

Original

**INCIDENCE OF HEMIPLEGIA DUE TO CEREBRO VASCULAR
ACCIDENT IN KUWAIT IN 1989: A RETROSPECTIVE STUDY**

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Data related to 393 patients admitted to various hospitals in Kuwait with hemiplegia due to cerebrovascular disease during 1989 were analysed of whom 41% were Kuwaitis. The overall annual crude incidence was 3 per 10,000 population and overall admission rate for the year was 2.42 per 1,000 admissions. Hypertension was the most prevalent risk factor followed by diabetes mellitus, smoking and ischaemic heart disease. The risk factors were more prevalent among Kuwaiti patients. CT scan findings showed a high incidence of cerebral infarctions followed by haemorrhage.

Hemiplegia refers to paralysis and loss of function of one side of the body. The most common cause of hemiplegia is cerebrovascular disease (CVD) or stroke¹. Hemiplegia is a major cause of disability in the adult population of Kuwait. There are many studies from various centres in the world regarding the incidence of stroke²⁻⁸. Some studies are confined to the population of a particular geographical area^{2,7} while others are restricted to a particular community or country^{3-5,9,10}. There are not many studies available in Kuwait regarding the incidence of stroke or hemiplegia. The aim of this study is to establish the incidence of hemiplegia responsible for locomotor disability and to study the risk factors associated with the aetiology.

Kuwait is situated in the north-western part of the Arabian Gulf between Saudi Arabia and Iraq. Its population was around two million in 1989.

METHODS

The medical services in Kuwait in 1989 were rendered from primary health level to advanced specialities level. We collected data from the records of the patients admitted and who survived from the regional general hospitals (Adan,

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Amiri, Farwaniya, Jahra and Sabah), a specialist hospital (Ibn Sina) and the Kuwait Oil Company Hospital.

The patients for our study were identified as those who were admitted with hemiplegia or hemiparesis due to CVD during the period between January 1st to December 31st, 1989. Patients who had transient ischaemic attack and other isolated neurological problems like speech bulbar involvement were excluded as there would not have been any locomotor disability and therefore would not have been referred for subsequent rehabilitation services.

Once a patient is identified, the presence of the following risk factors were identified; hypertension, diabetes mellitus, smoking, ischaemic heart disease, high plasma lipid, arrhythmias, valvular disease and heart failure. In addition

we recorded the computerised tomography (CT) scan findings if they were available in the files.

The routine demographic data regarding the age, sex and nationality were also recorded.

All data were collected on special computerised sheets and the results were analysed statistically with the help of Medical Information System and the Statistics Department of the Ministry of Health, Kuwait.

RESULTS

During the period from January 1st to December 31st, 1989, a total of 393 patients were identified as having hemiplegia due to CVA. There were 265 (67.4%) men and 128 (32.6%) women. There were 161 (41%) Kuwaiti nationals and 232 (59%) non-Kuwaitis.

Table 1 shows the crude sex and nationality specific and the age-adjusted incidence rate for first hemiplegia.

Table 1
Crude sex-specific, nationality-specific and age-adjusted incidence rates for first hemiplegia in Kuwait State, 1989

Sex	Cases(n)	Crude	Age-Ad justed	Nation- ality	Cases(n)	Crude	Age-Ad justed
Male	265	3.3	3.5	Kuwaiti	161	5.6	3.6
Female	128	2.6	2.4	Non-Kuwaiti	232	2.3	2.7
Total	393	3.0	3.1	Total	393	3.0	3.1

Rates are given as number of cases per 10,000 inhabitants per year.

* Adjusted using 1985 Kuwait Census

The overall annual crude incidence rate of first hemiplegia was 3 per 10,000 population. The incidence in men was 3.3 and in women was 2.6 (Table 1). The national annual crude incidence rate showed an increase among the Kuwaiti population and after adjustment using the 1985 census the rates were 3.5 for men, 2.4 for women and 3.1 as the total mean.

Table 2 show the age and sex specific incidence rates for first hemiplegia in Kuwait. The rate significantly increases with age in both sexes. The difference is not statistically significant.

Table 2
Age and sex - specific incidence rates for first hemiplegia, Kuwait State, 1989

Age	No. Cases/ No. at risk	Rate	95% Confidence interval
Men			
15-54	97/752016	0.13	0.10 - 0.16
55-64	82/33406	2.45	1.92 - 2.98
65-74	58/9430	6.15	4.57 - 7.73
75-84	19/2599	7.31	4.03 - 10.59
85 +	9/799	11.26	3.94 - 18.58

Total	265/798250	0.33(0.35)	0.29 - 0.37
Women			
15-54	35/466642	0.08	0.06 - 0.10
55-64	32/17722	1.81	1.18 - 2.44
65-74	30/7938	3.78	2.43 - 5.13
75-84	22/3075	7.15	4.17 - 10.13
85+	9/875	10.29	3.60 - 16.98
Total	128/496252	0.26(0.24)	0.26 - 0.30
Men & Women			
15-54	132/1218658	0.11	0.09 - 0.13
55-64	114/51128	2.23	1.82 - 2.64
65-74	88/17368	5.07	4.01 - 6.13
75-84	41/5674	7.23	5.03 - 9.43
85 +	18/1674	10.75	5.81 - 15.69
Total	393/1294502	0.30(0.31)	0.27 - 0.33

Rates are given as number of cases per 1,000 inhabitants per year, values in parentheses are adjusted to 1985 Kuwait census.

Table 3 shows the age and nationality incidence rates for first hemiplegia among Kuwaiti and other nationalities.

Table 3
Age and nationality - specific incidence rates for first hemiplegia, Kuwait State, 1989

Age	No. Cases/ No. at Risk	Rate	95% Confidence interval

Kuwaiti			
15-54	33/261272	0.13	0.09 - 0.17
55-64	43/16749	2.57	1.80 - 3.34
65-74	48/8039	5.97	4.29 - 7.65
75-84	27/2734	9.88	6.17 - 13.59
85 +	10/918	10.89	7.46 - 14.32
Total	161/289712	0.56(0.36)	0.47 - 0.65

Non-Kuwaiti			
15-54	99/957386	0.10	0.08 - 0.12
55-64	71/34379	2.07	1.59 - 2.55
65-74	40/9329	4.29	2.96 - 5.62
75-84	14/2940	4.76	2.27 - 7.25
85 +	8/756	10.58	3.29 - 17.87
Total	232/1004790	0.23(0.27)	0.20 - 0.26

Rates are given as number of cases per 1,000 inhabitants per year, values in parentheses are adjusted to 1985 Kuwaiti census.

Table 4 show the prevalence per 100,000 population of risk factors for first hemiplegia due to CVD. A high rate of hypertension is noticed followed by diabetes, smoking, ischaemic heart disease, etc.

Table 4
Nationality and risk factors for first hemiplegia

in Kuwait State, 1989

Risk factor	Kuwaiti	Non-Kuwaiti	Total
Hypertension	32.10	14.43	18.39
Diabetes mellitus	24.51	7.66	11.43
Smoking	9.32	6.27	6.95
Ischaemic heart dis.	12.01	4.98	6.57
High plasma lipid	7.59	4.08	4.87
Arrythmias	7.59	2.09	3.32
Valvular disease	4.14	2.29	2.70
Heart failure	4.83	1.49	2.24

Prevalence Rate / 100,000 population (15 years and over)

Table 5 show the aetiology of stroke leading to hemiplegia as seen from the CT scan findings. The crude and age adjusted incidence rates shows high incidence of cerebral infarction followed by intracranial haemorrhage. A significant rate is noted in the "unspecified category", which was the presence of a radiological finding which did not correspond with the clinical neurological presentation at the time of admission. The CT findings were not available in 113 records.

Table 5
Crude and age-adjusted incidence rates for
first hemiplegia according to diagnosis by CT Scan,
Kuwait State, 1989

Stroke type	Causes (n)	Crude Rate	Age-adjusted
Cerebral infarction	184	14.23	14.32
Intracranial haemorrhage	42	3.24	3.29
Unspecified stroke	54	4.17	4.20
Not available	113	8.73	8.82

Rates are given as number of causes per 100,000
inhabitants per year

* Adjusted using 1985 Kuwait census

Table 6 shows the admission rates for patients with first hemiplegia in the different hospitals. The overall admission rate was 2.42 per 1,000 admissions.

Table 6
Admission rate of patients with first hemiplegia
according to different hospitals,
Kuwait State, 1989

Hospitals	Cases (n)	Total Admission	Admission Rate
Amiri	69	12517	5.51
Sabah	26	20366	1.28
Mubarak	48	18758	2.56
Farwaniya	111	35798	3.10
Adan	89	27306	3.26
Jahra	48	29189	1.64
Ibn Sina	1	7315	0.14

Ahmadi	1	11135	0.09

Total	393	162384	2.42

Rate / 1,000 admissions			

DISCUSSION

This study, being retrospective, has limitations. There are chances that the clinical data might not have been recorded and so not all cases would have been included. Our study differs from other studies since it is directed at establishing the incidence and risk factors of patients with hemiplegia who had a locomotor disability during 1989.

The incidence rate increased with age, in accordance with literature throughout the world. As mentioned above we cannot compare the incidence rate accurately with other studies^{11,12}, because we have excluded patients with transient ischaemic attacks and those with neurological involvement not resulting in locomotor disability.

The overall rates of risk factors were higher among the Kuwaiti patients (32.1 per 100,000 population) as compared to 14.43 in the non-Kuwaiti population. Hypertension was the most common risk factor in our study, followed by diabetes mellitus. This is in accordance with other studies^{2-5,7,10}. The other risk factors are also increased among the Kuwaiti population. This might be due to sedentary habits, ignoring dietary advice, inadequate health awareness, smoking, obesity, stress or neglecting to have treatment.

CONCLUSION

This study has enabled us to estimate the number of hemiplegics who sought rehabilitation services in 1989. With this baseline we will be able to predict the number of patients expected each year. This in turn will help us to plan rehabilitation facilities for the present number of hemiplegics and for the future influx.

In addition there is a significant increase in the prevalence of risk factors among the Kuwaiti population. With better control of hypertension, diabetes and dietary advice the incidence of hemiplegia would be reduced in Kuwait. This could be achieved by highlighting the risk factors.

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