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Research Article

CEREBRAL INFARCTION AND ITS RISK FACTORS: A CASE STUDY DONE IN A TERTIARY CARE HOSPITAL

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Abstract:

***Objective:** The focus of our study is to put light on the aspects of the necrotic area that causes morbidity and mortality in the CVA patients, that may result in blocking the blood supply by pressure effect and causing anoxia and deterioration of the disease.*

***Methodology:** It is a descriptive type of cross sectional study. And it was carried out in Services hospital, Lahore, from April 2018 to March 2019. The presence of the necrotic tissue was proved by CT scan brain plain in 98 patients of brain insult. The history about cigarette smoking, ischemic heart disease and hypertension was taken, as these are dangerous risk factors that may end up causing serious brain injury.*

***Results:** The results of our study collected from the 98 patients that were enrolled in the study show that every patient who got brain insult has two or more dangerous risk factors that resulted in the blockage of the arteries in the cerebrum. The most frequently encountered risk factor is hypertension with prevalence in more than 50% of the cases. The results of our study show that in all the patients who presented to us with hemiplegia were found to have more than two risk factors that resulted in blockage of the cerebral arteries causing brain injury. More than 30% of the patients were found to be smokers. The percentage of the males were quite higher as compared to the females and the prevalence of the smoking as risk factor was found higher in males as compared their counterparts.*

***Conclusions:** It is concluded from the results of our study that area of necrotic tissue that resulted due to anoxia is the cause of brain damage in more than 85% and is responsible for morbidity and mortality in patients with CVA.*

. The cerebrovascular accident impairs the quality of life and is the cause of bringing the misery to ones life besides physical disabilities and financial burden to the patient himself and the family. Some of the risk factors are controllable and proper education to the society must be given to put a check on the increasing number of the cases.

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INTRODUCTION:

The type of brain injury characterized by blockage of the blood supply and resulting in anoxia to the brain tissue and formation of the necrotic area, lasting for more than 24 hours. Loss or the altered level of consciousness is the one of the most frequent presenting complaint besides hemiplegia. The brain injury is the second leading cause of the death in the world resulting in one hundred and 10 thousand deaths per year. [1] And more than half of this figure suffer from lifelong disabilities. [2] There are some risk factors that are more frequently found in patients suffering from the disease. Some of them are modifiable and others are non-modifiable like race, family background, society and civilization. The risk factors that are modifiable are smoking, high fat and high glycemic index foods, diabetes, ischemic heart disease and hypertension. [3] The focus of this study is to highlight the dangerous aspects of the disease and the risk factors which are modifiable with proper treatment and rising awareness in the society. There are various presentations of the CVA, some of the patients show hemiplegia, monoplegia, quadriplegia, loss of vision or hearing and gait disturbances. The difference in the clinical presentations is due to involvement of different blood vessels that supply the specific areas of the brain. If the whole of the anterior, middle or posterior cerebral arteries are involved, there may be complex clinical presentations.

MATERIALS AND METHODS:

This study was carried out in the Services Hospital, Lahore from April 2018 to March 2019. It is a descriptive type of cross-sectional study. The patients aging 20-75 years were enrolled in our study. 94% of the patients enrolled were presented through the emergency department of the Services Hospital, Lahore and the remaining 6% were from the other departments.

It was made sure that

1. All of the patients had the first episode of cerebrovascular accident and they were transferred to the hospital within 24 hours of the accident.
2. The person being enrolled from both the genders aged more than 20 years.
3. The computed tomography brain plain scan used in order to confirm the diagnosis of cerebrovascular accident. And differentiate between CVA hemorrhage and CVA infarction.

Exclusion criteria:

The patients who needed intensive care services and those who cannot be shifted from one department to the other easily due to their serious condition. The patients who were found to have disease other than CVA infarction on CT scan brain plain.

The patients enrolled underwent all baseline investigations, B.P monitoring for 3 days, echo cardiography, ECG, X rays chest, CT scan brain plain and serum profile.

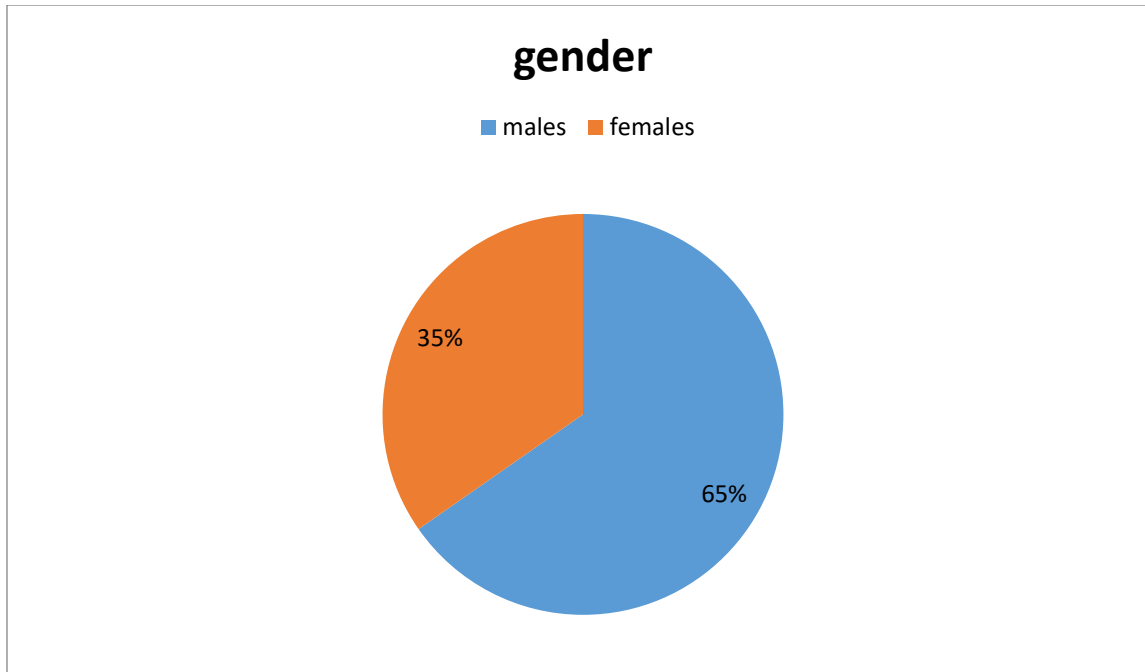
There are a number of definitions of the stroke according to their origins. Stroke is an organic disorder of the brain parenchyma characterized by sudden blockage of the blood supply due to thrombo-embolic phenomena or progressive occlusion of the blood vessels due to arterosclerosis resulting in anoxia of some part of the brain and weakness, paralysis or other organic manifestations of brain injury.

The CT scan brain plain used for confirmation of the disease. It differentiates infarction from the hemorrhage on the basis of density of the tissues and blood. There are a number of factors that may end up in causing CVA, the most important one found is hypertension and smoking being the second most important.

The patients who presented with the disease were found to have 160/100 mm Hg blood pressure or above as per the history, before the occurrence of the disease. Diabetes and dyslipidemia were also found as risk factors in these patients. The cholesterol and lipid profile was done of these patients. The patients having Q waves in the ECG were sent to Cardiology department for echocardiography and history regarding chest pain, excessive sweating and faintness etc to rule out myocardial infarction.

RESULTS:

In our study, 98 patients having necrotic tissue in the brain were documented, the cases were aged 21 years to 75 years. The mean age of males was 54.4 years and that of females was 53.7 years. The most of the cases who suffered from the disease were more than 60 years of age, in both the genders.



Most of the patients enrolled have two or more risk factors as mentioned in Table-I.

Number of risk factors	Number of patients
One	18
Two	22
Three	36
Four	16
Five	6

The most frequent of the risk factors was hypertension followed by smoking. Hypertension was recorded as main culprit in more than fifty % of patients. Thirty five percent cases were smokers and they had history of more than 15 pack years. Twenty seven percent of cases were suffering from diabetes.

Risk factors	Number of patients
Hypertension	50.5%
Smoking	34.7%
Diabetes	27.1%
Hyperlipidemia	31%
Ischemic heart disease	14%
Stroke history	12%
A.fibrillation	19%

DISCUSSION:

The risk of the brain injury increases with the increase in the age of the patient[4] and mean age in both the genders is 54.1 years.

In a study conducted by Sacco RL reports that the mean age in the patients of CVA is seventy years that is much higher than our study [5]. A study done by Akher shows the average age of fifty three years, the result of this study is in line with results of our study [6]. The lack of education, ignorance towards the health and showing no concern towards the dangerous risk factors are the root cause of cerebrovascular accidents in Pakistan. The most highly prevalent age for this disease is 60 years and above for both genders. Al-Rajeh, in a study, shows that the same age is more prone to suffer from the disorder [7].

Hypertension being the most common etiological agent in our study. In our study, more than fifty percent of patients suffered from hypertension as well as reported by Ali-L [8] and Al-Rajeh[7]. With the proper control of high blood pressure, thirty eight percent of The cerebrovascular accidents can be prevented. [13]. Diabetes mellitus is another etiological factor of the CVA after hypertension[14]. This study of ours shows that 27% of the patients who suffered from CVA had diabetes as a risk factor along with other factors. The figures are much higher than that of discovered in a study done by Qureshi. In different studies, various percentages were reported for diabetes [16]. Smoking is also an important etiological agent. This risk related to it depends on the quantity and the duration of the smoking cigarettes [17]. Various risk factors are found in varying percentages in different patients as described in the table above.

The results of our study are comparable to that of AL-RAJEH, that showed almost the same percentage as ours i.e (Thirty three percent) suffered from IHD. But in his study the patients having structural heart diseases i.e mitral stenosis etc were also included. In this study, twenty three percent of the cases were found to have progressive narrowing of the carotid arteries leading to hypoxic injury to the brain.

Chang YJ showed almost the same results [24]. The extra Physical activity or work being carried out with hand at work place increases the risk for brain injury in patients having co-morbidities[25]. On the other hand, the less active people who are fat as well fell victim to the disease.

Thirteen percent of cases have the positive family history for the brain injury and this value is a little bit higher in comparison with the other studies conducted in the same field [26].

CONCLUSION:

Almost eighty five percent patients suffering from brain injury result in the cerebral malfunctioning. It is quite a common disease these days. Proper education and awareness must be given to the public regarding the risk factors and prevention of the disease by modifying the life style and other factors responsible.

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