

REHABILITATION OF CEREBROVASCULAR DISEASE WITH NEUROLOGICAL DEFICITS — RESULTS OF 500 CASES TREATED BETWEEN 1973 & 1978

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SYNOPSIS

500 cases of cerebrovascular disease with neurological deficits treated at the Department of Rehabilitation Medicine, Tan Tock Seng Hospital, between 1973 and 1978 are collected and analysed. 60.2% were males and 43.6% were above the age of 60. There is an almost equal distribution of left and right hemiplegics in this series with only 8 cases having bilateral stroke. 74% of the cases were caused by cerebral thrombosis, and almost all the cases had one or more other diseases besides the stroke on admission. In fact 80% had either hypertension or diabetes mellitus or both. 94.2% stayed in the hospital for less than 3 months before they were ready to go home. 79% reached the level of total independence in self care activities and 90.2% were able to ambulate either with or without aids or appliances on the day of discharge from the hospital. About 50% of the cases were able to go back to gainful employment or to continue with some household activities on discharge.

INTRODUCTION

Cerebrovascular disease causing neurological deficits is one of the most common chronic disabling diseases which is prevalent not only amongst the affluent societies of the West and America but also amongst those in the developing countries like Singapore. The incidence rises with the aging of a population. In Singapore, a population projection based on the 1970 population census shows that by 1995, 347,000 persons would be above the age of 55, a figure almost doubled that in 1970. As the incidence of cerebrovascular disease peaks between the ages of 50 and 60, we anticipate a sharp rise in the incidence of physical disability due to cerebrovascular disease alone in the coming years. Unfortunately, till today no one has yet carried out a nation wide survey on the actual annual incidence of cerebrovascular disease in Singapore, as surveys of this nature not only involve a lot of money, time and manpower, but also depend on the response and co-operation of the population which is essentially multiracial with Singaporeans of Chinese descent predominating.

In the past, stroke was looked upon as an inevitable paralysis with a hopeless future, but with the advent of medical rehabilitation, the approach to stroke treatment is a positive one. At the National Stroke Conference in Chicago in 1964, it was estimated that with the help of rehabilitation 90% of patients could be taught to get out of bed, 70% became self-sufficient and 30% of those employable age group could return to some form of gainful employment.

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METHOD AND MATERIAL

In Singapore, the Department of Rehabilitation Medicine with a bed complement of 77, was established at Tan Tock Seng Hospital in 1973. Less than half of the beds are for spinal cord injuries and the rest are used for orthopaedic and neurological cases of which stroke accounts for about 43% of the total annual admissions. This paper illustrates the importance of rehabilitation medicine in the final treatment of cerebrovascular disease with neurological deficits. 500 consecutive cases of stroke admitted to this Department for rehabilitation between 1973 and 1978 are recorded and analysed. All these cases were referred by other Government hospitals, private hospitals and general practitioners.

RESULTS AND DISCUSSIONS

There were 301 (60.2%) males and 199 (39.8%) females, 454 (90.8%) of whom were married. The racial distribution of these 500 cases shows that Singaporeans of Indian descent are more prone to have stroke than those of Malay descent. However, this is not a true representation of the actual national incidence of stroke in Singapore, because not all cases of stroke were admitted to our Department and many with minor or transient attacks were in fact treated and discharged from the acute hospitals without being referred to us. (Table I). Amongst the Chinese patients, grouping into the various dialect groups show that 44% were Hokkien, 24.4% were Cantonese and 20.1% were Teochew - these are the 3 largest dialect groups in Singapore.

Age distribution of these cases shows that stroke is rare in those below the age of 20 but very common in those above the age of 45 (85.4%). For those above 60 years the incidence is 43.6% (Table II).

Most of our patients were referred from other Government General Hospitals and only 3.6% came from private practitioners. This could be due to one of these two reasons - either most cases seen by private practitioners were minor or transient stroke and therefore did not require rehabilitation, or patients consulting the private practitioners were reluctant to be referred for rehabilitation.

Out of the 500 cases, 250 had right hemiplegia, 232 had left hemiplegia and 8 had bilateral stroke. Amongst the right hemiplegics, 84 had normal speech function whereas amongst the left hemiplegics, 216 had intact speech function. This again proves a point that right handed people are more likely to have speech disturbance when they have stroke affecting the right side of their bodies because the dominant hemisphere containing the speech areas of right

handed people is on the left (Table III).

TABLE II: STROKE - AGE DISTRIBUTION

AGE GROUP	NUMBER	PERCENTAGE
BELOW 15 YRS	0	0
15 - 20 YRS	10	2.0
21 - 45 YRS	63	12.6
46 - 60 YRS	209	41.8
ABOVE 60 YRS	218	43.6

None of the 500 cases were the result of trauma and Table IVA shows that 74% were due to cerebral thrombosis, 16.4% from cerebral haemorrhage, 8% from cerebral embolism and 1.6% from transient ischaemic attacks. The aetiology of each case was arrived at mainly from the mode of onset of the illness and the C.S.F. findings. It is therefore not very accurate because intracerebral haemorrhage does not give bloody C.S.F. in most areas.

Almost all the cases under study had one or more other diseases on admission to hospital. The commonest diseases they had were hypertension and diabetes mellitus, which together accounted for 80.4% of the total number of cases (Table IVB).

63% of the cases were referred to us within one month of onset of illness, as we believe strongly that early rehabilitation means greater chance of success (Table VA) and therefore shorter duration of stay in hospital. In fact 94.2% stayed less than three months in our centre (Table VB).

The results of good rehabilitation of these 500 cases are shown in Tables VIA & VIB. After rehabilitation 79% gained total independence in self care activities and 16.8% gained partial independence. 90.2% could walk independently but 87% needed aids and appliances like walking sticks and calipers to ambulate. Of the 229 cases, who, before the onset of stroke, were gainfully employed, 108 were able to return to gainful employment after they went home from hospital. 44 of the 66 housewives admitted to our Department could continue their household chores on discharge.

CONCLUSION

This paper illustrates the importance of medical rehabilitation as a final treatment of all stroke patients. It also shows that early rehabilitation gives the patient a better chance of functional recovery, and that old age, the presence of associated diseases and the number of recurrent strokes a person has do

TABLE I: STROKE - RACIAL DISTRIBUTION

RACE	CHINESE	INDIANS	MALAYS	EURASIANS	OTHERS
NUMBER	388	62	39	7	4
PERCENTAGE	77.6	12.4	7.8	1.4	0.8
ETHNIC DISTRIBUTION OF POPULATION	76	7	15	2	

TABLE III: STROKE - SIDE AFFECTED & SPEECH INVOLVEMENT

SPEECH	EXPRESSIVE	RECEPTIVE	MIXED	NOT AFFECTED	TOTAL
LEFT SIDE	25	0	1	216	232
RIGHT SIDE	137	1	28	84	250
BILATERAL	1	0	3	4	8

TABLE IVA: AETIOLOGY OF STROKE

AETIOLOGY	NUMBER	PERCENTAGE
CEREBRAL THROMBOSIS	370	74.0
CEREBRAL HAEMORRHAGE	82	16.4
CEREBRAL EMBOLISM	40	8.0
TIA (TRANSIENT ISCHAEMIC ATTACKS)	8	1.6

TABLE IVB: STROKE - PATIENTS WITH ASSOCIATED DISEASES

ASSOCIATED DISEASES	NUMBER	PERCENTAGE
HYPERTENSION	299	59.8
DIABETES MELLITUS	103	20.6
RESPIRATORY DISEASES	35	7.0
HEART DISEASES	34	6.8
VASCULAR DISEASES	14	2.8
RENAL DISEASES	13	2.6
FRACTURES (eg Neck of Femur)	13	2.6
GASTROINTESTINAL DISEASES	11	2.2
NEUROLOGICAL DISEASES	10	2.0
OLD STROKE	11	2.2
JOINT DISEASES	9	1.8
EYE DISEASES	9	1.8
ENT DISEASES	5	1.0
MENTAL ILLNESSES	5	1.0
GYNAECOLOGICAL DISEASES	5	1.0
DISEASES OF THYROID	4	0.8
NO. OF PATIENTS WITH MORE THAN ONE ILLNESS	147	29.4

TABLE VA: STROKE - TIME LAPSED BEFORE REHABILITATION

DURATION	NUMBER	PERCENTAGE
BELOW 1 WEEK	30	6.0
1 WEEK - 4 WEEKS	285	57.0
4 WEEKS - 12 WEEKS	153	30.6
12 WEEKS - 24 WEEKS	21	4.2
BEYOND 24 WEEKS	11	2.2

TABLE VB: TIME SPENT AT REHABILITATION

DURATION	NUMBER	PERCENTAGE
BELOW 1 WEEK	14	2.8
1 WEEK - 4 WEEKS	182	36.4
4 WEEKS - 12 WEEKS	275	55.0
12 WEEKS - 24 WEEKS	28	5.6
BEYOND 24 WEEKS	1	0.2

TABLE VIA: STROKE - SELF-CARE INDEPENDENCE (ADL) ON DISCHARGE

LEVEL OF INDEPENDENCE	NUMBER	PERCENTAGE
TOTAL INDEPENDENCE	395	79.0
PARTIAL INDEPENDENCE	84	16.8
TOTAL DEPENDENCE	21	4.2

TABLE VIB: MOBILITY STATUS ON DISCHARGE

STATE OF MOBILITY	NUMBER	PERCENTAGE
INDEPENDENT IN AMBULATION	16	3.2
INDEPENDENT IN AMBULATION WITH AIDS/APPLIANCES	435	87.0
INDEPENDENT IN WHEELCHAIR	4	0.8
BEDRIDDEN	45	9.0

contribute greatly to the poor prospects of stroke rehabilitation.

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