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Cerebrovascular Accidents and In-Hospital Outcomes: Across Sectional Study of the In-Hospital Mortality and Associated Risk Factors Among Patients Admitted for Cerebrovascular Accidents in a Teaching Hospital in Basra

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Abstract

Patients with cerebrovascular accidents face a glooming outcome. Globally there have been some improvements in the management of such patients. Whether this is true to Iraqi patients (as a representative of low-income countries) or not is a matter of debate. Our study tries to measure the overall incidence of mortality and prevalence of associated risk factors in this population to shed a light on possible efforts to improve the health care management. Method: this is a prospective single centre cross sectional study done in Al-Fayhaa teaching hospital from January 2019 to March 2020. Patients with an initial diagnosis of Cerebrovascular accidents were carefully collected and looked out for measuring in hospital mortality and any known associated risk factors identified from previous studies. Results: the sample was composed of 100 patients in the study period. Overall mortality was an alarming of 15%. On a multilogistic regression analysis, mortality was higher in patients who are older, with intracerebral haemorrhage and in patients with Ischemic heart disease.

Keywords: Cerebrovascular accidents; CVA; Intracerebral hemorrhage; ICH; Ischemic heart disease; IHD; Mortality; Inhospital mortality

Introduction

The incidence of atherosclerotic cardiovascular disease has increased steadily during the last 3 decades [1,2]. Cerebrovascular accidents come on the top list of bothersome complications of that disease. Interestingly, the burden came harder on low- and middle-income countries such as Iraq in the same period. With an estimated increase in incidence, mortality, and disabilities from ischemic stroke in the same period. This alarming revelation prompts efforts to try to hurdle down the process or look for possible modifiable risk factors that can be targeted to improve stats for this disease [3].

This study aims to look for the incidence of mortality and associated prevalence of risk factors in patients admitted for ischemic stroke in a teaching hospital in Basra-Iraq given a sample point of time measurement.

Method

This is a prospective cross-sectional study done at Al-Fayhaa teaching hospital [4]. All patients admitted with an initial diagnosis of CerebroVascular Accident (CVA) were prospectively collected and analysed between January 2019 and March 2020. The diagnosis was made using a clinical examination and Computed Topography (CT), additional evaluation was done if necessary, according to guidelines. The hospital institutional ethics committee approved the study before collecting data. All data were collected by the authors in a systematic form. Data were transformed to IBM SPSS statistics m 23 for analysis. All continuous variables were tested for normality. Normally distributed variables were presented with mean and standard deviation. Otherwise, continuous variables were presented with median and interquartile if

necessary. All categorical variables were presented with number and percentage. A p. value of 0.05 were set to be significant given the appropriate statistical test.

Results

Study sample included 100 patients. Data collection began from January 2019 and were stopped amid March 2020 at the beginning of COVID-19 in Iraq. Which was supposed to affect sample properties at that time [4–7]. Of the 100 patients included the incidence of IS vs ICH was 84% vs 14%. In hospital mortality was 6 times more frequent for ICH vs IS (81.25% vs 13.09%). Patient initial data are documented in table 1 below.

Table 1: Patient Initial data.

Variable		Died	Discharged	Overall	P. value
		Mean (SD) Count (%)	Mean (SD) Count (%)	Mean (SD) Count (%)	
Number		24 (24)	76 (76)	100	Nil
Age (years)		78.38 (13.44)	65.13 (13.19)	68.31 (14.36)	Nonsignificant
Gender (Male)		11 (45.83)	41 (53.95)	52 (52)	Nonsignificant
HTN		23 (95.83)	66 (86.84)	89 (89)	Nonsignificant
DM		17 (70.83)	56 (73.68)	73 (73)	Nonsignificant
Smoking		5 (20.83)	17 (22.37)	22 (22)	Nonsignificant
Hx of Stroke/TIA		10 (41.67)	34 (44.74)	44 (44)	Nonsignificant
dyslipidemia		6 (25.00)	34 (44.74)	40 (40)	Significant
obesity		7 (29.17)	18 (23.68)	25 (25)	Nonsignificant
alcohol		0 (0.00)	2 (2.63)	2 (2)	Nonsignificant
IHD		10 (41.67)	25 (32.89)	35 (35)	Nonsignificant
Valvular HD		0 (0.00)	1 (1.32)	1 (1)	Nonsignificant
Atrial Fibrillation		4 (16.67)	14 (18.42)	18 (18)	Nonsignificant
HF		0 (0.00)	2 (2.63)	2 (2)	Nonsignificant
CTD		0 (0.00)	0 (0.00)	0 (0)	Nonsignificant
Living (Rural)		10 (45.45)	27 (36.00)	37 (38)	Nonsignificant
Stroke Type	Ischemic	11 (13.09)	73 (86.90)	84 (84)	Significant
	Hemorrhagic	13 (81.25)	3 (18.75)	16 (16)	

Table 2: Univariate regression analysis.

	B	Sig.	Exp (B)	95% C.I. for EXP(B)		log (Odds)	95% C.I. for log (Odds)	
				Lower	Upper		Lower	Upper
Age	0.144	0	1.155	1.071	1.247	0.062712	0.029726	0.095698
IHD	1.314	0.048	3.719	1.054	17.101	0.570483	0.022841	1.23301
Stroke type (hemorrhagic)	6.206	0	495.835	25.051	9814.261	2.695337	1.398817	3.991858
Constant	-13.397	0	0					

Univariate regression analysis was done to estimate the risk of in-hospital mortality (Table 2). A higher risk of in-hospital mortality was shown in higher age group, patients with a history of IHD, and an initial diagnosis of ICH. These significant variables were further studied in a multi-logistic regression analysis, in the analysis only Age and ICH were independently significantly associated with increased mortality in this study group. We further analysed the mortality to only patients with IS. Multilogistic regression analysis revealed that Age, a history of IHD and dyslipidaemia were independently associated with increase mortality in this group.

Discussion

Several studies have been done to estimate the mortality risks in patients with stroke, but none have been published in Iraq as far as we know [1,2,8–14]. Scares date are also available for Arabic countries as well. several registries in developed countries identified an overall in- hospital mortality risk of around (2-5%) from ischemic stroke, our cohort sample mortality is way higher with 13% reported in-hospital mortality [10–12]. This difference may stem from lack of systematic response to stroke signs and symptoms by the emergency team and limited use of fibrinolytic and thrombectomy (non in our cohort) in our current practice. The use of such techniques has proven beneficial in several trials and it could be a major improvement in our current practice to help ischemic stroke patients. On the other hand, these interventions need a dedicated team available 24 hours a day and a rapid response effort starting from the patients or caregivers as well.

The difference in risk factors could also be a potential target to improve medical care in a drastically affected population even in high income countries. In our study the only risk factors that were associated with increased mortality were age and a history of IHD. This contrast with other studies from European or American population were risk factors included in addition to that, DM, dyslipidaemia, Atrial Fibrillation, among others. Data from nearby populations also has the same distribution of risk factors to western studies. The difference should be documented with a larger study and if proven right, measures to change policies of the health care system should be in place.

Limitation

The biggest limitation of our study is sample size as it was lower than the expected. We stopped recruiting because of COVID-19 pandemic which affected our hospital admission policy and due to the fear of COVID effect on stroke risk factors then, which was found to be totally true in latest research. Another potential limitation is that data were collected from a single centre only. We intend to extend the recruitment with more centres in the future after the COVID pandemic resolution. Thus far our analysis was limited by site and number, but they shed a window of opportunity for improving health system care and better direct resources in a limited restrains of the MOH budget if any.

Ethics approval and consent to participate

The study was approved by the Institutional Review Board of college of medicine-university of Basra and the institutional board of Basra health directorate. An informed written consent was obtained from all patients upon arrival or from their relatives when necessary.

Availability of data and materials

The datasets supporting the conclusions of the study are included in the article. Any additional data will be available on request.

Competing interests

The authors declare that they have no competing interests.

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Authors contributions

All authors contributed toward data analysis, drafting, and revising the paper and agree to be accountable for all aspects of the work.

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