Clinical Profiling of Stroke

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Background: Stroke is the second leading cause of death worldwide. Defined by the WHO as 'Rapidly developing clinical signs of focal or global disturbance of cerebral function with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than vascular origin'. It is a major complication of hypertension.

Objectives: To evaluate the personal and clinical characteristics of stroke patients.

Setting: Salmaniya Medical Complex, Bahrain.

Design: A Retrospective Cross-Sectional Study.

Method: All patients diagnosed and admitted between 1 January 2010 and 31 December 2010 were included. One hundred eighty-three patients were included in the study. Personal and clinical data were documented. Data was entered and analyzed using SPSS program version 17.

Result: Ischemic stroke was the most common, 115 (62.8%). The majority of patients were males, 129 (70.5%). The most notable outcome is the rehabilitated patients, 74 (40.4%). One hundred sixty-six (90.7%) patients did not suffer confusion, whereas 84 (45.9%) had impaired speech and 77 (42.1%) had right-sided numbness and weakness.

Conclusion: The most common type of stroke was the ischemic stroke, 115 (62.8%). The most common symptom was weakness, 147 (80.3%). The most common risk factor was hypertension, 136 (74.3%) and the most common outcome was rehabilitation, 74 (40.4%).

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Stroke is defined by the WHO as rapidly developing clinical signs of focal or global disturbance of cerebral function[1]. Stroke is classified as Ischemic and Hemorrhagic.

Based on World Health Organization Monitoring Trends and Determinants in Cardiovascular Disease (MONICA) Project, males had higher incidence of coronary events than females in Finland, Russia and Lithuania. Stroke peak incident was after the age of 65 years[2,3]. In the USA, males have higher stroke mortality rate than females. Black Americans have a considerably higher stroke mortality rate (84/10,000 compared to 56/10,000 for white Americans[4]. In Bahrain, the majority of strokes occur in middle and late age individuals; males predominate in all, except the hemorrhagic type. The crude annual incidence rate for Bahrainis was 57/100,000, with the frequency of each type being 53% ischemic, 30% hemorrhagic and 16.5% unspecified as opposed to 76%, 10% and 15% in non-Bahrainis, respectively. Subarachnoid hemorrhage was 2%. The most common risk factors were hypertension, dyslipidemia, diabetes mellitus, smoking and ischemic heart disease[5].

The following are the signs and symptoms of stroke: numbness or weakness in any part of the body, trouble in speaking and understanding, blurred or decreased vision, difficulty in swallowing, severe and sudden headaches and confusion. It might also vary in duration from few seconds, as in Transient Ischemic Attack (TIA), to several hours[6].

The diagnosis of Cerebrovascular Accident could be achieved by physical and neurological examination and evaluate consciousness, speech, memory, vision, eye movement, reflexes,

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walking and balance. Blood and blood vessels evaluated by angiography, CBC, liver and kidney function and prothrombin time. Electroencephalogram (EEG), electrocardiogram (ECG), lumbar puncture, CT and MRI are essential to complete the evaluation[6-10].

High blood pressure is one of the most important risk factors leading to stroke. According to the Centers for Disease Control and Prevention, reduction of 12 to 13 points of systolic blood pressure would decrease the risk of a stroke by 37%[11]. People with diabetes have two to four-time higher risk of developing a stroke than a normal[11]. Cigarette smoking doubles ischemic stroke risk[11]. A person who has had TIA or a previous stroke is ten times more likely to have a stroke than someone of the same age and sex who has not[11]. Age has also been determined a risk factor, stroke doubles for each decade of life after 55[11]. African Americans have a higher risk of death due to stroke, which might be due to increased incidence of high blood pressure and diabetes[11]. Stroke is more common in males than females; however, female mortality is higher[11]. In addition, mutated genes exist that could damage the brain's blood vessels[11,12].

Treatment of acute ischemic strokes is either medical and/or surgical[13]. Medical management includes intravenous thrombolysis with rtPA, anticoagulant therapy and antiplatelet agents such as Aspirin. The Surgical Interventions, such as Carotid Endarterectomy (CEA).

Mortality rates are declining. Seventy-five percent of first-stroke patients survive the first year and 50% survive beyond the fifth. Complications of stroke are hemiplegia, aphasia, or bowel and/or bladder incontinence. Survivors of hemorrhagic stroke have a greater chance of recovery compared to those who have suffered an ischemic stroke[14-16].

The aim of this study was to evaluate the personal and clinical characteristics of stroke patients.

METHOD

Our study design is a retrospective cross-sectional study, with all patients who were diagnosed with stroke 2010. The following data were documented: age, gender, nationality occupation, hypertension, dyslipidemia, smoking, diabetes and family history of stroke. The signs and symptoms the patients presented with, the type of stroke and the outcome were recorded.

The data were entered and analyzed using SPSS version 17. In the analysis of cross-tabulation between different variables and the outcome were analyzed.

RESULT

Two hundred fifty-eight patients were diagnosed with stroke; only 183 patient files were found and used for the study.

Ischemic stroke was the majority, 115 (62.8%). The majority were over 70 years, 47 (25.7%). The majority were males, 129 (70.5%). Seventy-four (40.4%) patients were rehabilitated, see table 1.

Table 1: Personal Characteristics and Outcome

Gender		
	Male	129 (70.5%)
	Female	54 (29.5%)
	Total	**183 (100.0%)**
Age		
	Less than 40	12 (6.6%)
	40-49	38 (20.8%)
	50-59	42 (23.0%)
	60-70	44 (24.0%)
	More than 70	47 (25.7%)
	Total	**183 (100.0%)**
Type		
	Hemorrhagic	13 (7.1%)
	Ischemic	115 (62.8%)
	TIA	4 (2.2%)
	Both	2 (1.1%)
	Unknown	14 (7.7%)
	Not Mentioned	32 (17.5%)
	R/O	2 (1.1%)
	Others	1 (0.5%)
	Total	**183 (100.0%)**
Outcome		
	Deceased	25 (13.7%)
	Rehabilitated	74 (40.4%)
	Paralysis	31 (16.9%)
	Not Mentioned	53 (29%)
	Total	**183 (100.0%)**

One hundred twenty-one (66.1%) patients suffered from confusion. Eighty-four (45.9%) had impaired speech and 77 (42.1%) had right-sided numbness and weakness. One hundred thirty-six (74.3%) had hypertension, and 176 (96.2%) had no family history of stroke, see table 2.

Table 2: Risk Factors and Chief Complaints

Risk Factors	**Yes**	**No**	**Total**
Hypertension	136 (74.3%)	47 (25.7%)	**183**
Dyslipidemia	62 (33.9%)	121 (66.1%)	**183**
Smoking	51 (27.9%)	132 (72.1%)	**183**
Alcohol	13 (7.1%)	170 (92.9%)	**183**
Diabetes	96 (52.5%)	87 (47.5%)	**183**
Family History	7 (3.8%)	176 (96.2%)	**183**
Recurrence	50 (27.3%)	133 (72.7%)	**183**
Chief Complaints and Signs and Symptoms	**Yes**	**No**	
Numbness and Weakness			
Chief Complaint	125 (68.3%)	58 (31.7%)	**183**
Symptom	147 (80.3%)	36 (19.7%)	**183**
Impaired Speech			
Chief Complaint	43 (23.5%)	140 (77.78%)	**183**
Symptom	84 (45.9%)	99 (55%)	**183**
Blurred Vision			
Chief Complaint	6 (3.3%)	177 (96.72%)	**183**
Symptom	24 (13.1%)	159 (86.88%)	**183**
Headache			
Chief Complaint	19 (10.4%)	164 (89.61%)	**183**
Symptom	44 (24%)	139 (75.95%)	**183**
Confusion			
Chief Complaint	7 (3.8%)	176 (96.17%)	**183**
Symptom	17 (9.3%)	166 (90.71%)	**183**
Dizziness			
Chief Complaint	26 (14.2%)	157 (85.79%)	**183**
Symptom	66 (36.1%)	117 (63.93%)	**183**
Loss of Consciousness			
Chief Complaint	7 (3.8%)	176 (96.17%)	**183**
Symptom	8 (4.4%)	175 (95.63%)	**183**

DISCUSSION

Previous studies revealed that 75% of strokes occur in people older than 65 years of age; in our study, 49.7% were ≥60 years of age[4]. Male predominance (70.5%) was noted in our study.

A previous study showed the different percentages of strokes within Bahraini and non-Bahraini patients; our study was performed regardless of nationality[5].

In our study, there was an increase in the percentage of most common symptom compared to a previous research performed in GCC countries; the percentage of weakness as one of the presenting symptoms in our study was 147 (80.3%) compared to 23% in a previous studies[5].

Hypertension and smoking were the two main risk factors in GCC patients, 23.1% and 27.3% respectively; in Bahrain, hypertension was a major risk factor (74.3%), the second was diabetes (52.5%), the third was dyslipidemia (33.9%) and smoking was the fourth risk factor (27.9%)[11].

Ischemic strokes have better survivability, and hemorrhagic strokes have better recovery and rehabilitation chances[14-16].

The drawback of our study was the retrospective nature and the missing data, which could be eliminated by the implementation of the electronic file system.

CONCLUSION

Ischemic stroke was the most common type, 62.8%. Weakness was the most common symptom, 80.3%. Hypertension was the most common risk factor, 74.3%. Rehabilitation was the most common outcome, 40.4%.

Further multicentric research is recommended to evaluate the pathophysiology of ischemic stroke is recommended.

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