BREAST CANCER - A COMPARATIVE STUDY BETWEEN MALAYSIAN AND SINGAPOREAN WOMEN

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ABSTRACT

Breast cancer is the leading cause of cancer deaths in Malaysian and Singaporean women. A study done to compare the epidemiology of the disease, as well as to compare the rate of conservative surgery between Malaysian and Singaporean women was carried out. The results show that the median age at presentation was the same in both countries, and the incidence was lower among the Malays. However, there was a significant difference in the stage at presentation and the tumour size; Singaporean women presented at earlier stages and with smaller tumours compared to Malaysian women. This led to a lower rate of conservation surgery in Malaysian women.

Keywords: *breast cancer, comparative epidemiology conservation surgery*

SINGAPORE MED J 1996; Vol 37: 264-267

INTRODUCTION

Breast cancer is the leading cause of cancer deaths in Malaysian and Singaporean women. In Malaysia, there is no cancer registry, so the incidence of breast cancer is not known. However Singapore has a cancer registry since 1968, and a rapidly rising incidence of breast cancer is noted (Fig 1). The incidence in 1990 was 39.3 per 100,000 and is expected to be 47.1 per 100,000 in 1995. This is less than half the incidence reported in the United States of about 100 per 100,000. Although Singapore is a more developed nation than Malaysia, the incidence in Malaysia is probably close to the Singapore data.

The aims of this paper are to:

1. study the mortality statistics for breast cancer in Peninsula Malaysia and compare them with the mortality statistics from Singapore.
2. compare the age and race incidence of breast cancer in Malaysia and Singapore.
3. compare the stage at diagnosis between Malaysian and Singaporean women.
4. compare the rate of conservation surgery between Malaysian and Singaporean women.

MATERIALS AND METHODS

The mortality statistics for breast cancer were obtained from the publications of the Vital Statistics Malaysia from 1982 to 1991. There were no separate statistics for deaths from breast cancer before 1982, and the 1991 publication is a preliminary report and hence some data were not available. The data on breast cancer related deaths in Singapore were obtained from the Singapore Registry of Births and Deaths.

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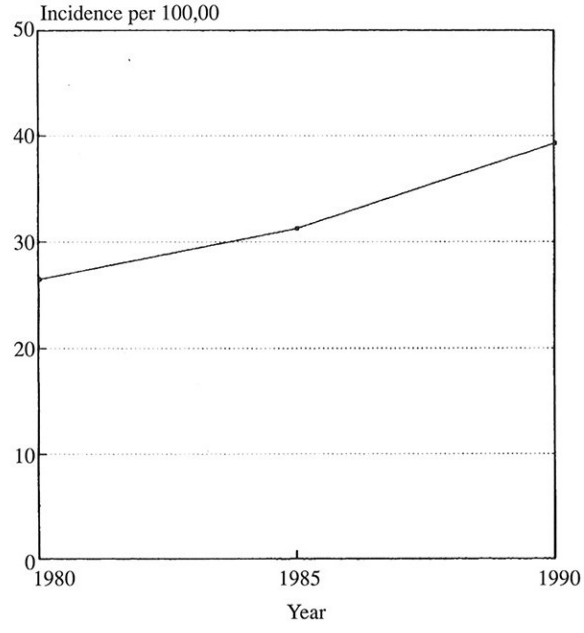
Fig 1 – Breast cancer in Singapore



Source: Singapore Cancer Registry

The data on breast cancer in Singapore were obtained from 396 cases seen in Singapore General Hospital from January 1992 to December 1993 as well as from the Singapore Cancer Registry. The data on breast cancer in Malaysian women were obtained from 205 cases seen in University Hospital, Kuala Lumpur from January 1992 to November 1994.

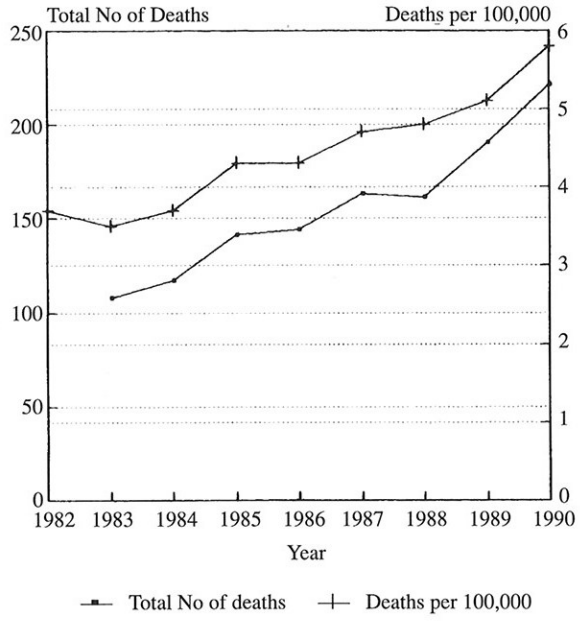
The chi squared test of significance was used to analyse the differences between the two groups.

RESULTS

Breast cancer mortality

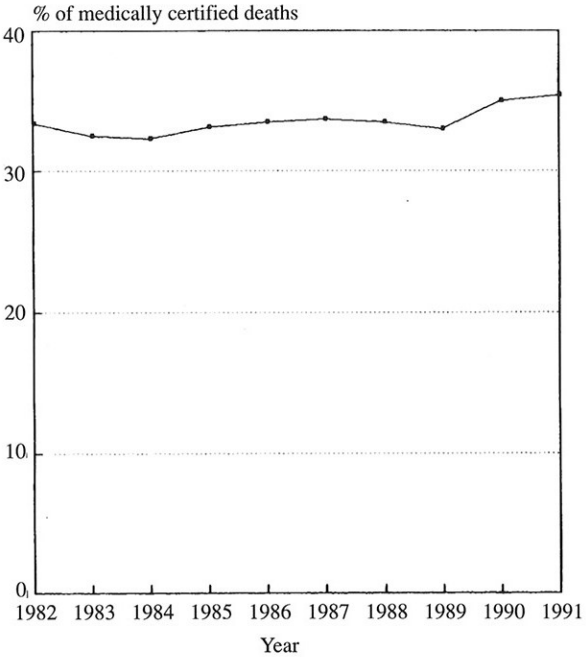
In Peninsula Malaysia, the number of medically-certified deaths from breast cancer showed an increasing trend from 1982 to 1990. The age-adjusted mortality rate per 100,000 also showed an increase from 3.7 per 100,000 in 1982 to 5.8 per 100,000 in 1990 (Fig 2). However, since only about one-third of deaths in Peninsula Malaysia were medically certified, the number of deaths and the mortality rate from breast cancer were actually higher. The percentage of medically certified deaths had remained remarkably constant at 33%-35% from 1982 to 1991 (Fig 3); therefore the increase in the deaths was not due to better reporting,

Fig 2 – Breast cancer deaths in Malaysia



Source: Vital Statistics Malaysia

Fig 3 – Medically certified deaths in females in Peninsula Malaysia



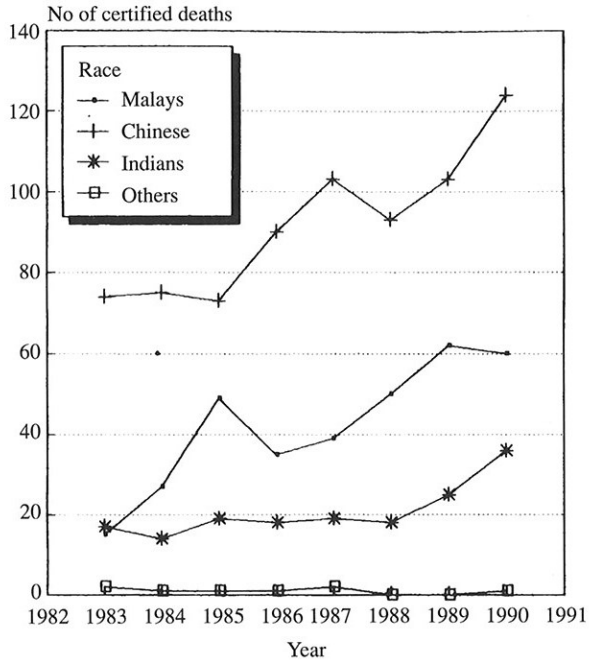
Source: Vital Statistics Malaysia

but to an actual increase in mortality, and hence an increase in incidence.

The number of medically certified deaths from breast cancer was highest among the Chinese, followed by the Malays and Indians (Fig 4). When compared to the female population of the three races in Peninsula Malaysia, there was a significantly higher number of Chinese dying from breast cancer (Table I).

In Singapore, almost all deaths are medically certified; hence the data on mortality is reliable. The age-specific mortality rate from breast cancer in Singapore did not show an increasing trend, from 13.4 per 100,000 women in 1978-82 to 13.1 per 100,000 in

Fig 4 – Certified deaths from breast cancer by race



Source: Vital Statistics Malaysia

Table I – Breast cancer mortality by race - 1990 Malaysia

Race	Breast cancer mortality		Female population
	No	%	%
Malays	60	21.1	55.5
Chinese	124	56.1	34.1
Indians	36	16.3	9.8
Others	1	0.5	0.6
Total	221	100.0	100.0

*p<0.05
Source: Vital Statistics Malaysia

1983-87, despite an increasing incidence of breast cancer. This is also seen in many Western countries where despite an increasing incidence of breast cancer, the mortality rate remains remarkably constant.

Age and race incidence

The median age at presentation in Singaporean women was 48 years with a range of 28-88 years compared with a median age of 48 years in Malaysian women with a range of 29-80 years. Fifty-five percent of Singaporean women were premenopausal compared with 56.1% of Malaysian women. This shows a similarity between the two groups of women in that the age of presentation was much younger than that seen in Western women where the median age is 60-64 years. In the University Hospital, the age at presentation in Malay women were significantly younger, with a median age of 42 years compared with a median age of 49 years in Chinese and 49.5 years in Indians. Studies in Nigeria, Japan and China also show a younger mean and median age of presentation in these countries, which suggests that breast cancer presents at a younger age in Asians and Africans.

The incidence in Chinese women in Malaysia appeared to be higher than the Malays and Indians (Table II). When compared to the number of hospital admissions by race, this was statistically significant. In Singapore, the incidence in 1983-1987 in Chinese

Table II – Incidence of breast cancer by race in UHKL

Race	Breast cancer patients (%)	Total female hospital admissions (%)
Malays	21	43.3
Chinese	60	30.9
Indians	16.6	23.3
Others	2.4	2.5

*p<0.05

(31.9 per 100,000) and Indian women (32.8 per 100,000) appeared to be higher than Malay women (23 per 100,000). Malay women in Singapore and Malaysia thus had a lower incidence of breast cancer compared to the other two main races in the region.

Stage at diagnosis

The patients were staged according to the TNM Classification (UICC and American Joint Committee on Cancer). 55.6% of Malaysian women presented with early breast cancer (Stage 0 - 2) compared with 72% of Singaporean women (Table III). There was a statistical difference in the stage of presentation of breast cancer between the two groups (p<0.05). Twenty-seven percent of Singaporean women presented with Stage 0 and Stage 1 disease compared with only 12.2% of Malaysian women. In the 1990 USA National Survey on Breast Cancer[10], 79.7% of women presented with early breast cancer. Hence the stage at presentation in Singaporean women do not differ much from the West.

Singaporean women also presented with smaller tumours compared to Malaysian women (Table III). Thirty-seven percent of Singaporean women presented with T1 and T0 tumours compared with 13.1% of Malaysian women. This was statistically significant.

Table III – Breast cancer by stage - Malaysia (UHKL) and Singapore (SGH)

Stage	UHKL (%)	SGH (%)	USA national survey 1990
0	3.9	7	7.6
1	8.3	20	36.3
2A	22.9	27	23.4
2B	20.5	18	12.4
3A	9.3	6	3.8
3B	7.8	4	3.3
4	17.1	7	3.4
Unknown	10.2	11	9.7

*p<0.05 UHKL vs SGH

Rate of conservation surgery

In University Hospital Kuala Lumpur, the rate of conservation surgery was 16.1% which was slightly lower than in Singapore General Hospital where the rate was 20% (Table V). The lower rate of conservation surgery in Malaysia was probably related to the fact that patients presented with larger tumours compared to Singapore.

DISCUSSION

Incidence rates of breast cancer are known to vary among countries and over time within countries. Although the incidence in Asian countries are less than in Western countries, increases in the rates of breast cancer have been noted in several Asian countries where there is a cancer registry[1-3]. This is seen in Singapore where the incidence rate has increased from 27 per 100,000 in 1980 to 39.3 per 100,000 in 1990. The reason for the increasing incidence could be related to changing lifestyles and modernisation. Increases in the rates of breast cancer among populations migrating from low incidence areas to high incidence areas have also been noted.

Table IV – Tumour size at presentation - Malaysia (UHKL) and Singapore (SGH)

T staging	UHKL (%)	SGH (%)
T0	2.4	7
T1	10.7	30
T2	50.2	36
T3	15.6	9
T4	19.5	8
Unknown	1.5	10

*p<0.05 UHKL vs SGH

Table V – Type of surgery done

Surgical procedure	UHKL (%)	SGH (%)
Mastectomy (all types)	64.4	63
Conservation surgery	16.1	20
None	19.5	13
Biopsy only	0	4

Malaysia and Singapore are similar in many aspects and have close historical and economical links. They are both multi-racial countries with three main races of Chinese, Malays and Indians. Malaysia does not have a cancer registry while Singapore has a cancer registry for breast cancer since 1968. Although Singapore is a more developed nation than Malaysia, the incidence of breast cancer in Malaysia is believed to be similar to that in Singapore which was 39.3 per 100,000 in 1990.

The age-specific mortality rate from breast cancer in Singapore is around 13 per 100,000, and this is about half the rate in USA where the mortality rate is around 20 -30 per 100,000. This is consistent with the incidence rate in Singapore which is about half of that reported in USA. In Malaysia, the incidence rate is not known; and mortality statistics are not reliable. However, the mortality rate for breast cancer is increasing, unlike in Singapore where the mortality rate has remained remarkably constant despite an increasing incidence. This is also noted in many Western countries[1-4]. This could be related to earlier diagnosis and better treatment of breast cancer over the years.

The age of presentation of breast cancer has been reported to be lower in Asians and Africans compared to Caucasians[4-9]. The median age of presentation (48 years) was the same in both Singapore and Malaysia. Malays are also noted to present at a younger age than Chinese and Indians. Because of the earlier age at presentation, more than half the patients were premenopausal in both countries. This is in contrast to the West, where the median age was 60-64 years[10], and only about a third of the patients were pre-menopausal. The earlier age at presentation could be merely due to population statistics; Asian countries have a much younger population than Western countries. The explanation for the younger median age may also be due to "cohort effects"; a particular generation experiences a greater change with regard to risk factors for breast cancer when

compared to the preceding generation. The median age should get older in later years because the following generation would also have experienced to the same or greater degree these risk factors.

Malay women in Malaysia and Singapore have lower incidence of breast cancer compared to the Chinese and the Indians. This could be related to different lifestyles, and a host of other socio-cultural differences between the races. There is not much difference between the incidence rates of Chinese and Indian women.

Singaporean women present with smaller tumours and earlier stages compared to Malaysian women. Thirty-seven percent of Singaporean women presented with T0 and T1 tumours compared to only 13.1% of Malaysian women. This is compared to the United States where 62.7% of women presented with T0 and T1 tumours in 1990[10]. Seventy-two percent of Singaporean women present with early breast cancer (Stages 0-2) compared with 55.6% of Malaysian women. In fact, the stage at presentation in Singaporean women did not differ much from the United States where 79.7% of women present with early breast cancer in 1990[10]. Singapore is a much smaller country than Malaysia and health education programmes can easily reach the populace, which is mainly urban, unlike in Malaysia, where the majority of the population is rural. In Malaysia, there is also a strong belief in traditional medicine among the three races, and a significant number of patients try traditional treatment for a while before presenting to the medical practitioner; hence they tend to present in later stages of disease.

Breast conservation surgery is being used with increasing frequency, and among the criteria for selection of patients for conservation surgery, patients with lower stage disease are more frequently selected for such operations. In the 1990 National Survey of Carcinoma of the breast by the Commission on Cancer in the United States, the rate of conservation surgery was 25.4%[10]. Despite the larger tumours at presentation in Malaysian women, the rate of conservation surgery in University Hospital Kuala Lumpur (16.1%) is close to that in Singapore General Hospital (20%).

CONCLUSION

In summary, the age and race incidence of breast cancer in Malaysia do not differ much from Singapore, where the women present at a much younger age compared to the West, and there is a lower incidence among the Malays, who also present at a young age compared to the Chinese and Indians. However, there is a significant difference in the stage at presentation between the two countries, where Singaporean women present in earlier stages and with smaller tumours. This led to a lower rate of conservation surgery in Malaysian women.

The lower incidence in Malays, and their younger age at presentation compared to the other two races would need further study to elicit specific risk factors that could be either genetic or non-genetic, in identifying women who may be at increased risk and modifying factors that will reduce risk.

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