

ETHNIC AND CLINICAL FEATURES OF FEMALE STROKE PATIENTS ADMITTED TO THE PENANG GENERAL HOSPITAL DURING A ONE YEAR PERIOD

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SUMMARY

One-hundred-and-thirty-one female stroke patients were identified in a retrospective analysis of female medical admissions to the Penang General Hospital during 1983. The hospital medical admission rate of women with stroke was significantly higher amongst the Chinese than the Malays ($p < 0.001$) or the Indians ($p < 0.001$).

A higher proportion of Indians than Chinese or Malays presented within 24 hours of the onset of illness. The case fatality rate at discharge was 34% when patients taken home moribund were included as fatal cases. Such cases where patients were taken home at their own risk (AOR) were common among the Malays and the Chinese but did not occur amongst the Indians.

INTRODUCTION

The incidence of strokes in Malaysia has not yet been determined. Community-based epidemiological studies are awaited. Hospital-based observations, however, may provide pointers to where attention should be focused. After observing that strokes seemed more common among ethnic Chinese women in Penang, a retrospective study into the admission records of the Penang General Hospital over a one-year period was undertaken.

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MATERIALS AND METHOD

Admission records to the female medical wards of the Penang General Hospital during 1983 were examined in a retrospective study. Case notes of all patients admitted with a possible diagnosis of a stroke were studied and only cases in which a definite clinical diagnosis of a stroke was made were included.

Stroke is defined according to the criteria of the World Health Organization as "rapidly developing clinical signs of focal and at times global loss of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than that of vascular origin". Other causes of cerebral dysfunction that were excluded included meningitis, epilepsy, head injuries, brain tumours, cerebral lupus, hyperglycemic and hypoglycemic coma, transient ischaemic attacks, Bell's palsy and trigeminal neuralgia.

The ethnic distribution of female medical admissions during 1983 was noted from admission records. A conventional X^2 test is used to compare differences between the observed and the expected distribution of stroke patients in the three major ethnic groups.

The level of consciousness, whether there was a history of hypertension and the duration of illness before presentation, was obtained from case records. The outcome of the patient was not pursued further than discharge or death.

RESULTS

Of the 131 women admitted with a stroke, 93 (71%) were Chinese, 23 (18%) were Malays and 15 (11%) were Indians. The proportion of stroke patients among all admissions to the female medical wards was significantly different between the Chinese and Malays ($p < 0.001$) or Indians ($p < 0.001$), but not significantly different between the Malays and Indians ($p > 0.1$). The proportion of strokes was highest amongst Chinese (57 per 1000 admissions), which is 2.4 times the proportion among Malays (24 per 1000) and 3.4 times the proportion among Indians (17 per 1000) (Table I).

Among Indians, a very high proportion of stroke patients (79%) presented themselves within 24 hours of the onset of symptoms. 63% of the Chinese and only 50% of the Malays presented as early (Table II). Loss of consciousness was a factor that brought a higher proportion of patients in for early admission than other less impaired states of consciousness (Table III).

61% of stroke patients gave a history of hypertension, 35% were not known to be hypertensive and in 5% a history of hypertension was not determined (Table IV). 62 (67%) Chinese, 12 (52%) Malays and 6 (40%) Indians were, by history, hypertensive. Only between the Chinese and Indians is the proportion of hypertensives significantly different ($p < 0.05$).

Twenty-six patients died of their strokes whilst in the hospital. Another 18 were taken home very ill against medical advice, and at their own risk (AOR). Almost all such patients taken home AOR were moribund and taken home for the specific purpose that they may die at home instead of in hospital. They were in real terms fatal cases. Including them as such gives a case fatality rate of 34%, although in fact 18 of the 44 (41%) did not die in hospital. The average hospital stay for these 44 patients was five-and-a-half days. 70% of deaths occurred within three days.

Of the remaining 86 patients who were discharged, 46 were clinically better, two not improved but for 38 patients, their condition at discharge was not clearly recorded. The average length of stay among those discharged was eight days.

The case fatality rate was similar in all ethnic groups (Table V) but AOR discharges was highest amongst the Malays (62%), also high among Chinese (41%) and never occurred among Indians.

A poorer conscious level on admission correlates with a poorer prognosis (Table VI). 61% of these admitted unconscious died or were taken home AOR. The case fatality was 42% and 13% among those with impaired and not impaired consciousness respectively. Late admissions had a lower mortality than early admissions if they were not unconscious at presentation but had a higher mortality if they were unconscious.

TABLE I
NUMBER (%) OF STROKE PATIENTS, FEMALE MEDICAL ADMISSIONS
AND THE STROKE ADMISSION RATE BY ETHNIC GROUPS

Ethnic group	Stroke patients		Female medical admissions		Stroke admission rate (per thousand)
	No.	(%)	No.	(%)	
Chinese	93	(71)	1,622	(47)	57
Malays	23	(18)	950	(27)	24
Indians	15	(11)	877	(25)	17
Others	—		17	(1)	—
	131	(100)	3,466	(100)	38

Between Chinese and Malays $X^2 = 15.5$, $p < 0.001$. Between Chinese and Indians $X^2 = 42.9$, $p < 0.001$. Between Malays and Indians $X^2 = 0.97$, $p > 0.1$.

TABLE II
NUMBER (%) OF STROKE PATIENTS BY DURATION OF
ILLNESS AT PRESENTATION

Duration of illness	Chinese		Malays		Indians		Total No.
	No.	(%)	No.	(%)	No.	(%)	
Less than 24 hours (early)	57	(63)	11	(50)	11	(79)	79
More than 24 hours (late)	28	(31)	10	(45)	3	(21)	41
Unknown	6	(6)	1	(5)	0	(0)	7
Total	91		22		14		127

Note: excludes four patients who had stroke while they were already in hospital for other reasons.

TABLE III
NUMBER OF STROKE PATIENTS AMONG PATIENTS
WHO PRESENTED WITHIN 24 HOURS (EARLY)
OR AFTER 24 HOURS (LATE) OF THEIR ILLNESS

Level of consciousness at presentation	Early		Late		Unknown		Total No.
	No.	(%)	No.	(%)	No.	(%)	
Unconscious	27	(87)	4	(13)	0	(0)	31
Consciousness impaired	16	(62)	9	(35)	1	(3)	26
Consciousness not impaired	30	(57)	22	(41)	1	(2)	53
Unknown	6	(35)	6	(35)	5	(30)	17
Total	79		41		7		127

Note: excludes four patients who had stroke while they were already in hospital for other reasons.

TABLE IV
STROKE PATIENTS WITH A MEDICAL HISTORY OF HYPERTENSION
AMONG CHINESE, MALAYS AND INDIANS

	Chinese		Malays		Indians		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Positive history of hypertension	62	(67)	12	(52)	6	(40)	80	(61)
Not known to be hypertensive	27	(29)	10	(43)	9	(60)	46	(35)
Unknown	4	(4)	1	(5)	—		5	(4)
Total	93		23		15		131	

Between Chinese and Indians $\chi^2 = 4.08, p < 0.05$.

TABLE V
NUMBER OF DEATHS, AOR* DISCHARGES, AND THE CASE
FATALITY RATE BY ETHNIC GROUP

Ethnic Group	Deaths		AOR Discharges		Total No. (%)	Case fatality rate (%)
	No.	(%)	No.	(%)		
Chinese	19	(59)	13	(41)	32 (100)	34
Malays	3	(38)	5	(62)	8 (100)	35
Indians	4	(100)	0	(0)	4 (100)	27
	26		18		44	34

*At your own risk.

TABLE VI
CASE FATALITY RATE(%) AMONG PATIENTS WHO PRESENTED
WITHIN 24 HOURS (EARLY) OR AFTER 24 HOURS (LATE) OF THEIR
ILLNESS BY THEIR LEVEL OF CONSCIOUSNESS AT PRESENTATION

Level of consciousness	Early	Late	Unknown	Total
Unconscious	59 [16]	75 [3]	—	61 [19]
Consciousness impaired	50 [8]	30 [3]	—	42 [11]
Consciousness not impaired	17 [5]	9 [2]	—	13 [7]
Unknown	17 [1]	33 [2]	20 [1]	24 [4]
	38 [30]	24 [10]	14 [1]	

Note: excludes three patients who had stroke while they were already in hospital for other reasons.

Figures in brackets [] denote number of deaths.

The age specific fatality rate showed a bimodal trend. One peak occurred in the 40–49 year age group where the fatality was 43%. It was then lower in the 50–59 year age group and rose as age increased (Table VII).

DISCUSSION

The different proportion of stroke patients among hospital admissions of women of different ethnic groups to the Penang General Hospital is interesting. It suggests the need to study whether there is a higher incidence of strokes among Chinese women than other ethnic groups in Penang. This study represents only those with sufficient disability to warrant admission and excludes those who fail to survive the initial insult. Also, stroke patients from Penang who

were admitted to other hospitals and those who resorted to other forms of treatment were not included.

Hypertension is the most important known cause of strokes in men and women of all ages.¹ Studies in Selangor² and Singapore³ have shown that hypertension is equally prevalent among the various ethnic groups. However, Ooi *et. al.*,⁴ noted a higher prevalence of cerebral haemorrhage among Chinese males in a hospital population of hypertensive patients. They also noted an increased predisposition of hypertensive Indian males to developing myocardial infarctions. This raises the possibility that for a given degree of hypertension one ethnic group may have a greater risk for cerebrovascular disease while another a greater risk for cardiovascular disease. The higher

TABLE VII
AGE (IN YEARS) SPECIFIC CASE FATALITY RATE OF STROKE PATIENTS
BY ETHNIC GROUP

	Below 40	40-49	50-59	60-69	70-79	Above 80
Chinese	0	50% [5]	22% [5]	34% [11]	40% [8]	43% [3]
Malays	nil	50% [1]	50% [2]	9% [1]	80% [4]	0
Indians	nil	0	0	43% [3]	0	100% [1]
	0	43% [6]	23% [7]	30% [15]	46% [12]	44% [4]

Figures in brackets denote number of deaths; nil = no admissions; 0 = no deaths.

prevalence of a history of hypertension among Chinese compared to Indian female stroke patients in this study suggests that if there is a higher incidence of strokes, it may be related to hypertension.

Medical care seeking behaviour was different among the ethnic groups. Indians are seen to present early more often and, in this series, never took AOR discharges. Their greater reliance on government hospital services is also seen in hospital admissions, which show that 29% of all admissions to the Penang General Hospital, and 25% of hospital medical admissions are Indians although they account for only 10% of the population in Penang.⁵

On the other hand, more Malays tended to present late and in fatal cases 62% had AOR discharges. Meerman noted that Malays have the lowest, while Indians have the highest public hospital inpatient and outpatient utilisation rates.⁶ Chinese from the middle group in the proportion of early presentations and AOR discharges, with rates closer to the Malays and Indians. However, a true picture of medical care seeking behaviour of Chinese must consider that they have the highest private hospital utilisation rate.⁶

As might be expected, a poorer level of consciousness on admission correlated with a poorer prognosis. Stroke being an event of sudden occurrence following which there is no continuation of the prime disorder, may be the reason why patients admitted more than 24 hours after onset of the stroke did not fare worse than those admitted earlier. Late admissions who were

unconscious were the exception. The management of the airway and fluid balance in hospital may account for the difference.

It is difficult to explain the high case fatality rate in patients in the 40-49 year age group without the benefit of necropsy of CAT scan findings. One may speculate that haemorrhagic events were more common among these women.

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