Lung cancer in Kelantan

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Summary

A review of 119 patients (88 males and 31 females) with carcinoma of the lung seen at the Hospital University Sains Malaysia (HUSM) from 1984 to 1989 was done. The mean age of the patients was 60.3 years with a high proportion (76.7%) of them were between 41 and 70 years. Seventy five percent of patients (84% of men and 26% of women) were smokers. The Chinese have a significantly higher preponderence to carcinoma of the lung. The commonest histological type found was squamous cell carcinoma in men and adenocarcinoma in women. Small cell carcinoma was uncommon. Squamous cell and large cell/undifferentiated type of carcinoma were significantly associated with smoking behaviour of the patients.

Key words: Cancer, carcinoma, bronchus, lung, Malaysia.

Introduction

Cancer is fast becoming a public health problem in Malaysia. The cancer death rate in the country has been steadily increasing from 14.3 per 100,000 in 1963 to 19.3 per 100,000 in 1972 and 20.5 per 100,000 population in 1980.[1,2] Carcinoma of the lung is the commonest type of cancer, accounting for about 12 to 24 percent of all cancer mortality in Malaysia.[3,4]

Previous reports on carcinoma of the lung in Malaysia were based on cases seen in Kuala Lumpur, which received referrals from all over the country.[5,6] In this paper we report the findings in a series of 119 patients with carcinoma of the lung seen at the Hospital Universiti Sains Malaysia (HUSM), Kelantan. In contrast to the urban Kuala Lumpur, Kelantan is a rural non-industrialised state with a large majority of ethnic Malay population. It is also a major tobacco growing state in Malaysia.

Materials and Methods

We reviewed the clinical records of every patient admitted to HUSM with carcinoma of the lung for the past five years (1984–1989). The diagnosis was made by positive histology or cytology in 109 patients (90%). The remaining ten patients (10%) were diagnosed based on strong clinical and radiographic findings alone. These patients were either too ill, died before completing investigations or refused further investigations. Cases with metastatic disease of the lungs were excluded from this review.

Details including age, sex, race, smoking history and the histological types were extracted from the case records. The WHO International Histological Classification[7] was used to classify the tumours. Statistical analysis using the one sample Z test was done to determine the significance of race and smoking in carcinoma of the lung.

Results

Age and sex distribution: During the five years under review, 119 patients were diagnosed as having carcinoma of the lung. The sex and age distribution of the patients is shown in Table 1. There were 88 males (74.1%) and 31 females (25.9%), with a male to female ratio of 2.9:1. The mean age of male patients was 59.4 years (range: 21–89 years) and 61.2 years for females (range: 31–77 years). Seventy-six percent of the patients were between 41 and 70 years.

Smoking history: The smoking history was recorded in 102 patients (85%). Seventy-two patients (70.5%) were smokers and 32 were non-smokers, giving a smoker to non-smoker ratio of 2.4:1. Smoking habits differ greatly between sexes: 84% of the males compared to only 26% of the female patients were smokers. Details regarding the type and amount of tobacco smoked and the duration of smoking were not available in most cases.

Table 1
Bronchial Carcinoma in Kelantan, 1984–1989:
Age and Sex Distribution

Age (Years)	Number of cases		Total (%)
	Males	Females	
21 – 30	2	0	2 (1.7%)
31 – 40	4	1	5 (4.2%)
41 – 50	15	6	21 (17.5%)
51 – 60	27	3	30 (25.0%)
61 – 70	23	17	40 (34.2%)
71 – 80	13	4	17 (14.2%)
> 80	4	0	4 (3.2%)
Total	88 (74.1%)	31 (25.9%)	119 (100.0%)

Ethnic distribution: The racial distribution of the patients and the total hospital admissions during the period of study is shown in Table 2. The Chinese had a significant proportion of carcinoma of the lung compared to the other races; they accounted for 19.2% of the cases although they constituted only 7.5% of total hospital admissions ($P < 0.01$).

Histological classification: Histological or cytological confirmation of carcinoma was made in 109 patients (90%). In 25 cases, malignant cells of unspecified cell types were identified. The distribution into cell types according to sex in the 84 cases is shown in Table 3. The most common histological type was squamous cell carcinoma (40.5%), followed by adenocarcinoma (27.4%) and large cell/undifferentiated carcinoma (19.0%). Small cell carcinoma constituted only 13.1%.

Table 2
Racial Distribution for Bronchogenic Carcinoma and Hospital Admission

Race	Bronchogenic carcinoma	%	Number of admissions	%
Malay	93	78.3	89,233	90.5
Chinese	23	19.2	7,400	7.5*
Others	3	2.5	1,920	2.0
Total	119	100.0	98,553	100.0

* $z = 4.84$, $p < 0.01$

Table 3
Bronchial Carcinoma in Kelantan, 1984–1989:
Historical Classification and Sex Distribution

Histological Type	Males	Females	Total (%)
Squamous	28	6	34 (40.5)
Adenocarcinoma	14	9	23 (27.4)
Small cell	7	4	11 (13.1)
Large cell/Undifferentiated	10	6	16 (19.0)
Total	59	25	84* (100.0)

* Excluding 25 cases which are not classified cytologically and 10 cases diagnosed clinically and radiologically.

The most common cell type in the females was adenocarcinoma (36.0%).

The relationship between smoking and the histological type is shown in Table 4. An association with smoking is significant in squamous cell type ($p < 0.01$) and large cells/undifferentiated type ($p < 0.05$).

Discussion

The majority of patients presenting with carcinoma of the lung were between 41 to 70 years. The age distribution was similar to that found in the other Malaysian reports. Malaysian patients had a younger age of presentation compared to those in England and Wales where the majority of patients were between 75 to 84 years.[5] This difference may be due to the longer life expectancy in the West. However other factors such as racial differences, cultural factors or smoking habits may contribute to this difference.

Table 4
Bronchial Carcinoma in Kelantan, 1984–1989: Histological Types and Smoking

Histological Type	Smoking Habits			
	Smoker	Non Smoker	Unknown	Total
Squamous cell	24	4	6	34**
Small cell	5	4	2	11
Adenocarcinoma	12	7	4	23
Large cells/undifferentiated	11	2	3	16*
No histology/Not classified	20	13	2	35
Total	72	30	17	119*

** $p < 0.01$, * $p < 0.05$

There was a wide variation of sex ratio of patients with carcinoma of the lung. Belcher reported a worldwide difference in the male to female ratio ranging from 1.0:1 to 13.5:1.[9] This ratio is changing in the west; the recent increase in incidence among women, which has been associated with an increase in their smoking habits, has resulted in a fall in the male to female ratio in England from 5.4:1 in 1950 to around 4.9:1 in the 1970s.[10]

In our series, the sex ratio of patients with carcinoma of the lung was 2.9:1. This is similar to the finding by Menon and Saw[6] but is lower than that was found by Prathap et al.[5] and the Western series.[8,10,15] The low male to female ratio noted in this study cannot be attributed to smoking since only 26% of the female patients were smokers. A possible explanation for the high incidence in females may be due to kerosene which is widely used as cooking fuel by our local housewives. This reason was suggested to explain the high incidence among females in Hong Kong[11] but later studies[12] have not shown positive association. The search for a cause of carcinoma of the lung in females who do not smoke certainly merits further studies.

The aetiological association between smoking and carcinoma of the lung has been well established since the classical study of Doll and Bradford Hill.[13] The smoker to non-smoker ratio as high as 16:1 has been reported in the United States. Our series also show a significant number of the patients to be smokers ($p < 0.05$) with a ratio of 2.4:1. Smoking habits differed greatly between sexes (84% in men, 26% in women). The high proportion of non smokers in our patients, especially in females indicate a possible existence of some other carcinogenic factors, as has been suggested by others.[12,14,15]

Ethnic predisposition to carcinoma of the upper respiratory tract particularly nasopharangeal carcinoma among the Chinese is well recognised. A similar finding is noted for carcinoma of the lung. In comparison to the ethnic ratio of total hospital admission, the proportion of cases of carcinoma of the lung in the Chinese is significantly higher than in the other races. This concurs well with the other Malaysian reports.[5,6] Previous authors have suggested that this may be due to the highest proportion of Chinese living in the urban and industrialised cities. However, since Kelantan is a rural state with no industrialised cities and many Chinese in Kelantan live in the rural kampungs, exposure to industrial carcinogens is unlikely to be the reason. Smoking is also unlikely to be the cause of this ethnic predisposition because although smoking habits

of the different ethnic groups is not known; from personal observations, it is believed that there is a lower prevalence of smoking among the local Chinese compared to the Malays. We speculate that genetic, racial or cultural factors such as diet, burning of incense for praying etc. might be the cause of this ethnic predisposition to carcinoma of the lung among the Chinese as has also been suggested for nasopharyngeal carcinoma.

In accord to all other studies, we found that squamous cell carcinoma was the commonest cell type (41.5%). However, compared to Western figures[8,10,15] small cell carcinoma is uncommon (13.1%) and the proportion of adenocarcinoma was high (23.7% in males and 36% in females). Similar findings have also been observed in the other Malaysian reports,[5,6] as well as in reports from Hong Kong and Singapore.[12,16–18] The possible aetiology of adenocarcinoma in women has been discussed above but the cause for the low incidence of small cell carcinoma among the Asian population is difficult to explain.

In conclusion, our study of 119 cases of carcinoma of the lung at HUSM, Kelantan found many similarities with other studies in Malaysia, Singapore and Hong Kong. Carcinoma of the lungs is more common among the Chinese and this was not fully explained by demographic, or observed smoking differences. In comparison to the western series, we found a higher incidence of adenocarcinoma particularly in females. Small cell carcinoma was less common.

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