

## Original article

# Prevalence of cerebrovascular accidents (CVA) in obese hypertensives among inpatients of Govt.General Hospital, Guntur

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### Abstract:

**Background:** Cerebrovascular accident (CVA) or Stroke is known as the abrupt onset of neurological deficit that is attributable to a focal vascular cause. Stroke has been found to be associated with hypertension, diabetes, hyperlipidemias and many metabolic syndromes. Hence the present study has been done with an objective to determine the prevalence of cerebrovascular accidents in obese hypertensives and to evaluate obesity as an individual risk factor for CVA.

**Material & Methods:** It was a non-experimental prospective observational study done in Government General Hospital, Guntur. Patients admitted to general medicine ward as inpatients with CVA were evaluated. A total number of 202 patients were admitted in the hospital during the study period i.e., from March 1<sup>st</sup> to August 31<sup>st</sup>.

**Results:** A total of 202 patients were admitted with CVA during the study period. Among obese hypertensives, prevalence of overall CVA was found to be 24.2% with more preponderance among females compared with males. Hypertension was associated with greater number (38%) of obese CVA subjects.

**Conclusions:** Though the results are showing the new trend in order to establish the findings more substantially. The study needs to be done on much larger scale and multiple centers all over the world.

**Keywords:** cerebrovascular accidents (CVA), obese hypertensives, Guntur

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### Introduction:

Cerebrovascular diseases are a heterogeneous group of disorders with a variable natural history. Cerebrovascular accidents (CVA) carry a high morbidity and mortality. Cerebrovascular accident or Stroke is known as the abrupt onset of neurological deficit that is attributable to a focal vascular cause <sup>[1]</sup>. Stroke can be either Ischemic that are resulted from a local thrombus formation or by embolic phenomenon that leads to occlusion of a cerebral artery or Hemorrhagic that include subarachnoid hemorrhage, intracerebral hemorrhage and subdural hematomas which are

resulted from a blood vessel rupture due to high blood pressure or an arteriovenous malformation (AVMs) or an intracranial aneurysm rupture <sup>[2]</sup>.

Though hemorrhagic stroke is less common than ischemic stroke it is more lethal with a 30-day case-fatality rates that are two to six times higher<sup>4</sup>. Stroke has been found to be associated with hypertension, diabetes, hyperlipidemias and many metabolic syndromes. Presence of hypertension increases the risk of CVA by three times <sup>[3]</sup>. The increase in both systolic and diastolic blood pressure increases the incidence of stroke and the risk is reduced by 30% by treating the blood

pressure<sup>[3]</sup>. Although a direct relationship has been established between obesity and coronary artery disease (CAD), obesity has yet not been proven to be associated with cerebrovascular disease substantially.

World health Organisation (WHO) defined Cerebrovascular accident as neurological deficit of Cerebrovascular cause that persists beyond 24 hours or is interrupted by death within 24 hours<sup>[4]</sup>.

Hypertension is simply defined as persistently elevated arterial blood pressure<sup>[1]</sup>. It is the most important risk factor for stroke<sup>[5]</sup> and contributes to more than 12.7 million strokes worldwide<sup>[6]</sup>. 70% of all strokes involve Hypertension as their most consistent and powerful predictor<sup>[7]</sup>.

Obesity is defined as abnormal or excessive fat accumulation that may impair Health<sup>[8]</sup>. Obesity was found to be a direct risk factor of stroke irrespective of race, gender and mode of measurement of obesity<sup>[9]</sup> anecdotally. According to Framingham Heart Study, a 5% gain in body weight was associated with an increase of Hypertension incidence by 20-30%<sup>[10]</sup>.

**Aim:** A clinical study to evaluate the prevalence of cerebro vascular accident in obese individuals attending the medical wards of Government General Hospital, Guntur.

**Objectives:**

1. To document prevalence of CVA in obese hypertensives
2. To evaluate obesity as an individual risk factor for CVA.

**Material & Methods:**

**Study Design:** A Non-experimental prospective observational study.

**Study Period:** 6 months period i.e., from March 1<sup>st</sup> 2014 to August 31<sup>st</sup> 2014.

**Study method:** Study is conducted in 1300 bedded Government General Hospital,

Guntur. Patients admitted to general medicine ward as inpatients with CVA were evaluated. CT was done in all patients for assessing the type of stroke.

**Sample size:** A total number of 202 patients were admitted in the hospital during the study period i.e., from March 1<sup>st</sup> to August 31<sup>st</sup>.

**Study population-**

**Inclusion criteria:**

All inpatients of CVA admitted in General Medicine wards of GGH, Guntur

**Exclusion criteria:**

The Patients who are critically ill and unable to participate in the study were excluded.

All patients admitted with cerebro vascular accident were evaluated for obesity which is defined as per the revised BMI cut -off points. Overweight if BMI is between 23.0 to 24.9 kg/m<sup>2</sup> and obesity if >25 kg/m<sup>2</sup>. Patients were screened for obesity by anthropometry, taking height in metres and weight in kilograms as parameters to calculate the BMI.

Institutional Ethical clearance was obtained prior to the start of the study from Ethics Committee, Guntur Medical College & Govt.General Hospital.

**Statistical analysis:** Data entry was done using Microsoft Excel 2007 and data analysis done using SPSS version 17.

**Results:**

A total of 202 patients were admitted with CVA during the study period. Out of 202, men were 105 (52%) and women 97 (48%). The highest prevalence of CVA was found in the 61-70 years age group. Mean age of CVA among men was 56.714 and 62.639 in women. Among the total 202, 158 (78.2%) were diagnosed with Ischemic stroke and 44 (21.8%) with hemorrhagic stroke.

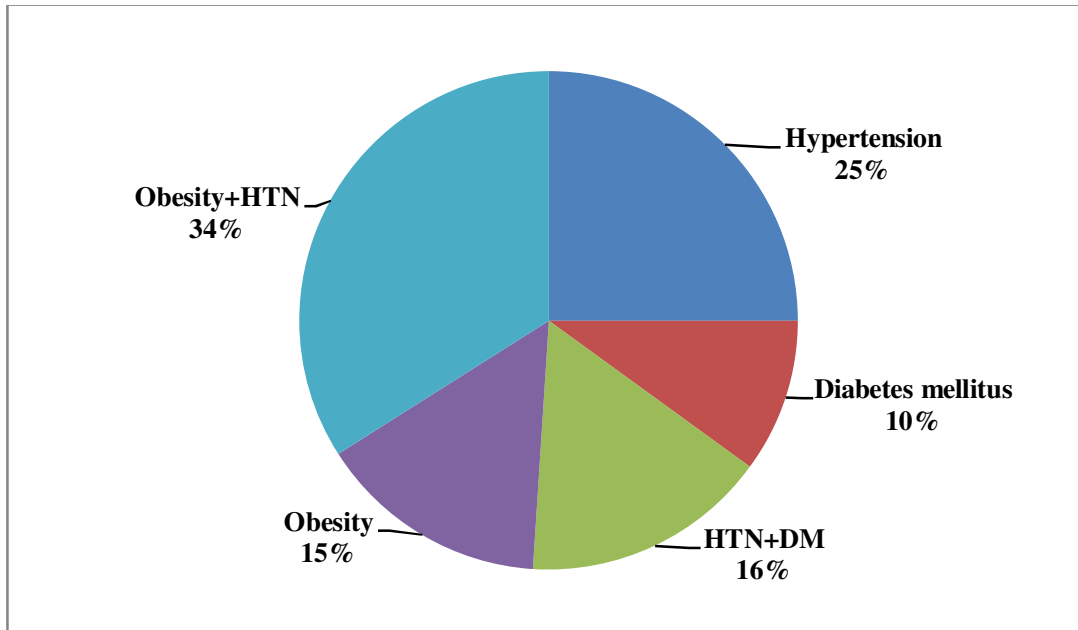
Prevalence of risk factors of CVA: Of the total study group, Hypertension was prevalent in 25% (36) people, Obesity in 10% (21) people, Obesity with Hypertension was found in 34% (49) of the

total subjects, Diabetes in 7% (14) people, Hypertension and Diabetes in 16% (23) people. Pattern of family history observed that 87% doesn't had a significant family history, 4% had family history of CVA, 6% with family history of Hypertension, 2% with family history of both CVA

and Hypertension and 1% with family history of Diabetes.

Among the modifiable risk factors of CVA, 23 (11.4%) were found to be smokers and 8 (4%) were found to be alcoholic. People with both smoking and alcohol history were 48 (23.7%) and 7 (3.5%) had the history of tobacco chewing.

**Figure 1: Prevalence of risk factors of CVA in study group**



Obese hypertensives: The overall prevalence of CVA among obese hypertensives was found to be 24.2% (n=49) among whom 34 found to be diagnosed with Ischemic stroke and 15 were having hemorrhagic stroke. Sex distribution found that 18 were male and 31 were females which showed a high prevalence of CVA among obese female hypertensives. The mean age of obese hypertensives with CVA was found to be 58.1 in men and 61.6 in women.

Prevalence of co-morbidities in obese CVA subjects found that Hypertension was associated with greater number (38%) of obese CVA subjects where as Diabetes is associated with less number (6%) of subjects. Hypertension along with Diabetes

is found in 28% of obese CVA subjects. About 28% of obese CVA subjects are not associated with any other risk factors.

**Discussion:**

Cerebrovascular Accident or Stroke is a neurological deficit of cerebrovascular cause that persists beyond 24 hours or is interrupted by death within 24 hours which is the leading cause of disability and the second leading killer worldwide<sup>6</sup>. It has been found to be associated with hypertension, diabetes, hyperlipidemias and many metabolic syndromes among which Hypertension increases the risk by 3 times and treating it can reduce the risk by 30%. Although a direct relationship has been established between obesity

and coronary artery disease (CAD), obesity has yet not been proven to be associated with cerebrovascular disease substantially.

Present study found that among obese hypertensives, prevalence of overall CVA was found to be 24.2% with more preponderance among females compared with males. Hypertension was associated with greater number (38%) of obese CVA subjects. Hypertension along with Diabetes is found in 28% of obese CVA subjects. About 28% of obese CVA subjects are not associated with any other risk factors.

Edina Tanovic, Senad Selimovic and Haris Tanovic, 2014<sup>[3]</sup> evaluated the results of rehabilitation to determine the prevalence of major risk factors in CVA and their consequences, as well as to propose measures and procedures that will affect the better rehabilitation. It analyzed the non-modifiable risk factors like age, sex and modifiable risk factors like Hypertension and Diabetes. The results showed that Hypertension as a common risk factor among the 116 patients (83 percent) followed by Diabetes (33 percent) and they showed significant and direct effects on results of rehabilitation.

Another study by Sumit Pal Singh Chawla et al (2014)<sup>[11]</sup> in Amritsar observed that almost half proportion of CVA cases were in age group of >60 years. Overall, 62.5% of all patients were either known hypertensive or had BP  $\geq$  130/85 mm of Hg. Overall, 47% of all patients were either known

diabetic or had FPG  $\geq$  100 mg/dl. 60% of all patients in the study population were obese. Central obesity was a risk factor for CVA. p value was 0.149 which was insignificant ( $p > 0.05$ ).

Yoshihiro Araki, Hisao Kumakura et.al<sup>23</sup> (2012)<sup>[12]</sup> evaluated the prevalence and risk factors of Cerebral Infarction (CI) and Carotid Artery Stenosis (CAS) found that prevalence of CI was higher in PAD group than in control group and the most common risk factors that are associated with Cerebral Infarction are found to be Hypertension (61.2 %), Diabetes Mellitus (34.5 %) and Smoking (75.7%)

#### **Conclusion:**

In this study, on tabulation of results, ischemic stroke is more prevalent than hemorrhagic stroke. Amongst the patients with ischemic stroke hypertension appears to play a major role in the disease process. Amongst hypertensives half of are obese. Till today obesity has found to be contributing the morbidity of the disease. However in the patients who are non-hypertensive, the significant population is obese. The mechanisms require to elucidate the onset of stroke has to be fully studied. Overall, men seem to be effected more than women in the pathogenesis of the stroke with an exception of greater obese population in women. Though the results are showing the new trend in order to establish the findings more substantially. The study needs to be done on much larger scale and multiple centers all over the world.

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