conclusion about the age-stage relationship is somewhat hampered by the high incidence of unknown stage among the oldest group.

It is of interest that some ethnic groups seem more likely to develop cancer of the cervix. Amerindians showed a more than twofold higher incidence rate than Creoles, Chinese, and bush Negroes. Moreover, a more than threefold higher rate was observed compared with the rate found among the Hindustani. These findings may reflect a combination of greater exposure to risk factors associated with cervical carcinoma as well as differential

access to diagnostic and treatment services. Recently special medical attention was paid to the group of Amerindians living in the interior of Surinam. Screening with a high coverage was carried out in a range of villages in the interior. This may have caused higher incidence rates among this ethnic group, because screening reached relatively more women compared with the case in other ethnic groups during the same period. Ethnicity was determined by gynecologists at each hospital. This determination of ethnic groups was done on the basis of appearance, patient questioning, or surname. Because no formal, specific definition of race or ethnicity was used, misclassification might have occurred.

The incidence of cervical carcinoma in Surinam showed a slightly increasing trend up to 1994. Increased screening activity in recent years may have contributed to this trend. Future data should elucidate the effect of changes in diagnostic activity.

The observed differences in incidence compared to The Netherlands and the variation of incidence among the ethnic groups throughout Surinam require further research to determine whether putative differences in exposure to risk factors and lack of screening are the only explanation for these findings. Alternatively, specific HPV types may pose different relative risks for cancer in different geographic regions as was recently proposed by Bosch, Manos, and coworkers.[16] Finally, genetic predisposition is a possibility; specific HLA haplotypes have been reported to be associated with a higher risk of cervical carcinoma.[17,18] The possibility of prevalence of peculiar HLA haplotypes and a genetic predisposition among parts of the Surinam population should be considered.

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