

Study To Assess the Prevalence of Cerebrovascular Accidents Using CT Scan: An Institutional Based Study

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ABSTRACT

Background: Cerebrovascular accidents are one of the leading causes of death after heart disease and cancer in the developed countries and one of the leading causes of death in India. The exact prevalence rate of this disease in the Indian population is not known, although it accounts for about one percent of admissions to general hospital. The present study was conducted to assess prevalence of cerebrovascular accidents using CT Scan.

Materials and Methods: The present study was carried out to assess prevalence of cerebrovascular accidents using CT Scan. 180 patients included in the study. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

Results: In the present study out of 180 patients clinically suspected of CVA submitted for CT scan study of brain 72.22% patients were males and 27.77% patients were females. Patients in the age group 20-30 yrs consisted of 10% of cases, 31- 40yrs age group consisted 13.88% cases, 41-50yrs age group consisted 17.77% patients, above 50 yrs age group consisted 58.33% patients. 65.55% patients had infarction, 23.33% patients had hemorrhage, 6.66% patients had cerebral

venous thrombosis (CVT), 1.66% patient had subarachnoid hemorrhage (SAH), 2.77% patient had normal scan.

Conclusion: The present study concluded that CVA were prevalent in males than females and prevalent in the age above 50 yrs. Maximum cases were of infarction followed by hemorrhage.

Keywords: CVA, Infarction, Hemorrhage, Strokes.


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INTRODUCTION

As per definition, Cerebrovascular accident or stroke is defined as an acute loss of focal and at times global (applied to patients in deep coma and those with subarachnoid haemorrhage) cerebral function, the symptoms lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin (WHO).¹ The incidence rate and death rate from stroke increases dramatically with age. About 15 to 30% of patients die with each episode of cerebral infarction and 16 to 80% with cerebral hemorrhage. Those who survive are usually left with permanent disability.¹

The four major types of stroke are cerebral infarction, intracerebral hemorrhage, primary subarachnoid hemorrhage and venous occlusion. Normal cerebral blood flow is in the range of 50 to 55 mL/100g brain tissue/min. A severe perfusion deficit with cerebral blood flow values below 10 mL/100g/ min may lead to infarction within a matter of minutes, whereas more moderate levels of

ischemia (10 to 20 mL/100g/min) may be reversible for a period of hours after the start of the ischemic insult.² Cerebrovascular accidents are major cause of mobility and mortality and clinically it is difficult to differentiate the types of stroke i. e, ischemic or haemorrhagic, in majority of cases as there are no specific differentiating feature.³

Accurate and early diagnosis may improve the mortality and morbidity. Computed tomography is one of the most accurate methods available for identifying and localizing an infarct with brain.⁴ Ischemic infarction and haemorrhagic infarction are well differentiated by CT.^{5,6} CT helps to compare patterns of abnormalities viewed with clinical profiles and pathologic anatomic findings at necropsy.⁷ It has proven to be of significant potential prognostic value in the evaluation of the acute stroke patient.⁸ The present study was conducted to assess prevalence of cerebrovascular accidents using CT Scan.

MATERIALS AND METHODS

The present study was carried out to assess prevalence of cerebrovascular accidents using CT Scan at Department of Radio Diagnosis, Rama Medical College Hospital & Research Centre, Pilkhuwa, Hapur, Uttar Pradesh, India. Before the commencement of the study ethical approval was taken from the Ethical Committee of the institute and written consent was taken from the patient after explaining the study. All patients with clinical diagnosis of acute stroke aged above 18 years were included in the study. Patients with neurological defects due to obvious cause other than vascular, such as hypoglycaemia, diabetic ketoacidosis and traumatic cause were excluded from the study. 180 patients included in the study. Scans are taken parallel to the floor of the anterior fossa, the lowest section through the external auditory meatus and continuing to the top of the head. The gantry is angled towards the feet. Slice thickness of 4mm was used for scanning posterior fossa, 7mm for remainder of the head and wherever necessary still thinner sections were taken. Routine IV contrast was carried out by using 40 ml of 76% iodinated contrast agent (calculated as 300 mg iodine per kg body weight) in all the cases of stroke except in intracerebral hemorrhage of non-traumatic origin. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

Table 1: Distribution of cases CVA according to gender

Gender	N (%)
Male	130 (72.22%)
Female	50 (27.77%)
Total	180 (100%)

Table 2: Distribution of cases CVA according to age

Age group(yrs)	N (%)
20-30	18 (10%)
31-40	25 (13.88%)
41-50	32 (17.77%)
Above 50	105 (58.33%)
Total	180 (100%)

Table 3: Distribution of patients with clinically suspected CVA

CT findings	N (%)
Infarcts	118 (65.55%)
Haemorrhage	42 (23.33%)
SAH	3 (1.66%)
CVT	12 (6.66%)
Normal	5 (2.77%)
Total	180 (100%)

RESULTS

In the present study out of 180 patients clinically suspected of CVA submitted for CT scan study of brain 72.22% patients were males and 27.77% patients were females. Patients in the age group 20-30 yrs consisted of 10% of cases, 31- 40yrs age group

consisted 13.88% cases, 41-50yrs age group consisted 17.77% patients, above 50 yrs age group consisted 58.33% patients. 65.55% patients had infarction, 23.33% patients had hemorrhage, 6.66% patients had cerebral venous thrombosis (CVT), 1.66% patient had subarachnoid hemorrhage (SAH), 2.77% patient had normal scan.

DISCUSSION

Before the advent of CT scan and in places where CT scan was not available, physicians were mainly dependent on the history, physical findings and the Allen's method of scoring system to differentiate between haemorrhage and infarct using this scoring system. Allen studied 174 cases of acute stroke and was able to make an accurate diagnosis in 90% of cases.⁷ CT is helpful in differentiating the different types of stroke and also helps in early diagnosis of cerebrovascular accidents.^{9,10}

R.H. Rosenwasser et al. (2000) emphasized the need for CT Scanning as a tool in the early diagnosis of cerebrovascular accidents in providing therapy via intra-arterial or intravenous pathway.³

In the present study out of 180 patients clinically suspected of CVA submitted for CT scan study of brain 72.22% patients were males and 27.77% patients were females. Patients in the age group 20-30 yrs consisted of 10% of cases, 31- 40yrs age group consisted 13.88% cases, 41-50yrs age group consisted 17.77% patients, above 50 yrs age group consisted 58.33% patients. 65.55% patients had infarction, 23.33% patients had hemorrhage, 6.66% patients had cerebral venous thrombosis (CVT), 1.66% patient had subarachnoid hemorrhage (SAH), 2.77% patient had normal scan.

Sotaniemi KA et al in their study of 154 cases of stroke found 102 (66.2 %) were due to infarcts, 30 (19.5 %) were due to hemorrhage and 16 (10.4 %) were due to subarachnoid hemorrhage.¹¹

Kumar LT et al (2016) conducted a study among 100 patients of stroke for a period of two years and of them 69% patients had infarct, 21% patients had hemorrhage, 08% patients had CVT, 1% patient had subarachnoid hemorrhage and 1% patients had normal scan.¹²

A retrospective study of medical admissions at the University of Nigeria Teaching Hospital, Enugu reported a male gender preponderance for CVA.¹³

Razzaq AA, et al. (1999) performed a CT study to investigate the role of CT in diagnosis and management of young stroke patients. CT scan findings of 108 stroke patients between 15 and 45 years of age were reviewed retrospectively. About 80% of the patients had infarcts of carotid territory and 20% of the vertebro basilar distribution. More than half of the infarcts were cortical (56%).¹⁴

Gaskill et al. (1999) emphasized that although new imaging techniques have emerged in the diagnosis of cerebrovascular accidents, CT remains the primary imaging test for evaluation of acute stroke. It is fast reliable, readily available and an accurate method of screening patients prior to thrombolytic therapy.⁴

CONCLUSION

The present study concluded that CVA were prevalent in males than females and prevalent in the age above 50 yrs. Maximum cases were of infarction followed by hemorrhage.

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