

MALIGNANT NEOPLASMS AT THE UNIVERSITI KEBANGSAAN MALAYSIA 1980 – 1984.

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Summary

Records of all specimens received by the histopathology laboratory, Department of Pathology, Universiti Kebangsaan Malaysia from 1980 to 1984 were reviewed to determine the number of **malignant** neoplasms received. These were analysed to determine relative ethnic incidences. The possible reasons for the differences in such **incidences** are discussed.

Keywords: Tumour, Malignancy, Ethnic incidences.

INTRODUCTION

Pathology records often provide an accurate source of information of disease patterns in a hospital population. In many hospitals in this country, however, such information has not been easily accessible and has often not been analysed.

This paper analyses the malignant neoplasms that were diagnosed histologically in the Department of Pathology, Universiti Kebangsaan Malaysia (UKM) from 1980 to 1984.

MATERIALS AND METHOD

All histopathology **reports** issued from 1980 to 1984 were reviewed. In situations where the diagnosis was unclear or felt to be inaccurate, the paraffin sections were reexamined and new sections cut where necessary. Data were analysed using DBASE II and an Apple II type computer with 64K of RAM

RESULTS

Carcinomas and haematological malignancy proved to be the most frequently observed malignancies. In terms of absolute numbers, the **10** most common sites of malignancy (not including sarcomas which constitute an insignificant number of lesions) are as shown in Table 1. They totalled 1564 **histologically**-proven malignancies.

Breakdown by the major ethnic groups reveals figures as in Table 2. The most frequently observed malignancy among Malays was haematological malignancy. In **Chinese**, this

was carcinoma of the lung and in Indians, carcinoma of the oral cavity.

The 8 commonest sites of malignancy in males and females are shown in Tables 3 and 4. The most frequently observed malignancy in males was carcinoma of the lung while in females, it was cervical carcinoma.

Further analysis by ethnic **group** and sex is shown in Tables 5 and 6. Among Malay males, haematological malignancy was the most frequently observed malignancy while in Chinese males, lung carcinoma was the commonest. Among Indian males, carcinoma of the oral cavity proved to be the commonest.

The property of being female appears to transcend ethnic boundaries – in **all** three major ethnic groups, either carcinoma of the breast or carcinoma of the cervix proved to be the commonest female malignancy.

Analysis of malignancies involving the alimentary system was also performed and are **summarized** in Table 7.

Chinese were noted to have a high **incidence** of gastric and colorectal carcinoma and Malays to have a high incidence of colorectal carcinoma. In contrast, Indians had a high incidence of carcinoma involving the oral cavity, oesophagus and stomach.

The relative incidence of in situ and invasive cervical carcinomas was also obtained. In all three major ethnic groups, invasive cervical carcinoma was observed to be more common **than** in-situ neoplasia – this was more marked in **Malay** and Indian females (Table 8).

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TABLE 1

10 COMMONEST SITES OF MALIGNANCY, 1980 – 1984

Site	Number of Patients
Uterine cervix *	242
Haematological **	193
Lung	183
Nasopharynx	178
Breast	177
Stomach	163
Colon / rectum	153
Oral Cavity +	104
Oesophagus ++	92
Larynx and epiglottis	79
Total	1564

* Includes carcinoma in situ

** Includes all forms of leukaemia, lymphoma, myeloma, malignant histiocytosis and Letterer-Siwe disease.

+ Includes alveolus, tongue and buccal mucosa.

++ Includes **postcricoid** lesions

TABLE 2

10 COMMONEST SITES OF MALIGNANCY IN MAJOR ETHNIC GROUPS, 1980 – 1984

Site	Malays	Chinese	Indians	Total
Uterine cervix	57	134	48	239
Haematological	108	53	24	185
Lung	41	134	5	180
Nasopharynx	44	125	2	171
Breast	85	71	18	174
Stomach	18	109	32	159
Colon/rectum	50	86	13	149
Oral Cavity	14	27	60	101
Oesophagus	22	34	32	88
Larynx and Epiglottis	15	44	19	78
Total	454	817	253	1524

TABLE 3

8 COMMONEST SITES OF MALIGNANCY IN
MALES, 1980 -- 1984

Site	Number of Males
Lung	146
Nasopharynx	123
Haematological	119
Stomach	113
Colon / rectum	85
Larynx and epiglottis	68
Oesophagus	60
Oral Cavity	56
Total	770

TABLE 4

8 COMMONEST SITES OF MALIGNANCY IN
FEMALES, 1980 -- 1984

Site	Number of Females
Uterine cervix	242
Breast	177
Haematological	67
Colon / rectum	67
Ovary*	60
Nasopharynx	48
Stomach	47
Oral Cavity	47
Total	775

* Includes germ cell and borderline malignancy

TABLE 5

COMMONEST SITES OF MALIGNANCY IN MALES OF MAJOR ETHNIC GROUPS, 1980 -- 1984

Site	Number of Males			
	Malays	Chinese	Indians	Total
Haematological	*69	31	18	118
Oral Cavity	6	20	*28	54
Oesophagus	13	27	19	59
Stomach	12	75	26	113
Colon / rectum	33	39	10	82
Nasopharynx	32	89	2	123
Larynx and epiglottis	15	37	16	68
Lung	28	*111	5	144
Total	208	429	124	761

* Most frequently observed malignancy

TABLE 6

COMMONEST SITES OF MALIGNANCY IN FEMALES OF MAJOR ETHNIC GROUPS, 1980 – 1984

Site	Number of Females			
	Malays	Chinese	Indians	Total
Breast	*84	71	17	172
Uterine Cervix	57	*134	*48	239
Ovary	38	14	7	59
Haematological	39	22	6	67
Oral Cavity	8	7	32	47
Oesophagus	9	7	13	29
Stomach	6	34	7	47
Colon / rectum	17	47	3	67
Nasopharynx	12	36	0	48
Larynx and epiglottis	0	7	3	10
Lung	13	23	0	36
Thyroid	25	10	6	41
Total	308	412	142	862

* Most frequently observed malignancy

TABLE 7

DISTRIBUTION OF ALIMENTARY TRACT MALIGNANCY IN MAJOR ETHNIC GROUPS, 1980 – 1984

Site	Number of Patients			
	Malays	Chinese	Indians	Total
Oral Cavity	14	27	60	91
Oesophagus	22	34	32	88
Stomach	18	109	33	160
Colon / rectum	50	86	13	149
Total	104	256	138	488

The data presented so far were for all age groups. Table 9 shows figures for children (under 13 years of age).

Except for haematological malignancies, these numbers were deemed too small for further analysis. For the former, breakdown by ethnic group is shown in Table 10.

DISCUSSION

Difficulties encountered

Patient identification proved to be the most difficult task. Although each patient had a unique name, identity card number

and registration number, it proved extremely difficult to establish whether multiple biopsies originated from the same or different patients. Patients' names were entered in a number of different ways or could be misspelled. Thus, a patient whose name was initially entered as "WAGINAH DOLLAH" later turned out to be identical with "LEGINAH BT ABDULLAH". "MUNIANDY S/O G" was the same patient as "MUNIANDY GOVINDA". This could usually be sorted out if identity card numbers were available. In many instances, however, they were not, although request forms have a space for such numbers.

TABLE 8
IN-SITU AND INVASIVE CERVICAL CARCINOMA IN MAJOR ETHNIC GROUPS, 1980 - 1984

Type of Cervical Carcinoma	Number of Patients			
	Malays	Chinese	Indians	Total
In-situ Lesions	13	57	10	80
Invasive Tumour	44	77	38	159
Total	57	134	48	239

TABLE 9
CHILDHOOD MALIGNANCY, 1980 - 1984

Malignancy	Number of Patients
Haematological	60
Teratoma*	19
Retinoblastoma	17
Neuroblastoma	15
Nephroblastoma	11
Rhabdomyosarcoma	8
Hepatoblastoma	3
Osteosarcoma	1
Others	11
Total	145

* All teratomas in children were regarded as potentially malignant

TABLE 10
CHILDHOOD HAEMATOLOGICAL MALIGNANCY IN MAJOR ETHNIC GROUPS, 1980 - 1984

Ethnic Group	Number of Patients
Malays	28
Chinese	16
Indians	15
Others	1
Total	60

In some cases, patients with similar names turned out to have identity card numbers which differed in only one or two digits. These differences were probably transcription errors and the different biopsies probably originated from the same patient.

Such difficulties could have been avoided if each patient received a single unvarying registration number. Unfortunately, the practice in the General Hospital, Kuala Lumpur (GHKL) is to give a patient a new registration number at each visit. Indeed, should the patient be seen at different clinics at the same visit, he will be given a different registration number at each clinic!

Another difficulty encountered was variation in recording the site of lesion. Thus, a lesion initially said to be a carcinoma of the alveolus could appear later as a carcinoma of the maxilla and still later as a carcinoma of the mouth.

Classification by race had to be done by guesswork based on the name. This led to great difficulties in separating ethnic Indians from Malays and Chinese Muslims. Transcription errors in names also led to difficulties. Thus, a patient initially called "NGU YUAN" later proved to be identical to "NGA YAAM". In situations like this, it proved impossible to identify the ethnic group of the patient.

Because of these difficulties, computer analysis of data proved to be almost impossible and matching of multiple biopsies to patients had to be done by hand. Thus, errors in the totals presented cannot be excluded although every effort has been made to exclude duplication of patients.

Many of the above problems can be reduced with enhanced computer facilities. An IBM type machine using DBASE III would probably suffice. Use of a hard disk would also greatly ease data analysis.

Sources of systematic error

Sources of error due to misspellings, etc, have already been discussed. There are, however, further sources of systematic error which may affect the results and conclusions.

In the first place, the data presented here are based on histologically diagnosed malignancies. While this may make the diagnoses more accurate, it means that lesions which are difficult to biopsy will be significantly under-represented. These would include malignancies of the brain, pancreas and most importantly, liver and lung.

At first sight, this would not appear to be true for lung malignancy. However, the figures

include numerous biopsies received from patients of the Lady Templer Hospital. This means that the population from which the lung malignancies are obtained is qualitatively and quantitatively different from that of the other malignancies.

In the second place, the UKM histopathology laboratory receives very few urological and brain specimens as these are sent to the GH laboratory. The number of bladder and prostate carcinomas is therefore greatly underestimated. Central nervous system tumours are also almost nonexistent.

This particular source of systematic error is probably most significant in the area of paediatric tumours. Throughout the world, brain tumours constitute the second commonest form of childhood malignancy. None, however, were received in the UKM laboratory throughout the five year period of study.

A third possible source of systematic error is patient selection of the ethnic group of their doctor. Given that most of the UKM clinicians are Malay or Chinese while those from GH are predominantly Indians, this would mean that Indian patients would be underrepresented in the population surveyed. This particular source of bias is expected to be most important in conservative women with lesions of intimate anatomical sites.

Finally, one should bear in mind that the population surveyed is that of a referral institution and that the figures presented here would be substantially different from those from other general hospitals. It would be interesting to compare these figures with those from the University Hospital.

General considerations

The number of patients with malignant neoplasms was highest in the Chinese and least in Indians; with Malays forming an intermediate group. The figures presented are absolute numbers and no attempt was made to relate them to a standard population. These absolute figures probably reflect relative use of hospital resources between the three major ethnic groups. Incidence rates could not be calculated because of difficulties in identifying an appropriate denominator.

To provide some sort of basis for comparison, figures from the Singapore Cancer Registry show that in males, the three most frequent malignancies are those of the lung, stomach and liver.¹ In females, the corresponding sites are breast, cervix and lung. These statistics reflect the predominantly Chinese

population of Singapore in whom the same figures are reproduced. Among Singapore Malay males, cancers of the lung, liver and stomach again constitute the three most frequent malignancies. For Malay females, however, these would be breast, cervix and ovary. Similar statistics for Singapore Indian males and females show that in the former, cancer of the stomach, lung and liver are the three most frequent lesions and in the latter group, cancer of breast, cervix and stomach. It is thus highly probable that liver carcinoma is significantly underrepresented in the figures presented and that liver carcinoma is probably a significant public health problem.

Haematological malignancy

Perhaps the most surprising finding of this study was the high rate of occurrence of haematological malignancy. It should be pointed out that this is a minimum incidence as those patients diagnosed solely by bone marrow aspirate would not have been included in the population studied.

Equally as striking is the large numbers of Malays affected as compared to that of the other ethnic groups. This ethnic susceptibility occurs in both sexes but is more marked in males and appears to begin in childhood. The cause of this is totally unknown though such statistics would suggest an intrinsic genetic susceptibility. As always, however, the presence of a cultural carcinogenic practice that is unique to a particular ethnic group cannot be excluded.

These findings require to be compared with those from other centres before they can be established as true incidences. In particular, selection effects must be excluded. The results from the fledgling paediatric tumour registry and the adult leukaemia study should thus be enormously helpful.

A recurrent problem is the difficulty in distinguishing lymphoma from undifferentiated malignancy. Repeated examination of the old slides and examination of new ones, even in the light of greater experience, did not satisfactorily solve this problem. Given that the treatment of the two different conditions is so markedly different, this distinction is quite important. It can now be satisfactorily resolved by the use of tumour markers. Unfortunately, the reagents required are expensive; the techniques may need to be performed on frozen sections and a high level of technological expertise is required. A possible solution would be to set up regional

referral laboratories which would perform these techniques routinely.

Digestive tract malignancy

One of the lesser known facts of epidemiology is that one can assess the socio-economic status of a country by looking at the distribution of alimentary tract malignancy.² In general, poor countries have a high incidence of malignancy involving the oral cavity, pharynx and oesophagus while the most affluent countries have a high incidence of carcinoma of the colon and rectum. This is believed to be related to dietary practices – a high protein, high animal fat diet being believed to be important in the aetiology of colorectal cancer.

Examination of the figures for digestive malignancy does show this trend. Indians are observed to have a high incidence of upper digestive tract malignancy while Chinese and Malays do have a somewhat higher incidence of colorectal cancer.

The high incidence of carcinoma of the oral cavity among Indians is well known to be related to betelnut chewing. The high incidence of oesophageal cancer in Indian women is probably a reflection of the high incidence of iron deficiency anemia and therefore of Plummer-Vinson syndrome.

The reason for the high incidence of carcinoma of the stomach in Chinese is not clear. Again, it is tempting to suggest the operation of a dietary factor. Chinese are well known to be fond of various forms of roast or barbecued meat. It is also well known that roasting and barbecuing produce carcinogens in the more burnt portions of the meat.

Besides diet, carcinoma of the colon and rectum is also believed to be related to the incidence of benign adenomatous colorectal polyps. These were received in too small numbers to be analysed. However, this apparently low incidence of benign colorectal adenomas together with a moderately high incidence of colorectal carcinoma means that adenomas are not being diagnosed early enough. Low public awareness of the malignant potential of colorectal adenomas is probably significant in this matter.

The figures presented probably represent the socio-economic status of the various ethnic groups some 10 or 15 years ago since the preclinical phase of malignancy is believed to be rather long. Given that there have been marked changes in socio-economic status, it should be interesting to repeat this exercise at 5 yearly intervals to see if trends change.

In particular, it would be interesting to determine if large bowel cancer rises in accordance with expectations.

Respiratory tract malignancy

Nasopharyngeal carcinoma is well known to be a Chinese malignancy. The incidence in Malays though markedly lower than in the Chinese nevertheless remains significantly high.

Laryngeal carcinoma shows no particular ethnic susceptibility – the figures probably reflect hospital use while the male preponderance is probably related to smoking.

The extremely high incidence of lung carcinoma in Chinese males is probably a reflection of the catchment population of the Lady Templer Hospital. This latter hospital is regarded highly by the Chinese as being a "good" hospital for chest disease.

Gynaecological malignancy and **breast** carcinoma

It is very difficult to draw conclusions regarding these malignancies since there is probably a very high selection effect due to patient selection of doctors. It is quite clear, nevertheless, that cervical carcinoma remains a major health problem among all ethnic groups.

A notable feature is the higher incidence of in-situ lesions among the Chinese compared with the higher number of invasive lesions among the Malays and Indians. This is clearly the effect of a more informed population making greater use of Pap smear facilities resulting in clinical detection of earlier lesions.

The reason for the relatively higher incidence of ovarian malignancy in Malay females is not clear. Patient selection of doctor certainly plays a role here. However, it should be noted that figures from the Singapore Cancer Registry show that ovarian cancer is the only **malignancy** in which Malays have the highest rates.

No significant conclusions regarding relative incidences of breast carcinoma can be drawn from these figures. However, a large proportion of breast carcinoma appears to develop in relatively young women. This phenomenon is deserving of further study.

Paediatric malignancy

The figures for paediatric malignancy are substantially different from those for adult tumours. Except for haematological malignancy, it appears that children develop lesions entirely different from those that occur commonly in adults.

The worldwide trend for haematological malignancy to be the commonest of all paediatric malignancies is noted. The relatively higher incidence in Malays has already been

discussed.

The deficiency of brain tumours has also already been discussed.

CONCLUSIONS

Retrospective statistical studies such as this can provide valuable information regarding disease patterns in a population. They are, however, no substitute for a proper cancer registry which would be in a position to provide unbiased figures regarding incidence of malignancy. Given that people are going to live to older ages and therefore that the incidence of cancer is going to increase, it would appear that formation of a national cancer registry is desirable, perhaps essential, for proper planning of future services.

In the interim, however, it would be desirable for pathology records to be stored in a form that is easily accessible. Storage on micro-computer diskettes (or preferably a hard disk) would appear to be a useful compromise. A common form of coding would ensure uniformity throughout the country. Since 1983, all specimens received in our **histopathology** laboratory have been classified using SNOMED T and M codes. Because of the enormous difficulties involved in using the full SNOMED T and M codes, a (slightly modified) subset of these is in use. Only minor difficulties have been encountered and these have been satisfactorily resolved.

Relative incidences of malignancy in the various ethnic groups in this country can be explained without postulating new theories of aetiology of neoplasms. Nonetheless, much remains obscure and further research to elucidate their aetiology and pathogenesis is essential.

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