

RESEARCH ARTICLE

RISK FACTORS OF THE CEREBROVASCULAR DISEASES AMONG COVID-19 PATIENTS THAT EXPERIENCED CEREBROVASCULAR ACCIDENT IN THE RANYAH CITY

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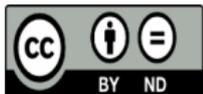
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ABSTRACT

It is an observational cross-sectional study, the data collected by convenience sampling method from 44 infected case in Ranya general hospital and private clinics for admission from neurological department and physiotherapy private centers after cases had right or left side weakness by side effect covid19 , from 10. January. 2021 to 01. august.2021, the study include all the participants diagnosed by covid19 and had side effect neurological disease post pandemic covid19. For the study materials the data was collected by face to face questionnaire from that include sociodemographic data, and questions about covid 19 and cerebrovascular accident, the data were analyzed by SPSS software to produce, in the result about the patient's gender, most of them were male and for the patients BMI classification, majority of them were classified as an overweight, and cardiovascular diseases risk factors as follow; majority of them had diabetes mellitus (72.2%), and blood pressure and high cholesterol atrial fibrillation and history of heart diseases had high role to occurrence neurological disease with covid19 or post covid19 . And hospitalized during COVID-19 disease, with high intensity sing and symptom increase risks for cerebrovascular accidents, type of ischemic stroke.

Keywords: covid19, cerebrovascular accident, risk factors.



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INTRODUCTION

A newly discovered coronavirus causes coronavirus disease (COVID-19). Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people have a medical problem in cardiovascular disease, and chronic disease (diabetic) and respiratory disease develop. An excellent way to prevent and provide to transmit the COVID-19 virus, the disease it causes, and how it spreads. Protect them and others from infection by washing the hands or using an alcohol-based rub frequently and not touching the face. Coronavirus 19 spread primarily through droplets of saliva discharge to the nose; when affected to the person have a cough or runny nose, it is essential that there also practice respiratory etiquette (for example, by coughing into a flexed elbow) (WHO,2021)

Coronavirus disease 2019, caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection, has become a global human pandemic that is believed to have begun in late December 2019. The disease quickly spread to 217 countries, infected more than 82 million individuals, and has caused more than 1.8 million deaths as of December,30, 2020 (COVID-19 coronavirus pandemic), The second wave of this pandemic remains in varied perennial countries (Fan G, Yang Z, Lin Q, et al. 2020). Numerous treatment strategies and drugs have been proposed (Frediansyah A, Nainu F, Dhama K, et al. 2020), Through the word health organization also has not yet announced a definitive therapy or treatment for COVID-19 (WHO: Solidarity clinical trial for COVID-19 treatments. 2020)

Coronavirus 19 may increase the risk of ischemic stroke (Merkler AE, Parikh NS, Mir S, Gupta A, Kamel H et al . 2020). the far distance future research indicates that COVID-19 may increase the risk of having thrombotic vascular event .thrombosis meets with a blood clot forms an A stroke is discovered when it destroys blood flow to the brain. The brain cell can not get the oxygen and nutrients required from the blood and dies within a few minutes. This can cause lasting brain damage, occurring over disability or death. It has been recognized that human coronavirus can reach the central nervous system and be associated with neurological symptoms and blocks blood vessels, such as arteries or veins (Desforges M, Le Coupanec A, Dubeau P, Bourgouin A, et al. Viruses. 2019). The ongoing pandemic caused by coronavirus disease (COVID-19) has been associated with high morbidity and mortality. Moreover, COVID-19 has been associated with a hyper coagulate state causing cardiovascular and neurological complications (Zhang L, Yan X, Fan Q, Liu H, et al. 2020).

The presence of stroke is currently being observed in young (under 50 years of age) who are under 50 and without cardiovascular risk factors. Oxley and colleagues recently described a case series of large-vessel strokes as an initial presentation in COVID-19 patients younger than 50 years old (Gunasekaran et al., 2020), Inflammation has been increasingly recognized as a critical contributor to the pathophysiology of CVD and is involved in acute intravascular events caused by disruption of the blood supply (Iadecola and Anrather, 2011). Ischemic stroke can cause blood clots that block a blood vessel in the brain. It is the most common type; about 80% of strokes are ischemic. Hemorrhage stroke is caused by breaking down blood vessels and bleeding in the brain. Additionally, a condition similar to a stroke transitory ischemic attack is sometimes called a "mini-stroke." transient ischemic attack happens when the blood supply to the brain is blocked for a short time. The damage to the brain cells is not permanent, but you are more at danger of stroke. Certain factors can raise the risk of a stroke. The significant risk factors include increased blood pressure is the first risk factor of stroke and diabetes mellitus, heart problem, the same heart disease caused on blood vessels, leads to stroke. While smoking. When you smoke, the damaged blood vessels and raise blood pressure and family history of stroke or transient ischemic attack, age he risk of stroke increases with gets elder and race and ethnicity, especially African Americans, have a higher risk of stroke. Numbness of the face, arm, and leg, especially one side. Confusion, speaking problems, or understanding speech, sudden problems show in one or both eyes, difficulty walking, dizziness, and loss of balance or coordination, severe headache with no known causes is the symptoms of stroke.

Treatments for stroke include medicines, surgery, and rehabilitation. Treatments they get depending on the type of stroke and the stage of treatment. The different stages are , Acute treatment, to stop a stroke while it is happening and Post-stroke rehabilitation, to against the disabilities. While Prevention, prevent the first stroke or prevent another stroke if they have already had one. If you have had a stroke or risk of a stroke, you can make some heart-healthy lifestyle changes to try to prevent and provide a future stroke: Eating a healthy diet and aiming for a healthy weight as well us remove a stress while getting regular physical activity, stop smoking, managing your blood pressure and cholesterol levels.

Aims of the study:

1. To find out relationship between the sociodemographic characteristics the sample of the study and covid19.
2. To find relationship between increase risk factors to Cerebrovascular diseases with COVID-19 of the study sample.

METHOD

-Design of the Study

A cross-sectional, Descriptive study conducted among 44 infected patients with covid19 was the sample was collected from 10. January. 2021 to 01. august.2021 to assess the risk factors of cerebrovascular accident post covid19.

The data of the study, collected by utilizing constructed questionnaire form, which composed of the two parts, first part included questions about sociodemographic characteristics of the study sample, while second part consist of two sections; first section included questions about the signs and symptoms of covid 19 disease and the second part included questions about the risk factors to cerebrovascular accident and types of stroke.

Validity of the study tool, was done by 10 experts in different universities to knowing the need of some manipulation of questions.

Pilot study was done among 8 patients with covid19 which included from the study sample to identify the clarify of the questions, estimated time, barriers of data collection, And to find out reliability of the study tool which 82.

Data collection, were collected in Ranya city among 44 patients by used interview technique (face to face approach).

Statistical analysis

Data analysis, by using by SPSS.20 software program to produce descriptive analysis such as (percentage and frequency).

RESULTS

For the current study data were collected from 44 patients that suffered from COVID-19 complications. The age of the participant were ranged from 51 to 89 years old with Mean and Standard Deviation (SD) (74.18 ± 9.24) and the majority of the them their age were higher than 70 years old comparing to those their age were less than 70 years old. Table 1.

About the patient’s gender, most of them were male 31 (70.5%) comparing to female 12 (27.3%) patients and for the patients BMI classification, majority of them were classified as an overweight person 31 (70.5%) and 9 (20.5%) were normal while only 2 (4.5%) were obese. Table 1.

The figure 1 show the frequency of the cardiovascular diseases risk factors as follow; majority of them had diabetes mellitus 32 (72.2%), blood pressure 30 (68.2%) and high cholesterol 30 (68.2%) respectively while minority of them had atrial fibrillation and history of heart diseases.

All the patients 43 (97.7%) were hospitalized during their COVID-19 disease period excepted one (1 (2.3%)), were two days stay in the hospital were minimum and 13 days were maximum with Mean and Standard deviation (6.26 ± 2.75). Furthermore, for the patient’s symptoms during diseases period, majority of them had moderate 22 (50%) and sever 21 (47.7%) symptoms respectively also most of them 38 (86.4%) experienced low SPO2 (less than 90%). Finally, almost all of the current study participates had Ischemic stroke 41 (93.2%) comparing to the Hemorrhagic stroke 3 (6.8%). Table 2.

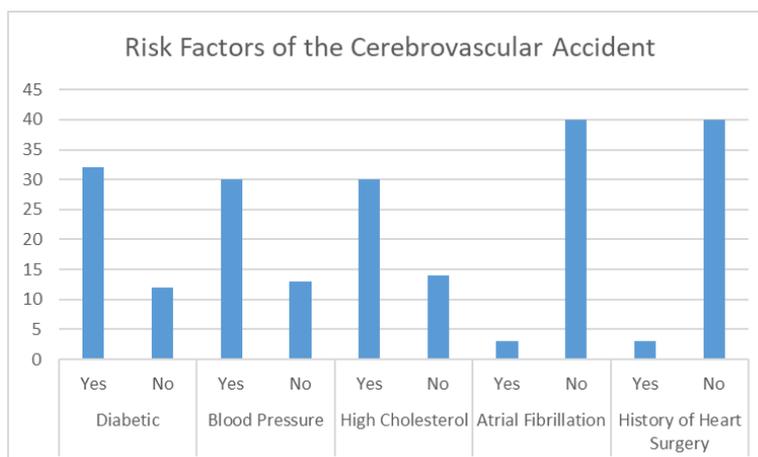


Figure 1:frequency of the Cerebrovascular accident risk factors

Table 1. Frequency and percentage of the demographic characteristics

Variables	Groups	Frequency	Percentage
Age groups			
Less than 70		14	31.8
70-80		15	34.1
More than 80		15	34.1
Gender			
Male		31	70.5
Female		12	27.3
Missing		1	2.3
BMI Classification			
Normal		9	20.5
Overweight		31	70.5
Obese		2	4.5
Missing		2	4.5

Table 2. Frequency and percentage of the patients were hospitalized

Variables	Groups	Frequency	Percentage
Hospitalized for COVID-19			
Yes		43	97.7
No		1	2.3
How many days stayed in the hospitalized?			
Mean \pm SD		6.26 \pm 2.750	
Minimum		2	
Maximum		13	
Symptoms during COVID-19			
Mild		0	0
Moderate		22	50
Sever		21	47.7
Missing		1	2.3
SPO₂ during COVID-19 less than 90%			
Yes		38	86.4
No		6	13.6
Types of stroke			
Ischemic Stroke		41	93.2
Hemorrhagic Stroke		3	6.8

DISCUSSION

This cross-sectional study to find relationship between covid19 and cerebrovascular accident, according to Table 1: most of the cases are higher than 70 years old (30 cases), while less than 70 years old are 14 cases. To compare another article, the reaserchs Dr Hans Henri P. Kluge, in Copenhagen, at 2020 was found that age groups are at risk of becoming infected COVID-19, older people increase risk of becoming infected many illnesses during increase age and physiological changes that come with change age and potential underlying health problems.

And agree with world health organization was declared at 2021 the are found, geriatrics, and those with underlying medical conditions like cancer, diabetes, chronic respiratory disease,

cardiovascular disease and are more likely to develop critical illness.

Furthermore, agree with the researcher (Altable, M. and de la Serna, J., 2021) the are found that Cerebrovascular diseases are more common in geriatrics with cerebrovascular accident risk factors, such as hypertension and diabetes mellitus.

About the patient's gender, mostly are male (31 cases) (70.5%) comparing to female (12 cases) (27.3%) patients, while to compare to Babak B. Navi, article at June 18, 2020 found that male more effected by covid19 rather than female, were are (57%) were men.

And according to patients BMI classification, most of them were classified as an overweight person 31 (70.5%) and only 2 (4.5%) were obese, while 9 cases (20.5%) were normal. While another researchers (Lyudmyla k. , Alyson B.) at march to December 2020 was found that Obesity is a

increase risk factor for increase intensity sign and symptoms of COVID-19.

In our research we are found that some risk factors during COVID19 pandemic disease increase risk become cerebrovascular accident like majority of them diabetes mellitus(72.2%), and follow by blood pressure and high cholesterol, while small number of the cases had atrial fibrillation. Further more another researchers published in pan Africa medical journal at 2020 was found that some of the chronic disease like Hypertension, dyslipidemia ,diabetic and coronary heart disease with patient COVID19 increase risk for stroke, was the most common (hypertension patients (30%)), diabetic patients (19%); and coronary heart disease (8%). And the are found ischemic stroke was recognized find as a serious complication after COVID-19. probably related to the sepsis, inflammation, and hypercoagulability with COVID-19, which probably predispose to stroke.

According to hospitalization, nearly all patients (97.7%) were hospitalized during their COVID-19 disease period, admission in the hospital were minimum 2 days and 13 days were maximum. While another study at 2021 Presented at the International Stroke Conference (Seattle, WA, USA) by Saate Shakil was noted that during the hospitalized with COVID-19, increase the risk of ischemic stroke is among patients start of the pandemic COVID-19. Furthermore, this study found that mostly type of stroke are occur ischemic stroke among hospitalized patients with COVID-19.

CONCLUSIONS

Current study concluded that some risk factors like diabetes mellitus and increase blood pressure and high cholesterol, heart disease and atrial fibrillation and hospitalized patients during covid19 increase risk for cerebrovascular accident during or post COVIAD19, most of them was diagnosed by ischemic stroke during covid19.

I recommend for another researcher take a large populations and record a treatment during covid19 and record daily activity during hospitalization.

ETHICAL CONSIDERATIONS COMPLIANCE WITH ETHICAL GUIDELINES

The protocol of the study was accepted by the council of the College of Nursing / University of Raparin.

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AUTHOR'S CONTRIBUTIONS

Study concept; Writing the original draft; Data collection; Data analysis and Reviewing the final edition by all authors.

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REFERENCES

Desforges M, Le Coupanec A, Dubeau P, Bourgooin A, Lajoie L, Dubé M, et al. Human coronaviruses and other respiratory viruses: underestimated opportunistic pathogens of the central nervous system? *Viruses*. 2019;12(1):14.

Worldometers: COVID-19 coronavirus pandemic.[cited 2020 November 14]

Fan G, Yang Z, Lin Q, et al. : Decreased Case Fatality Rate of COVID-19 in the Second Wave: A study in 53 countries or regions. *Transbound Emerg Dis*. 2020. 10.1111/tbed.13819.

Frediansyah A, Nainu F, Dhama K, et al. : Remdesivir and its antiviral activity against COVID-19: A systematic review. *Clin Epidemiol Glob Health*. 2021;9:123–127. 10.1016/j.cegh.2020.07.011.

WHO: Solidarity clinical trial for COVID-19 treatments. 2020.

Zhang L, Yan X, Fan Q, Liu H, Liu X, Liu Z, et al. D-dimer levels on admission to predict in-hospital mortality in patients with Covid-19. *J Thromb Haemost*. 2020.

K. Gunasekaran, K. Amoah, V. Rajasurya, M.G. Buscher Stroke in a young COVID -19 patient 2020.

C. Iadecola, J. Anrather The immunology of stroke: From mechanisms to translation *Nat. Med.*, 17 (2011), pp. 796-808.

(Statement – Older people are at highest risk from COVID-19, but all must act to prevent community spread 2 April 2020, Copenhagen, Denmark, Dr Hans Henri P. Kluge, WHO Regional Director for Europe).

(WHO, 2021, Who.int. 2021. Coronavirus. [online] Available at: <<https://www.who.int/health->

topics/coronavirus#tab=tab_1> [Accessed 3 September 2021].

(Altable, M. and de la Serna, J., 2021. Cerebrovascular disease in COVID-19: Is there a higher risk of stroke?.)

(Accepted for Publication: June 18, 2020. Corresponding Author: Babak B. Navi, MD, MS, Department of Neurology, Weill Cornell Medicine, 420 E 70th St, Room 411, New York, NY 10021 (ban9003@med.cornell.edu). Published Online: July 2, 2020. doi:10.1001/jamaneurol.2020.2730

Lyudmyla Kompaniyets, Alyson B Goodman, Brook Belay, David S Freedman, Marissa S Sucosky, Samantha J Lange, Adi V Gundlapalli, Tegan K Boehmer, Heidi M Blanck, March-December 2020.

Pan Africa Medical Journal. 2020;35(2):65 DOI: 10.11604/pamj.supp.2020.35.2.23751 Received: 26 May 2020 - Accepted: 27 May 2020 - Published: 05 Jun 2020 Domain: Neurology (general),Vascular Neurology.

Stroke among patients hospitalized with COVID-19 in the US: Findings from the AHA COVID-19 CVD Registry Presented at the International Stroke Conference 2021 by Saate Shakil (Seattle, WA, USA).