Cervical intra-epithelial neoplasia and invasive cervical cancer in black and white patients

J. T. NEL, L. DE LANGE, P. J. MEIRING, J. I. DE WET

Abstract **The relative incidences of cervical intra-epithelial neoplasia (CIN) and invasive cervical cancer were studied in black and white patients at the academic hospitals of the University of the Orange Free State. A statistically highly significant difference was found between black and white patients, with a higher incidence of invasive cervical cancer than stage III CIN (CIN III) in black patients and a higher incidence of CIN III than invasive cervical cancer in white patients (P = 0,000092; 95% confidence interval −0,355 - −0,128). The time interval between the peak incidence of CIN III and that of invasive cervical cancer was found to be shorter in black than in white patients.**

These distressing findings emphasise the urgent need for a national cervical cytological screening programme to decrease the incidence of invasive cervical cancer. This serious yet preventable disease is still very prevalent in South Africa, especially among black women.

S Afr Med J 1994; **84:** 18-19.

An analysis of time trends in cancer incidence can be utilised to predict cancer incidence in future years and help with decision-making apropos preventive diagnostic and therapeutic facilities. This is the first study of the incidence of cervical intra-epithelial neoplasia (CIN) and invasive cervical cancer in black and white patients seen at the academic hospitals of the University of the Orange Free State. The aims of the study were as follows: (*i*) to determine the incidence of CIN and invasive cervical cancer in black and white patients; (*ii*) to compare the relative ratios of stage III CIN (CIN III) and invasive cervical cancer in black and white patients; (*iii*) to determine the age distribution of CIN and invasive cervical cancer in the population groups mentioned; and (*iv*) to determine the stage distribution of invasive cervical cancer in these groups.

Patients and methods

The 1990 cytological, histological and oncological records of the academic hospitals of the University of the Orange Free State were analysed. To ascertain the correctness of these figures they were correlated with those of the National Cancer Register.

For statistical analysis the chi-square test and 95% confidence intervals were used.

Departments of Obstetrics and Gynaecology and Biostatistics, University of the Orange Free State, Bloemfontein
J. T. NEL, M.B. CH. B., M.MED. (O. & G.), F.C.O.G. (S.A.), M.R.C.O.G, F.R.C.S. (EDIN.)
L. DE LANGE, M.B. CH.B.
P. J. MEIRING, M.B. CH.B.
J. I. DE WET, D.COM.

Accepted 24 Feb 1993.

Results

Table I shows the numbers of cases of CIN and invasive cervical cancer in black patients, distributed according to age group.

The ratio of CIN III to invasive cervical cancer in black patients is therefore 155:231 or 1:1,5. These data were correlated with those of the National Cancer Register and they concurred.

Table II shows the numbers of cases of CIN and invasive cervical cancer in white patients, according to age group.

The ratio of CIN III to invasive cervical cancer in white patients is therefore 54:30 or 1:0,5. These data were also correlated with those of the National Cancer Register and concurred with them.

Table III shows the difference in the ratio of CIN III to invasive cervical cancer between black and white patients. This difference is statistically highly significant (P = 0,000092; 95% confidence interval −0,355 - −0,128).

The age distribution of CIN III and invasive cervical cancer in black and white patients is illustrated in Fig. 1. As can be seen, the time interval between the peak incidence of CIN III and that of invasive cervical cancer is shorter in black than in white patients. The peak incidence of invasive cervical cancer also occurs at an earlier age in black than in white patients.

The stage distribution of invasive cervical cancer in black patients is illustrated in Fig. 2. The majority of these patients presented at an advanced stage. The 18% in whom the stage at presentation was unknown represents 41 patients with advanced carcinoma who died soon after admission before exact staging could be done. Fifty per cent of white patients with invasive cervical cancer presented in stage I, 7% in stage II and 7% in stage III. The 36% of unknown stage represents 5 patients with advanced carcinoma who died soon after admission.

Discussion

The statistically highly significant difference in the ratio of CIN III to invasive cervical cancer between black and white patients is a distressing finding, which can be explained by the fact that the black female population of the Orange Free State is not adequately reached by existing cytological services.[1] This situation needs to be rectified urgently in order to decrease the unacceptably high incidence of invasive cervical cancer in black women. In the past, several pleas have been made for the institution of a national cervical cytological screening programme.[2-4] Up to now these pleas have fallen on deaf ears, despite the fact that several studies have revealed a decrease in the incidence of invasive cervical cancer after continuous and extensive mass cervical cytological screening.[5-11]

Furthermore, our finding that the time interval between the peak incidence of CIN III and that of invasive cervical cancer is shorter in black than in white patients emphasises the urgent need for an adequate cervical cytological screening programme among black women in the Orange Free State. The reason for this finding is unknown. It cannot be ascribed to differences

TABLE I.
CIN and invasive cervical cancer in black patients

Age	Unknown	< 20	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80+	Total
CIN I	11	6	32	27	9	2	0	0	0	87
CIN II	8	2	13	24	9	2	2	0	0	60
CIN III	17	1	20	52	36	17	7	5	0	155
Invasive cancer	19	0	9	25	62	58	40	17	1	231
Total	55	9	74	128	116	79	49	22	1	533

TABLE II.
CIN and invasive cervical cancer in white patients

Age	Unknown	< 20	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80+	Total
CIN I	3	2	12	21	3	2	0	0	0	43
CIN II	5	0	5	8	5	0	1	0	0	24
CIN III	5	0	9	22	10	5	1	1	1	54
Invasive cancer	0	1	3	5	5	4	8	3	1	30
Total	13	3	29	56	23	11	10	4	2	151

TABLE III.
The difference in the ratio between CIN III and invasive cancer in black and white patients

	CIN III	Invasive cervical cancer	Total
Black patients	155	231	386
White patients	54	30	84

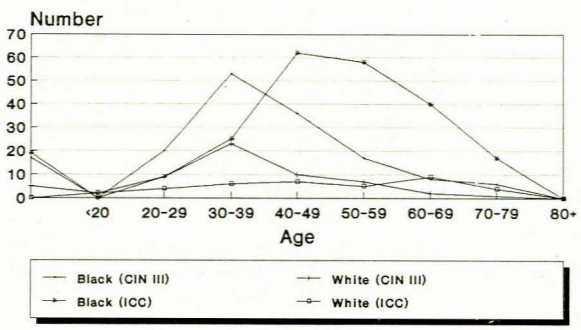

FIG. 1.
The age distribution of CIN III and invasive cervical cancer (ICC) in black and white patients.

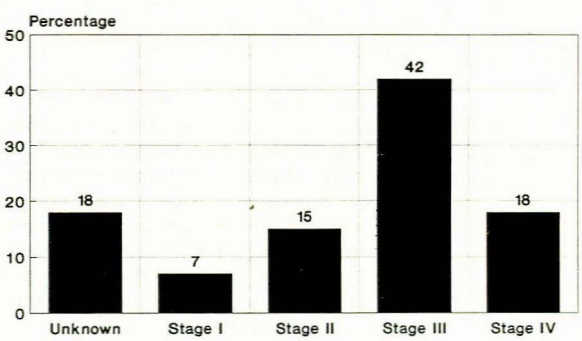

FIG. 2.
The stage distribution of invasive cervical cancer in black patients.

in sampling methods, since these were the same for both population groups. It could be because a more aggressive type of cervical cancer occurs in black women or because of differences in the nutritional and/or immunological status of black and white women.[12] Many clinicians in Africa believe the disease to be more aggressive in black women.[12] Further research is needed in this regard. Both nutritional and immunological factors have been shown to be important in the initiation and progression of cancer.[13-16] Further research is also needed in this regard, especially into possible differences between black and white patients.

Conclusion

The institution of an adequate cervical cytological screening programme among black women in South Africa is long overdue. It is particularly tragic that so many women suffer from a disease which can be prevented by a simple screening test.

REFERENCES

1. Cronjé HS, Trümpelmann MD, Divall PDJ, Scott LL, Middlecote BD, De Wet JI. Cervical cytological services in the Orange Free State. *S Afr Med J* 1989; **76:** 615-618.
2. Editorial. Mass prevention of cervical carcinoma. *S Afr Med J* 1962; **36:** 705-706.
3. Du Toit JP. Carcinoma of the cervix — a plea for some organised planning. *S Afr J Hosp Med* 1980; **Oct:** 199-205.
4. Gordon Grant MC. Carcinoma of the cervix — a tragic disease in South Africa. *S Afr Med J* 1982; **61:** 819-822.
5. Helm G, Johnson JE, Lindberg LG. The impact of cytological screening on the incidence of invasive cervical cancer. *Acta Obstet Gynecol Scand* 1980; **59:** 271-273.
6. Sweetnam P, Evans DM, Hibbard BM, Jones JM. The Cardiff Cervical Cytology Study: prevalence and epidemiology of cervical neoplasia. *J Epidemiol Community Health* 1981; **35:** 83-90.
7. Soost HJ, Bochmühl B, Zock H. Results of cytological mass screening in the Federal Republic of Germany. *Acta Cytol* 1982; **26:** 445-452.
8. Sadeghi SB, Hsieh EW, Gunn SW. Prevalence of cervical intraepithelial neoplasia in sexually active teenagers and young adults: results of data analysis of mass Papanicolaou screening of 796,337 women in the United States in 1981. *Am J Obstet Gynecol* 1984; **148:** 726-729.
9. Ouguid HL, Duncan ID, Currie J. Screening for cervical intraepithelial neoplasia in Dundee and Angus 1962 - 1981 and its relation with invasive cervical cancer. *Lancet* 1985; **2:** 1053-1056.
10. Kjellgren O. Mass screening in Sweden for cancer of the uterine cervix: effect on incidence and mortality. *Gynecol Obstet Invest* 1986; **22:** 57-63.
11. Magnus K, Langmark F, Andersen A. Mass screening for cervical cancer in Ostfold county of Norway, 1959 - 77. *Int J Cancer* 1987; **39:** 311-316.
12. Rogo KO, Omany J, Onyango JN, Ojwang SB, Stendahl U. Carcinoma of the cervix in the African setting. *Int J Gynecol Obstet* 1990; **33:** 249-255.
13. Schneider V, Kay S, Lee HM. Immunosuppression as a high-risk factor in the development of condyloma acuminatum and squamous neoplasia of the cervix. *Acta Cytol* 1983; **27:** 220-224.
14. La Vecchia C, Franceschi S, Decarli A, *et al.* Dietary vitamin A and the risk of invasive cervical cancer. *Int J Cancer* 1984; **34:** 319-322.
15. Butterworth CE jun, Hatch KD, Gore H, Mueller H, Krumdieck CL. Improvement in cervical dysplasia associated with folic acid therapy in users of oral contraceptives. *Am J Clin Nutr* 1982; **35:** 73-82.
16. Romney SL, Duttagupta C, Basu J, *et al.* Plasma vitamin C and uterine cervical dysplasia. *Am J Obstet Gynecol* 1985; **151:** 976-980.