

The Clinical Profile of Stroke: A Yemeni Experience

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Abstract

Objective: to study the pattern of brain strokes, the major risk factor, and the medical problems associated with cerebrovascular accidents in Yemeni patients.

Patients and Methods: Retrospective hospital-based study conducted in Kuwait teaching hospital in Sana'a, over a four-year period (1999-2003). All cases admitted with stroke were diagnosed by history and clinical examination, and were then confirmed by investigation including CT scan as included in the study.

Results: The mean age of stroke patients was 59.6 years with a 62.6% male-to-female predominance. Among patients in the group aged above 45years, the most common stroke pattern was ischemic in 72%, hemorrhagic in 25 %and was undetermined in 2.5%. The most common age for stroke was the middle age group (15-44) years as the stroke was seen in 51.7% of them.

The major associated medical conditions were hypertension (HTN) in (68.3%), cardiac diseases that account for 42.4% and diabetes mellitus (DM) in (24.4%). Hypertension was more common in the hemorrhagic stroke presents; 82.6%, versus 61.6% in the ischemic group. Assessing the known risk factors, smoking history was positive in 42% and hyperlipidemia in13.9%. QAT chewing habit was positive in 43.4% of the patients. QAT chewing is known to be associated with hypertension. The fatality rate was (24.2%) and it was higher in hemorrhagic stroke (28.8%), than ischemic stroke (19.7%).

Conclusion: This is the first study about strokes in Yemeni population highlighting that younger age sustained stroke when compared to other countries that have a predominance of ischemic over hemorrhagic type. Hypertension is the most common associated factor observed and it was more common in the hemorrhagic type. The ratio of associated diabetes and hyperlipidemia is low compared elsewhere. Whether this is related to QAT chewing or not, the issue needs to be further studied.

Keywords: Brain Stroke, major risk factor, cerebrovascular accident, Yemeni patients.

(J Med J 2009; Vol. 43 (2):115-121)

Received

June 19, 2008

Accepted

November 9, 2008

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Introduction

Stroke is the second leading cause of death globally.¹ It is a disease that predominantly occurs in adults and the elderly. In the year 2001, it was estimated that cerebrovascular diseases accounted for (5.5) million deaths worldwide that is equivalent to (9.6 %) of all deaths.¹ Two-thirds of these deaths occurred in people living in the developing countries and (40%) of the subjects were aged less than (70) years.¹ According to the World Health report 1999, cerebrovascular diseases accounted for (28.5%) of all deaths in low and middle-income countries in 1998.²

Stroke is known to be associated with certain risk factors including smoking and oral contraceptive.³ It is also known to be related to many medical problems including hypertension, heart diseases, diabetes mellitus, hyperlipidemia and blood diseases.³

In our country, no previous data addressing the magnitude of stroke and trying to identify the common risk factors and associated medical conditions was presented with the aim of knowing the characteristic of Yemeni patients with a stroke. QAT chewing habits are unique to Yemeni people. QAT chewing is known to cause elevation of blood pressure.⁴ This study was conducted to have a baseline data on the clinical and demographic characteristics of Yemeni patients with stroke. If QAT chewing ratio is high in patients with stroke, then another controlled study will be conducted to assess the role of QAT chewing and stroke.

Patient and Methods

A retrospective hospital-based study was conducted in Kuwait Teaching Hospital in Sana'a city over a four-year period (1999-2003). Kuwait teaching hospital is one of the main general hospitals in the city of Sana'a with 300 beds.

We reviewed the files of all cases admitted with a diagnosis of cerebrovascular accident. Patients were diagnosed by a consultant neurologist

according to the WHO criteria.¹ Patients presented with transient ischemic attack, subdural or epidural hematoma and symptoms caused by recent trauma were excluded from the study.

Variables tested were collected by a special data collection sheet developed for the sake of the study including information on: age, gender, smoking, QAT chewing, history of previous attack and the family history of stroke. Hypertension was positive if the patient is using medication for hypertension or if three consecutive blood pressure estimation readings were above 140/90.³

Diabetes mellitus was positive if there was a history of diabetes mellitus or if the patient was receiving drugs for diabetes or their random blood sugar levels were above 200mg with symptoms, or fasting blood sugar scored more than 126mg for more than two readings during hospitalization.³

Heart disease was positive if history, clinical examination, available investigation on admission or investigated requested during hospitalization yield one or more of the following: rheumatic heart disease, ischemic heart disease, atrial fibrillation and cardiomyopathy.³

Hyperlipidemia was considered positive if lipid profile results show total cholesterol >200 and/or triglyceride >150.⁵ We also gathered information on oral contraceptive pills before sustained stroke, family history of stroke in the first-degree relatives and history of previous stroke. Habits of smoking and QAT chewing were positive if patients were using them daily for a duration of at least more than a year.

The course of the disease during hospitalization and outcome were recorded as alive on discharge or died or transferred to another hospital or left against some medical advice.

The study was conducted on approval of the ethical committee of Kuwait hospital. The data was collected, and then simple data analysis for percentages was performed.

Results

During the four-year study period, of the 9865 patients admitted to the medical department, 505 patients were due to stroke resulting in an admission rate of 5.1%.

The type of stroke is detailed in table (1); from the table, it is revealed that the commonest type is the ischemic type (72.3%). The sex distribution shows a predominance of male gender, 316 (62.6 %) versus 189 (37.4 %) being females. The age distribution shows that 69 (13.6%) of stroke cases occurred in younger age group (age from 15-44 years), 261 (51.7%) in the middle age group (from 45- 64) and 175 (34.7) was in the old age group of more than 65 years.

Table (1): Frequency of the types of stroke.

Type of stroke	No of patient	%
Ischemia	356	72
Hemorrhagic	127	25.5
Undetermined	13	2.5
Total	505	100

Table (2) shows the frequency of stroke risk factors studied. QAT chewing and smoking habits were positive in 43.4 and 42%, respectively.

Table (2): The frequency of different proposed risk factor in stroke.

Risk factors	Positive (%)
Smoking	210 (42%)
QAT chewing	219 (43.4%)
Oral contraceptive	16 (3.2%)
Family history of stroke	27(5.4%)
Previous history of stroke	86 (17.3%)

Table (3) listed the frequency of certain medical conditions studied that were known to be associated with stroke, hypertension was found in 68.3%. Diabetes mellitus and Hyperlipidemia were low and positive in only 24.4 and 13.9%, respectively.

Table (3): The frequency of certain medical condition associated with strokes.

The precipitate factors	No. of patient	Percentage %
HTN	68.3	339
DM	24.4	121
Heart disease	42.1	209
Blood disease	8.7	43
Hyperlipidaemia	13.9	69
Others	4.8	24

Table (4) details the frequency of the associated medical conditions that was studied in relation to the type of stroke whether ischemic or hemorrhagic with hypertension, the results show that stroke was seen more in the hemorrhagic type (82.6 %).

Table (4) shows the frequency of the proposed medical condition in relation to ischemic and hemorrhagic stroke.

Risk Factor	Type of stroke according to CT scan	
	Ischemic N = (365)	Hemorrhagic N =(129)
Hypertension	61.6	82.6
Heart Disease	45.3	33.1
Diabetes Mellitus	24.4	25.2
Blood diseases	6.9	9.5
Hyperlipidemia	14.5	12.6
Previous Stroke	18.4	14.2
Past TIA	1.1	1.6
Others	8.77	3.9

Table (5) shows the ratio of different medical conditions associated with stroke that was studied in the young age group with many of them having more than one risk factor.

Table (5): The frequency of risk factors for Stroke in young adult.

Risk Factor	No. of patients	Percentage (%)
Hypertension	31	28.9
RHD	16	14.9
Blood diseases	16	14.9
Hyperlipidemia	13	12.2
Previous Stroke	13	12.2
Diabetes Mellitus	7	6.54
Previous ischemic attach	1	0.9
Oral contraceptive*	10	9.5

The outcome of the stroke and fatality rate are shown in table (6), as 122 patients died during hospitalization with a case fatality rate of 24.1%; while 383 were discharge alive with variable residual disability.

Table (6): The case fatality rate according to the types of Stroke.

<i>Types of stroke</i>	<i>Total No. of in patients</i>	<i>No. of patient discharged</i>	<i>Case Fatality Rate</i>
<i>Ischemic</i>	365	293	19.7
<i>ICH</i>	127	89	28.8
<i>Undetermined</i>	13	11	14.2
<i>Total</i>	505	383	24.1

Discussion

This is the first study on stroke in Yemen, that was retrospectively designed to study the demographic, clinical characteristic, patient habits, major risk factors and associated medical conditions of patients admitted to Kuwait teaching hospital with a diagnosis of stroke over 4years period. The admission rate due to stroke among other diseases was calculated to be 5.1%, a figure higher than the 3.5% reported from Jordon and 3% from Saudi Arabia.^{6, 7} The mean age of our patients with stroke was 59.6years. The age group mostly affected was in the range 45-64 years (51.7%), a figure similar to 51.2 years reported from Bahrain⁸ and lower than many reports from the developed countries.⁹ There is a male predominance of (62.6%) which is a similar finding by other Arab countries.⁶⁻⁹ Smoking as a risk factor was positive in 42%; this is higher than the 35% reported from Jordan.⁶

QAT chewing is a common habit in Yemen that was reported to be positive to stroke in (43.4%) of our patients. Others considered this habit as a risk factor for ischemic heart diseases.¹⁰ QAT is a CNS stimulant, known for its many components, which lead to blood pressure elevation and arrhythmia.⁴ The exact role of QAT and stroke need to be further studied by other controlled studies.

The most common type of stroke in our study was the ischemic type, reported in (72.3%) of patients. These results were nearly similar to the 74, 72 and 73% reported from Saudi Arabia, Nigeria and Hungaria, respectively.¹¹⁻¹³ The next common type of stoke was the Hemorrhagic type (28.2%). This rate is nearly similar to the figures from neighboring Arabic countries (Bahrain, Saudi Arabia, and Libya) and is higher than 12.6% that was reported from Hungaria and the 11.2% from Spain.⁹⁻¹⁵ This high percentage in our study compared to Hungaria and Spain may be explained by the finding of a higher percentage of patients having associated hypertension (67%) compared to lower figures reported elsewhere.¹⁶⁻¹⁸ QAT chewing may play a role in etiology of hypertension among Yemeni patients, as 43.4% of patients with stroke are QAT consumers.

The second main associated factor in our study was heart disease reported in 42.1%. This figure is also higher than the ratio of (11% -34.9%) report elsewhere.^{5, 7, 11, 18-21} The types of heart diseases are further analyses to ischemic heart diseases (30.30%), a trial fibrillation (4.63%), and rheumatic heart diseases (3.96%).

The rate of DM (24.4%) in Yemen is lower than reports from Saudi Arabia 52% and Jordon 44%.²² This low figure may be due to the lack of awareness of DM or because QAT chewing suppress appetite as obesity ratio is also low among Yemeni population.⁴

Hyperlipidemia was reported in 13.9%; contrasting the much higher ratio from Saudi Arabia 35%, Bahrain 67% and Jordan 33%.^{4, 6-8}

Regarding the outcome, the case fatality rate for stroke was 24.1 %. Which is a higher rate when compared to similar studies reported elsewhere.^{7,23, 24}

The case fatality rate from hemorrhagic stroke was even higher than that of ischemic stroke (28.8%) versus (19.7%); a finding similar to reports from other Arab countries.^{22,24}

Conclusion

This is the first study concerning strokes in Yemeni population highlighting the younger age sustained strokes when compared to other countries, with a predominance of ischemic over hemorrhagic type. Hypertension is the most common associated factor observed and it was more common in the hemorrhagic type. The ratio of associated diabetes and hyperlipidemia is low compared to other countries. Whether this is related to QAT chewing or not, it needs to be further studied.

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