



ROLE OF COMPUTED TOMOGRAPHY IN DETECTING INFARCT, HAEMORRHAGE AND ARTERIAL TERRITORIES INVOLVED FOR EVALUATION OF CEREBROVASCULAR ACCIDENTS

Dr. Mullangi Sujay

Final Year Postgraduate, Department of Radiodiagnosis, GEMS AND Hospital, Andhra Pradesh, Bharat

Dr. B. R. Nagaraj*

MD(RD),DMRD, Professor and HOD, Department of Radiodiagnosis, GEMS AND Hospital, Andhra Pradesh, Bharat *Corresponding Author

ABSTRACT

75 patients of with the clinical suspicion of having stroke underwent a Computed Tomographic examination of the head. 47 patients with Infarcts constitutes 63.33% patients,19 patients with intracerebral haemorrhage constitute 25%,3 patients WITH CVT constitutes 4% 4 patients with subarachnoid haemorrhage constitutes 5%,1patient with tumor pathology constitutes 1.33%, and 1patient with normal scans constitute 1.33% of the study individuals. Infarction and intracerebral haemorrhage are more common to occur in people between the ages of 60 -69 years. Present study shows male predominance as major contributory factor. HTN&DM played a very major role in the stroke evolution. In 22 individual with history of pre-existing hypertension, 54.54% of them showed internal bleeding and 36.36% of people presented with infarction. 23 diabetic patients had a combined rate of cerebral infarction of 65.21 percent and cerebral haemorrhage of 34.7%. 20% of this group has preexisting cardiac problems. In cases of cerebral infarction, the right middle cerebral artery region was most frequently damaged, accounting for 27.65% of cases.

KEYWORDS :

INTRODUCTION

The computed tomography (CT) has been the first-line of imaging modality for patients who are suspected to have an infarct and haemorrhage. CT has many advantages due to easy accessibility, shorter scanning time, reduced motion artifacts, non invasive.

Cerebrovascular accident(CVA) 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 for more than 24 hours or leading to death with no apparent cause other than that of vascular origin (WHO)1.

After heart disease and cancer, cerebrovascular accidents are among the top causes of death in developed nations, and they are also one of the main causes of death in India. Age has a significant impact on both the frequency of strokes and their mortality rates.To determine whether an infarct or haemorrhage is present or absent.To establish age of the infarct in relation to its clinical symptoms and its size, location, arterial supply implicated.To find other stroke-simulating causes

MATERIALS AND METHODS

A prospective study carried out on 75 patients with history of Cerebrovascular accidents over a period of 6 months referred to Radio diagnosis department, Great Eastern Medical School & Hospital for CT scanning after evaluation of GCS score.

Inclusion Criteria

All patients with the clinical suspicion for CVA

Exclusion Criteria'

1. Patients who had neurological deficits/damage.
2. Some other cause different from vascular etiology like DKA, trauma etc.

Equipment Used

The scan machine which is used was GE16 slice helical CT in suspected CVA patients in tertiary care hospital.

RESULTS

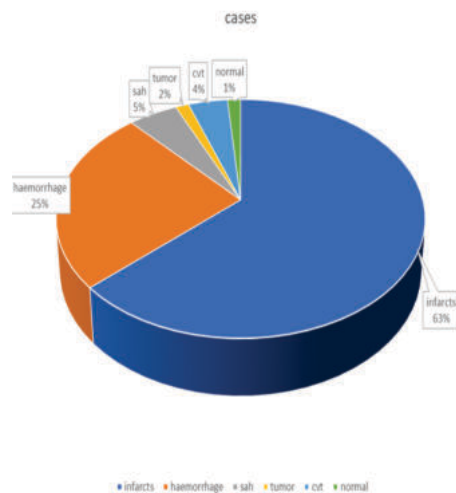
Present study which we took a total of 75 patients who were clinically diagnosed to have signs of Infarction and haemorrhage are sent for imaging study of head.

- 47 individuals are observed suffering from infarction

- 19 Patients had haemorrhage
- 4 Patients had subarachnoid haemorrhage
- 1 was identified having tumor
- 3 Patient had CVT
- 1 individual was normal

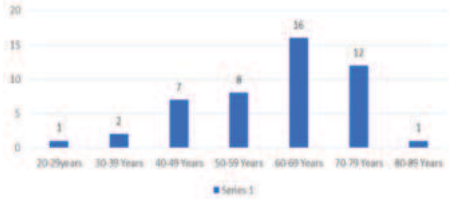
Table1- Below Table Depicits Etiology Of A Total 75 Who Were Clinically Identified As Suffering From CVA On CT.

Imaging results	The total number out of 75	Calculation for 75 cases
INFARCTS	47	63.33%
HAEMORRHAGE	19	25%
SAH	4	5%
TUMOR	1	1.33%
CVT	3	4%
NORMAL	1	1.33 %



Age Distribution In Cases Of Infarcts:

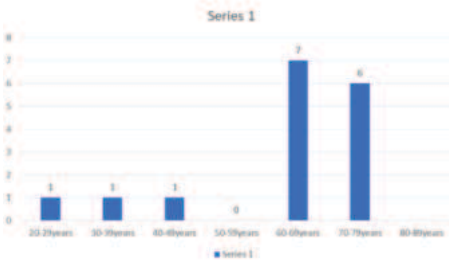
AGE	Distribution of individuals
20-29' Years	1
30-39 Years	2
40-49 Years	7
50-59 Years	8
60-69 Years	16
70-79 Years	12
80-89 Years	1



Graph

Table -3 Different Age Groups In Internal Bleeding Total Number 19

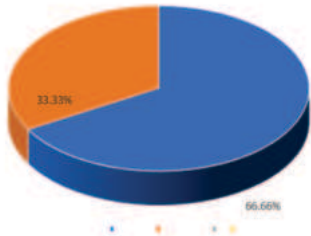
AGE	CASES
20-29/ Years	1
30-39 Years	1
40-49 Years	1
50-59 Years	0
60-69 Years	7
70-79 Years	6
80-89 Years	3



Graph: Haemorrhagenumber And Its Total Distribution Of Individuals With Bleed.

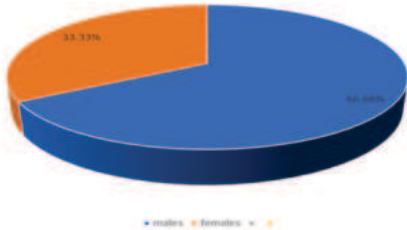
Sex

49(66.6%) patients are male, 26(33.3%) patients were female', 65.7%(which includes male) &34.21%(i.e females) and their Male: female ratio: 1.05:0.5 in infarction

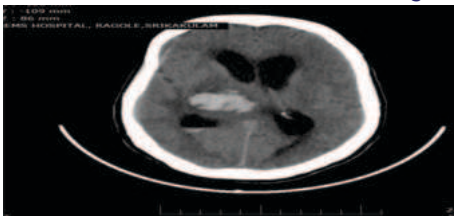


Graph IV Males And Females In Cases Of Infarcts

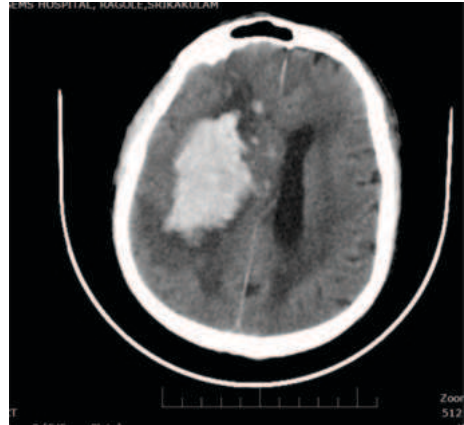
Internal bleeding: Haemorrhage in, Males: 66.6% Haemorrhage in, Females:33.33% Male: Female ratio: 2:1



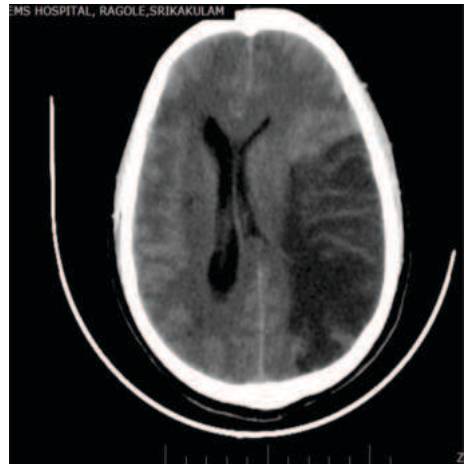
Graph V Males And Females In Cases Of Bleeding



Evidence of well defined hyperdense area(HU 64) in the right caudate, anterior limb of right internal capsule & right corona radiata with Intraventricular hyperdensities seen in the ipsilateral lateral, third & fourth ventricles. Midline shift to left. Periventricular hypodensities noted



Well defined hyperdense area of Hemorrhagic attenuation in the right lentiform nucleus, thalamus, right internal and external capsule extending in to corona radiata with surrounding hypodensities suggesting edema. Mass effect in form of effacement of ipsilateral cortical sulci, compression on ventricles obliteration of cisterns.



Ill defined Hypodense areas noted in the left temporal region , insular cortex and corona radiata with associated mid line shift and ipsilateral ventricular compression with sulcal effacement.



Complete right MCA territory infarct with pronounced midline shift (Sub falcine herniation).

CONCLUSION

By observation and analysis concluded that:

Computed tomography is the "Gold standard" method for diagnosing the acute infarct and haemorrhage because "Accurate diagnosis" is essential to treat the patient. Finding in the present study and results are correlated with the results of many research works conducted elsewhere in the world.

Risk factors like diabetes, hypertension, and prior stroke episodes have a significant role in how cerebrovascular accidents develop. Careful investigation should be done on such patients. All unexplained headaches need careful evaluation to rule out CVA procedure.

Early intervention procedure could prevent some CVA patients from potentially deadly complications.

REFERENCES

1. Nogles TE, Galuska MA. Middle Cerebral Artery Stroke. 2022 May 8. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. PMID: 32310592.
2. Ebrahimi HA, Saba M, Sedighi B, Kamali H. Study of the involved vascular territories in patients with ischemic stroke in Kerman, Iran. *ARYA Atheroscler*. 2016 Sep;12(5):250-253. PMID: 28458702; PMCID: PMC5403021.
3. Czap AL, Sheth SA. Overview of Imaging Modalities in Stroke. *Neurology*. 2021 Nov 16;97(20 Suppl 2):S42-S51. doi: 10.1212/WNL.0000000000012794. PMID: 34785603.
4. Toyoda K. Anterior cerebral artery and Heubner's artery territory infarction. *Front Neurol Neurosci*. 2012;30:120-2. doi: 10.1159/000333607. Epub 2012 Feb 14. PMID: 22377877.
5. Bouchez L, Sztajzel R, Vargas MI, Machi P, Kulcsar Z, Poletti PA, Pereira VM, Lövblad KO. CT imaging selection in acute stroke. *Eur J Radiol*. 2017 Nov;96:153-161. doi: 10.1016/j.ejrad.2016.10.026. Epub 2016 Oct 26. PMID: 28277288
6. Hakimi R, Garg A. Imaging of Hemorrhagic Stroke. *Continuum (Minneapolis, Minn)*. 2016 Oct;22(5, Neuroimaging):1424-1450. doi: 10.1212/CON.0000000000000377. PMID: 27740983
7. Ferrara A. Computed Tomography in Stroke Diagnosis, Assessment, and Treatment. *Radiol Technol*. 2020 May;91(5):447CT-462CT. PMID: 32381677