

A Preliminary Investigation into the Incidence of Cancer of the Cervix

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SUMMARY

An investigation was undertaken to estimate the prevalence of carcinoma of the cervix in a population where circumcision is commonly practised. A high rate of evidence of carcinoma of the cervix and vaginal infection was established.

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The incidence of cancer of the cervix is generally considered to be high in the Eastern Cape, particularly among the Black population. In view of the fact that these people traditionally practise circumcision before intercourse is permitted, and that people of other races, e.g. Jews and Moslems, who practise circumcision, have a low incidence of the disease, the problem seemed worth investigating. All the more so, because the practice of circumcision has been considered by some to have a protective effect in carcinogenesis of the cervix.

In order to establish whether the problem of cancer of the cervix was of sufficient magnitude to warrant investigation, a preliminary study was undertaken to assess the extent of the disease in the patient population at the Frere Hospital, East London. Our aim was to assess how many patients were admitted for cancer and what proportion of them suffered from cancer of the cervix.

PATIENTS AND METHODS

Cancer admissions for 1966 and 1967 were analysed, as well as bed bookings for Black cancer patients. Then we compared the histologically confirmed cancers from the Frere pathology laboratory with those of a higher socio-economic group sent to a private laboratory in East London during the same years.

In an attempt to find a suitable control series for a projected investigation into aetiological factors in Black cervical cancer patients, we first analysed reports on vaginal smears taken from 93 consecutive Black patients attending gynaecological outpatient departments. When this source of material was found to be unsuitable, we decided to match our cancer patients by age with patients having no gynaecological complaints, who were selected from the general wards of 4 hospitals, and from willing nursing staff. The results of the vaginal smears from 105 of these people are presented.

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RESULTS

Cancer Admissions

Frere hospital caters for approximately 14 000 patients per year (excluding maternity patients) of whom approximately 3% are admitted for cancer. The cancer admissions for the 4 racial groups for whom the hospital caters, namely Whites, Blacks, Coloureds and Asiatics, are shown in Table I. Owing to the small numbers of the latter 2 groups, they have been grouped together.

It is worth noting that 18% of Whites, 44% of Blacks and 20% of Coloured and Asiatic cancer admissions were of the female genital tract. This is high in every instance but most marked in Blacks.

An interesting feature, apart from the numbers, is the proportion of the different gynaecological cancers. Of the 257 cancers in Whites, 35 were of the cervix, and 7 of the uterus, whereas of the 517 cancers in Blacks almost half were of the cervix and only 2 of the body of the uterus. This disproportion is remarkable.

Cancer Bed Bookings of Blacks

The high proportion of patients with cancer of the cervix admitted to the hospital raised the question of hospital bias in admission of certain types of cancer. With this in mind we studied the cancer bed bookings for Blacks, the group which had the highest incidence through the years 1965 - 1968. Table II shows the number of patients booked for the four most commonly encountered tumours. Again, 43% of beds booked from the Transkei were for cervical cancer patients. In the Ciskei it was less (27,8%), because of the high percentage of oesophageal carcinoma in that group. The bulk of oesophageal cancer patients in the Transkei are treated elsewhere. There was no doubt that cancer of the cervix has a high incidence in female Blacks.

Laboratory Findings

Histological reports from the laboratories include biopsy specimens sent not only from the Frere Hospital but also from the surrounding areas. Table III shows a comparison of histologically confirmed cancers of females in the 4 racial groups for the Frere Hospital laboratory and for a private laboratory, the latter serving mainly Whites of a high socio-economic group. Again there is evidence of the high percentage of cervical cancer, particularly in the Black and Coloured races. The percentage

TABLE I. CANCER ADMISSIONS TO FRERE HOSPITAL (1966 - 1967 inclusive)

	White	Black	Coloured and Asiatic	Total
Total cancer admissions male and female	257	517	24	798
Cervix	35	224	5	264
Vagina	1	—	—	1
Uterus	7	2	—	9
Vulva	2	—	—	2
	45 (18%)	226 (44%)	5 (20%)	276

TABLE II. CANCER BED BOOKING AT FRERE HOSPITAL FOR BLACKS (1965 - 1968 inclusive)

	Oesophageal	Cervix	Breast	Tongue	Total cases
Transkei	47	238	51	35	542
		↓			
		43% of total cancers booked			
Ciskei	122	130	65	20	497
Kokstad	4	16	2	—	28
	126	146	67	20	525
		↓			
		27,8% of total cancers booked			

TABLE III. HISTOLOGICALLY CONFIRMED CANCERS FROM 2 LABORATORIES IN EAST LONDON

Frere Hospital laboratory 1966 + 1967 (2 years)

	White	Black	Coloured and Asiatic	Total	Private laboratory 1966 + 1967 (18 months)
Total cancers	621	780	50	1 451	323
Total female cancers	330	450	24	804	157
Cancer of female genital tract					
Cervix	24	157	12	193	10
Vulva	4	2	1	7	3
Labium	—	1	—	1	—
Uterus	17	8	2	27	10
Vagina	1	3	—	4	—
	46	171	15	232	23
Percentage of total female cancers	13,9%	38,0%	62,5%		14,7%

in Whites from both the Frere Hospital and the private laboratory is very similar, and again there is a difference in the ratio between the cervical and uterine cancers in the 2 groups.

This preliminary survey showed that the problem was well worth tackling. Quite frankly we did not realise the extent until we embarked on an in-depth investigation. Some of the data gathered for this investigation are pertinent.

Search for Cancer-Free Controls

In this investigation into causative factors we had to find controls without cancer or dysplasia matched by age

with the cancer sufferers. The problem was greater than we anticipated, as will be demonstrated. We first turned to the gynaecological outpatients' department, since these people have routine vaginal smears taken.

Analysis of Gynaecological Outpatients

Ninety-three consecutive Black outpatients were investigated. The reasons for their attendance are given in Table IV.

The cytological findings are presented, as well as the histology, where available. Over 80% of these people had some evidence of inflammation. Five of these showed inflammatory atypia and 5 presented with dysplasia. Four

TABLE IV. ANALYSIS OF 93 CONSECUTIVE BLACK GYNAECOLOGICAL PATIENTS (August - September 1972)

Reason for attending	No.	Cytological report						Biopsy report
		Inflammation	Inflam. atypia	Dysplasia	<i>Trichomonas</i>	<i>Candida</i>	<i>Leptothrix</i>	
Routine investigation	19	16	2		7		1	1 suspected cancer clinically. No report on histology.
Unspecified	15	11	1	1	6	1		—
Contraceptive loop	13	11	1	1	10	2	1	—
Depo-Provera	3	2						—
Erosion of cervix	7	5			5			1 suspected cancer clinically. No histology.
Cervicitis	6	5			2			—
Pregnancy	6	5			3			—
Menorrhagia	4	3		1				—
Discharge vaginal	2	1			2			—
Pre-op. (unspecified)	2	2						—
Postop. (ovarian cyst)		1			1			—
Cone biopsy	4			1				Marked dysplasia.
Ca vulva							1	Well-differentiated infiltrating Sq. Ca.
Hysterectomy		1			1			Poorly-differentiated non-keratinising Sq. Ca
Cancer cervix	2	1						Poorly-differentiated infiltrating Sq. Ca.
? Cancer cervix	1			1				Poorly-differentiated Sq. Ca.
Atrophic cervix	1	1						Well-differentiated Sq. Ca.
Postmenopausal	1		1		1			—
Infertility	1							—
Pruritus of vulva	1	1						—
Folate deficiency	1							—
Incomplete abortion	1	1						—
Urinary infection	1	1			1			—
Lower abdominal pain	1	1						—
Purpura of vagina	1	1			1			—
(Thrombocytopenia)	93	70	5	5	40	4	2	

80

patients presented with outright carcinoma, proved to be poorly differentiated infiltrating squamous carcinoma (3 cervix and 1 vulva). Of the 5 patients with dysplasias, 3 never returned for biopsy, one continued to have severe dysplasia on repeated biopsies, and the last proved to have a well-differentiated squamous carcinoma of the cervix.

So we have, in 93 consecutive outpatients, 5 proven cancers, 4 more cytological suspects, 3 of whom were lost to our records. Besides this there were two patients clinically suspected of having cancer. On cytological examination one had marked inflammation and the other had inflammatory atypia.

We considered 5 outright cancers and 4 dysplasias, as yet unproven cancers, excessively high even for a gynaecological outpatient department over a period of 1 month, especially when one considers that 16 of these patients came for contraceptive advice only. For this reason a more detailed analysis of these 16 patients is given in

Table V. All of them had some evidence of inflammatory change; one had progressed to inflammatory atypia, and a dysplasia was found in a para 3 of 19 years. It is interesting to note the high infection rate for *Trichomonas*, with which 50% of those seeking contraceptive advice were infected. Of the 93 patients seeking gynaecological advice, 40 had *Trichomonas*, 4 had *Candida albicans* and 2 *Leptothrix*.

Vaginal Smears from Hospital Inpatients

The gynaecological outpatients were obviously biased in favour of abnormalities, so we checked some 105 hospital patients with no gynaecological complaints. These patients were taken from 4 hospitals (Table VI). Of these, 6 refused to have smears taken, in 3 the smears were inadequate for assessment, and in another the inflammatory exudate was so excessive that malignancy could not

TABLE V. ANALYSIS OF 16 PATIENTS SEEKING CONTRACEPTIVE ADVICE

Age (years)	Parity	Cervical examination	Type of inflammation present	Results of Papanicolaou smear			
				Bacteria present	<i>Trichomonas</i>	<i>Candida</i>	<i>Leptothrix</i>
19	3	Normal	Dysplasia				
24	2	Not stated	Moderate with metaplastic cells	++			
26	2	Abnormal	Mild inflammation				
28	4	Normal	Inflammatory atypia		✓		
30	8	Normal	Moderate	✓	+++		
30	4	Abnormal	Moderate with metaplastic cells	✓	+++		
30	3	Not stated	Moderate with metaplastic cells		+++		
33	5	Normal	Mild				
35	1	Abnormal	Moderate with metaplastic cells	+++	+++		
36	1	Normal	Moderate	✓	+++	✓	✓
37	6	Normal	Marked with metaplastic cells		+		
39	6	Not stated	Mild	+++			
48	5	Not stated	Inflammatory atypia	+++	+		
—	1	Normal	Mild metaplastic cells	++	++		++
—	2	Abnormal	Mild	++++	++++		
—	2	Normal	Moderate with metaplastic cells				✓

Where there is a tick the presence only but not the degree was indicated.

TABLE VI. ANALYSIS OF HOSPITAL CONTROLS (105 CASES)

Wards	Hospital	Cases		
Surgical	Frere Hospital	44		
Orthopaedic			Mount Coke	17
Medical			Butterworth	28
Outpatient			Holy Cross	16
Nursing staff of Butterworth Hospital				105

be ruled out. This left us with 95 patients, the findings of whose smears are tabulated in Table VII. Again a high inflammation rate is demonstrated, with 39 showing inflammatory changes, 5 with inflammatory atypia and 3 with dysplasia—in fact, a group of cancer cells was actually detected in the one smear from a case of dysplasia.

DISCUSSION

The main progress in the prognosis of the disease over the last 30 years has not been in the treatment of cancer

10 discarded (vaginal smears inadequate).

± 50% from Frere Hospital.

± 50% from other three hospitals.

TABLE VII. FINDINGS IN VAGINAL SMEARS TAKEN FROM PATIENTS OF 4 HOSPITALS

Hospital	NAD	Bacterial type			Inflammatory		Inflam- matory atypia	Dysplasia	Abnormal flora		Other flora
		Type 1	Type 2	Type 3	Cells	Changes			<i>Trichomonas</i>	<i>Candida</i>	
Frere											
38 cases	1	4	0	27	28	16	2	2	11	—	<i>Herpes simplex</i>
Butterworth											
24 cases	2	3	5	11	18	9			5	2	
Mount Coke											
16 cases		2	3	9	11	8	1		3	1	<i>Diplococci</i>
Holy Cross											
16 cases		2	4	9	10	6	2	1	5		<i>Leptothrix</i>
94 cases	3	11	12	56	67	39	5	3	24	3	3

of the cervix, but in its early diagnosis, and the prognosis of treatment depends on how early we make the diagnosis. Perhaps it is an oversimplification, but it is practical to think of the progress of the disease as going from normal cells to mild dysplasia, moderate dysplasia, severe dysplasia, carcinoma-*in-situ*, and then to invasive carcinoma, with the possibility of spontaneous regression up to the invasive stage and an average time factor of 10 years.

Prognosis of treatment of the disease up to the carcinoma-*in-situ* stage is excellent—100% cure rate. Even the treatment of the micro-invasive carcinoma closely approaches the 100% cure rate. The obvious line of attack is therefore early diagnosis. At this early stage there is no visible lesion on which to make a diagnosis, and the patient has no symptoms. Therefore, this early diagnosis can only be made by taking routine smears. Where the number of abnormal smears is small in proportion to the number of smears taken, e.g. in a private practice—more or less 2 per 1000—there might be some disagreement

over the value of the smear by economists, but in Black patients it is obviously imperative. In the hospital female population, the pick-up figure could well be 20 unsuspected cases of cancer of the cervix per 1000 smears—and at a stage well worth treating.

At present it is not practical to screen the whole Black population, but there is no valid excuse for not examining a smear in every single female patient admitted to any of our hospitals.

CONCLUSION

It is very clear from the preliminary study that there is a high incidence of inflammatory atypia, dysplasia and cervical cancer in Blacks, and that the pathological vaginal flora are excessive, whether they are gynaecological patients or not. The question of venereal origin of these infections and their relation to hygiene and promiscuity is the subject of a later article.