CANCER OF THE LUNG IN NATAL BANTU—A NEW CANCER PROBLEM*

A REVIEW OF 472 CASES, 1964 - 1966

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A recent cancer survey has shown that lung cancer has a high incidence in urban Bantu males of Natal.[1] Table I gives the lung cancer incidence in several South African groups, as well as in England and the USA. The rates for Bantu males of Durban[1] and Pietermaritzburg[2] (two large urban-industrial complexes in Natal) lie between those for males of New York State[3] and for England and Wales,[4] and are higher than the rate for Johannesburg Bantu males[4] which was measured 14 years ago. These high rates for lung cancer were not unexpected, as clinicians working in Bantu hospitals have observed an increase of lung cancer in their male patients in recent years.[5] The rate for Durban Bantu females is higher than for English females, and was unexpected.

TABLE I. AGE-ADJUSTED INCIDENCE RATES* FOR CANCER OF THE LUNG

Area	*Males*	*Females*
Durban Bantu (1964 - 66)	24·0	8·4
Pietermaritzburg Bantu (1964 - 66)	27·1	2·5
Johannesburg Bantu (1953 - 55)	4·6	1·7
England and Wales (4 regions) (1960 - 62)	37·7	5·2
USA; New York State (1959 - 61)	19·4	2·8

*Rates/100,000/year, standardized to Bantu Standard Population.

PRESENT SURVEY

During the 1964 - 66 Natal cancer survey, 472 cases of lung cancer in Bantu were found. This paper presents a discussion of lung cancer in Natal Bantu under the following headings: percentage of all cancers; rising incidence; regional pathology; histological features; and age distribution.

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Percentage of All Cancers

Cancer of the lung is one of the two commonest cancers in Natal Bantu males, the other being cancer of the oesophagus. Lung cancer caused 17·7% of all Bantu male cancers but only 2·9% of all Bantu female cancers in Natal province. Table II gives the proportions of Natal Bantu

lung cancers as a percentage of all cancers in comparison with the figures for England. This comparison has been chosen because the lung cancer incidence in English males is the highest in the world.

TABLE II. LUNG CANCER AS PERCENTAGE OF ALL CANCERS (NATAL BANTU AND ENGLAND)

Subjects	*Lung cancer*	*All cancers*	*Percentage of all cancers*
Males			
Urban Natal Bantu (1964 - 66) (Durban and Pietermaritzburg)	183	882	20·7
All Natal Bantu (including rural cases) (1964 - 66)	418	2,360	17·7
England (4 regions) (1960 - 62)	27,554	94,312	29·2
Females			
Urban Natal Bantu (1964 - 66) (Durban and Pietermaritzburg)	25	508	4·9
All Natal Bantu (including rural cases) (1964 - 66)	54	1,854	2·9
England (4 regions) (1960 - 62)	4,670	91,967	5·1

The proportion of lung cancer to other cancers in urban Bantu males is almost as high as that in males of England. The proportion in urban Bantu females is of a low order, similar to that of females in England.

Rising Incidence

Evidence of past studies indicates that the frequency of lung cancer in Bantu used to be much lower than it is today. As the 1964 - 66 cancer survey was the first complete study to be carried out in Natal, no direct evidence of a rise in the lung cancer incidence can be shown, but the points presented below suggest that there is a considerable difference in the frequency of Bantu lung cancer between the years of the 1950s and the 1960s.

In the 7-year period 1950 - 56, Wainwright and Roach[6] found 70 cases of bronchial carcinoma in Bantu males (an average of 10 cases *per annum*) and 19 cases in Bantu females (2·7 cases *per annum*), when reviewing all histopathological material for Natal. In the 3-year period 1964 - 66, in the present study, 120 cases in Bantu males (an average of 40 cases *per annum*) and 19 cases in Bantu females (6·3 cases *per annum*) were found from the same sources. This represents a 4-fold increase in the yearly average for Bantu males, and the yearly average for Bantu females has more than doubled, in a period of about 12 years.

It can be calculated from the figures given by Wainwright and Roach that, in Natal in the period 1950 - 56, lung cancers formed 7·6% of all male Bantu malignancies and 1·9% of all female Bantu malignancies. In the period 1964 - 66 we find that lung cancers form 17·7% of all male Bantu cancers, and 2·9% of all female Bantu cancers in Natal (see Table II). Although the percentage of female lung cancers has risen only slightly, in males it has risen 2·3 times, while there is no evidence that other cancers have decreased during the period of about 12 years that separates the 2 studies.

In Johannesburg, Hurwitz[7] reviewed the incidence of lung cancer between the years 1949 and 1960, and concluded that lung cancer was 5 times commoner in Whites than in Bantu. However, it may be calculated from the figures he presents that in the period 1949 - 51 there were 27 Bantu cases and in the period 1958 - 1960 there were 47, which represents a rise of 74%, while the given populations-at-risk rose by only 16%.

In a cancer morbidity survey of Johannesburg Bantu for the years 1953 - 55, Oettlé and Higginson[4] obtained a lung cancer incidence which may be compared with the Durban and Pietermaritzburg figures for Bantu for the years 1964 - 66 (see Table I). If the geographical distance between the two studies is ignored, it can be seen that the lung cancer incidence in males has increased about 6-fold, and in females about 5-fold in the 11 years which separate the 2 surveys.

It may be argued that improvements in diagnostic facilities and better attendance at hospitals would account for these differences, but hospital services have not changed radically during the last decade, and we conclude that the present rate of lung cancer in urban Bantu of Natal is a recent phenomenon, and is an expression of a rising tendency which may not yet have reached its peak. This rise is probably occurring in the Transvaal also.

Regional Pathology

An analysis of the Bantu lung cancer cases from the country districts of Natal[8] indicates that lung cancer is more frequent than expected in south and mid-Natal and less frequent than expected in the north coastal and inland areas. This variation is apparently independent of hospital facilities. The distribution of lung cancer in Bantu relates well to the distribution of the White population of Natal, being higher where there are more White people. This association suggests that lung cancer in Natal Bantu occurs more frequently where economic opportunities are better, and it is suggested that cigarette smoking is promoted in situations offering cash wages and western influences. Other factors such as air pollution and exposure to occupational carcinogens have yet to be evaluated.

TABLE III. HISTOLOGICAL CLASSIFICATION OF 335 LUNG CANCERS IN BANTU (NATAL 1964–66)

Histology	*Male*		*Female*	
	No.	*%*	*No.*	*%*
Anaplastic and undifferentiated ..	43	14·6	8	19·5
Kreyburg group I				
Squamous cell	142	48·3	11	26·8
Oat cell	28	9·5	8	19·5
Large or small cell	26	8·8	—	—
Kreyburg group II				
Adenocarcinoma	51	17·4	10	24·4
Alveolar cell	4	1·4	4	9·8
All cases	294		41	

TABLE IV. CLASSIFICATION OF 284 LUNG CANCERS IN NATAL BANTU, ACCORDING TO KREYBURG

Histology	*Male*	*Female*	*Male/female ratio*
Kreyburg group I	196	19	10·3:1
Kreyburg group II	55	14	3·9:1
Group I/group II ratio	3·6:1	1·4:1	

TABLE V. AGE DISTRIBUTION OF 472 CASES OF LUNG CANCER IN NATAL BANTU, 1964–66

Subjects	*Age in years*											*All ages*	*Mean age*
	20–24	*25–29*	*30–34*	*35–39*	*40–44*	*45–49*	*50–54*	*55–59*	*60–64*	*65–69*	*70+*		
Males													
No.	3	4	12	27	64	64	62	53	59	45	25	418	52·06
%	0·7	1·0	2·9	6·4	15·3	15·3	14·8	12·7	14·1	10·8	6·0		
Females													
No.	1	2	1	3	2	7	3	7	8	10	10	54	57·41
%	1·9	3·7	1·9	5·5	3·7	13·0	5·5	13·0	14·8	18·5	18·5		

TABLE VI. AGE DISTRIBUTION OF 251 CASES OF LUNG CANCER IN NATAL MALE BANTU, ACCORDING TO KREYBURG'S GROUPS I AND II

Classification	*Age in years*											*All ages*
	20–24	*25–29*	*30–34*	*35–39*	*40–44*	*45–49*	*50–54*	*55–59*	*60–64*	*65–69*	*70+*	
Group I												
No.	—	2	3	14	34	22	33	25	35	16	12	196
%	—	1·0	1·5	7·1	17·3	11·2	16·8	12·8	17·9	8·2	6·1	
Group II												
No.	2	1	4	3	13	8	4	6	7	5	2	55
%	3·6	1·8	7·3	5·5	23·6	14·5	7·3	10·9	12·7	9·1	3·6	

Histological Features

Of the 472 cases of lung cancer in Bantu, the histology was known to us in 335 cases (71%). The types of malignancy were as shown in Table III.

Squamous cell carcinoma was the predominant type in Bantu males. It was possible to place 284 cases into Kreyburg's classification,[9] the group I tumours being regarded by Kreyburg as associated with smoking (Table IV).

It can be seen that group I tumours are about 10 times commoner in Bantu males than in females and the bulk of Bantu male lung cancers are of group I smoking-associated type. It can also be seen that in Bantu males group I cancers were 3·6 times more frequent than group II cancers, whereas in Bantu females the ratio of group I to group II cancers was only 1·4 to 1.

Group II tumours are almost 4 times commoner in Bantu males than in females. Kreyburg and Saxén[10] found this ratio to be 2·7 : 1, but did not discuss the sex difference further. Group II tumours are thought not to be associated with smoking.

Age Distribution

The age distribution of 472 lung cancers in Natal Bantu is shown in Table V.

This table shows that 72·2% of the male cases occur between the ages of 40 and 64 years, while the incidence of the female cases rises fairly steadily with age.

The age distribution of lung cancers in Bantu males which can be classified according to Kreyburg is shown in Table VI. Thus 76% of group I cancers occur in the age-period 40 - 64 years. Although 69% of group II cancers also occur in this age-period, the large number of group I cancers merits attention.

DISCUSSION

Measurement of the lung cancer incidence in 2 urban areas of Natal indicates the high rate for lung cancer in Bantu males, and comparison with past studies suggests that there has been a dramatic rise over the last decade in the frequency of this cancer. Geographical pathology suggests that this is associated with economic opportunities and western influences, which promote smoking of cigarettes, and the predominance of Kreyburg's group I cancers, and in particular squamous cell carcinomas, affecting males in the age-group 40 - 64 years, confirms the suspicion that the new rise in lung cancer is connected with cigarette smoking. A study of the smoking patterns of Natal Bantu will be completed in the near future.

Lung cancer in Natal Bantu males has become a serious cancer problem, and the probability is that the occurrence of these cancers has not yet reached its peak incidence. We feel that thought must now be given to this rather new problem in order to detect Bantu lung cancer cases earlier, and to discourage the adoption of the cigarette-smoking habit. Efforts in this direction should be aimed particularly towards Bantu males of the age-group 35 - 60 years.

SUMMARY AND CONCLUSIONS

The recent finding that lung cancer is one of the commonest cancers in Natal Bantu males has confirmed the impression of clinicians working in the field. In Durban and Pietermaritzburg lung cancer forms about 20% of all cancers in Bantu males, but only about 4% of all cancers in Bantu females.

Certain comparisons with past studies in Natal and the Transvaal suggest that the incidence has risen sharply in the last decade. The regional distribution of lung cancer in Natal Bantu follows the same pattern as the distribution of White people in Natal. There appears to be an association in Bantu between lung cancer and economic opportunities and western influences, which may promote cigarette smoking.

An analysis of 472 cases of lung cancers in Natal Bantu registered during the years 1964 - 66 is presented.

It is concluded that the dramatic rise in the numbers of Bantu male lung cancer cases is a serious cancer problem, and techniques should be aimed at Bantu males in the age-group 30 - 60 years to promote early diagnosis and discourage cigarette smoking.

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