Original Research Article

# Study of acute neurological complications in young hypertensive non-diabetic patients

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## Abstract

**Background:** Hypertension is one of the leading causes of the global burden of disease. Focal neurological deficits, convulsion, headache, loss of vision, are considered as the commonest symptoms. **Aims and Objectives:** To study clinical profile, risk factors of CVA in young HTN patients. **Materials and Methods:** Descriptive Study done at tertiary care centre, sangli. We have examined 48 cases. **Observations and Results:** Motor weakness, Headache, projectile vomiting, visual field defects, altered consciousness, convulsions are common presentations. Obesity, addictions, male sex, dyslipidemia are common risk factors for neurological complications in young HTN. Left hemiparasis, left sided hemiplegia, right sided hemiparasis, monoplegia, drowsiness, altered consciousness were the neurological complications. **Conclusions:** There is increasing % of young hypertension. Neurological complications are very common in young hypertensive nondiabetic patients.
**Key Words:** Young HTN, Neurological complications, CVA.

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## INTRODUCTION

Hypertension (HTN) is one of the leading causes of the global burden of disease. WHO and ISH both define HTN as a persistent elevation of blood pressure greater than 140/90 mm Hg. Blood pressure is the force exerted laterally by blood on the walls of the arteries and veins as it courses through the body.[1] Approximately 7.6 million deaths and 92 million disability-adjusted life years worldwide were attributed to high blood pressure in 2010.. Target organ damage resulting from HTN includes those affecting the brain. Focal neurological deficits, convulsion, headache, loss of vision, are considered as the commonest symptoms.[2, 3] Epidemiological studies shows that HTN is present in 25% in urban and 10% in rural subject in India. It is estimated that there are 31.5 million have HTN in rural population[2] With increasingly sedentary lifestyle, smoking and changing dietary pattern, the presence of HTN, hasten process of atherosclerosis, causing narrowing of vessels causing complications in the young generation is increasing[4,5].Atherosclerosis is well accepted and proven pathology[3,4,7] The syndrome of hypertensive emergency was first described by Volhard and Fahr in 1914 and was characterized by severe accelerated HTN, accompanied by evidence of renal disease and by signs of vascular injury to the heart, brain, retina and kidney, and by a rapidly fatal course ending in heart attack, renal failure, or stroke.[11]

**Acute Target Organ Damage in Brain**

1. **Hypertensive encephalopathy**: A clinical symptoms appear above mean arterial pressure of about 180mmHg[4]. JNC7, has labelled acute severe elevation of blood pressure above 180/120mmHg (about 20mmHg above the Stage II HTN) as “Hypertensive Crisis” in adults.[4]
2. **Intra-cerebral haemorrhage- ICH:** is common in hypertensive patients and is more likely to

result in death or major disability than cerebral infarction or SAH.

3. **Subarachnoid haemorrhage (SAH):** Patients usually present with severe headache, altered sensorium and neurological deficits.
4. **Cerebral Infarction**-sudden onset neurodeficit usually paresis of motor weakness due to thrombotic occlusion of atherosclerotic narrowed cerebral arteries.

## MATERIAL AND METHODS

**Study designed:** scriptive Study

**Study Place:** Department of Medicine at Bharati Vidyapeeth Deemed University, Medical College and Hospital, Sangli.

**Study Period**: cases admitted during the period of 1 year (June 2016-June 2017)

**Permission and consent**: Ethical clearance from college and university committee,

**Study Subject:** Diagnosed cases of young HTN with CVA,

**Inclusion Criteria:** Patients admitted with CVA having increased systolic and diastolic blood pressure. Patients with age 18-42 yrs.

**Exclusion Criteria**

- Patients having other diseases causing HTN.
- Patients with Diabetes.
- Secondary HTN

**Study Procedure:** Informed written consent is taken, detailed history of HTN, risk factors and neurological examination done. Data of HTN patients is collected.

## OBSERVATIONS AND RESULTS

48 selected cases of CVA were studied. The percentage of various factors in our study are given in the following tables:

**Table 1:** Age

| Age Group | Percentage (N=100) |
|---|---|
| 18- 26yrs | 10% |
| 27- 42yrs | 90% |

**Table 2:** Sex

| Sex Distribution | Number Of Patients (N=48) | Percentage |
|---|---|---|
| Male | 32 | 66.66% |
| Female | 16 | 33.33% |

**Table 3:** Presenting Symptoms

| Presenting Complaints | No. of Patients (N=48) | Percentage |
|---|---|---|
| Giddiness | 31 | 64.58% |
| Headache | 26 | 54.16% |
| Vomitting | 25 | 52.08% |
| Blurring of vision | 18 | 37.5% |
| Palpitation | 1 | 2.08% |

**Table 4:** Hypertension

| Hypertension | Total (No. Of Patients) | Percentage |
|---|---|---|
| Newly Detected | 42 | 87.5% |
| Known | 6 | 12.5% |

**Table 5:** Blood pressure

| Blood Pressure (Systolic) | No. Of Patients (N=48) | Percentage |
|---|---|---|
| 170 – 200 mm Hg | 35 | 72.91% |
| Above 200 mm Hg | 13 | 27.08% |

**Table 6:** Addiction

| Addiction | No. of Patients (N=48) | Percentage |
|---|---|---|
| Tobacco/ Mishri | 14 | 29.16% |
| Smoking | 16 | 33.33% |
| Alcohol | 25 | 52.08% |
| No Addiction | 13 | 27.08% |

**Table 7:** Dyslipidemia

| Dyslipidemia | No. of Patients (N=48) | Percentage |
|---|---|---|
| Present | 32 | 66.66% |
| Absent | 16 | 33.33% |

**Table 8:** CT Brain

| CT brain | No. of patients (n=48) | Percentage |
|---|---|---|
| infarct | 22 | 45.83% |
| ic bleed | 16 | 33.33% |
| subarachnoid hemorrhage | 13 | 27.08% |
| normal | 03 | 6.25% |

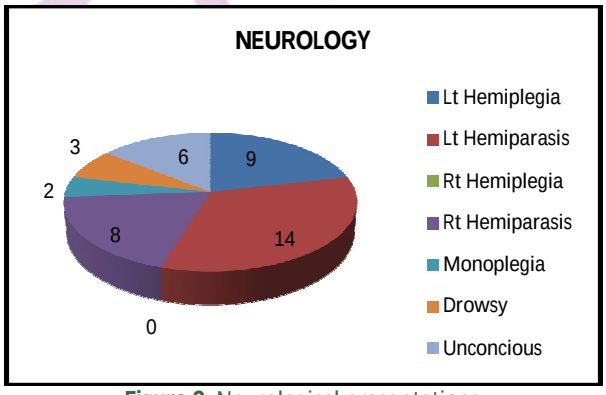


**Figure 9:** Neurological presentations

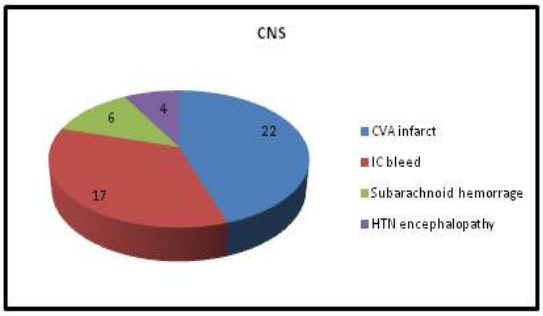


**Figure 10:** Neurological Emergencies

## DISCUSSION

The present study shows percentage of neurological complication in young patients with HTN. Newly detected and known hypertensives, who are not receiving treatment were culprits of CVA. Poor knowledge of disease and its complications along with various addictions, dyslipidemia resulted in such complications. Proper knowledge and councelling can reduce morbidity and mortality in young HTN cases. In a study by Grindal *et al*[7], 55%of the patients were found to have HTN as an identifiable etiology for their cerebral infarction of 31 and 40 years of age.

**Age:** In our study10% were below age of 18- 26 years and 90% patients were between the age of 27- 42 years. Majority of complications of HTN are observed in second group In a study by Patne *et al*[4], majority of patients presenting with hypertensive emergencies belonged to the 20-35 years of age group.

**Sex Distribution:** of 48 cases 66.67% of the subjects were Male and 33.33% were Female patients. Study by Srinivas *et al*[2], on hypertensive crises observed that 55% male. The proportions of males in hypertensive emergencies were also higher in the study by Zampaglione *et al*[38]. The incidence of Male patients in young HTN has proved to significantly more in comparison with female population. This is probably due to oestrogen protection in young females[9]

**Presenting Complaints:** The most common was motor weakness. 31 (64.58%) presented with motor weakness, 22 had right sided hemiplegia and 10 had left sided weakness. Headache was observed in 26 (54.16%) patients, while projectile vomiting was present in 25 (52.08%) cases. Visual defects in 18(37.5%), 6 were unconscious at admission and 5 patients had convulsions. In a study by Srinivas K[2], largest group of patients presented with a neurological deficit (48%) Martin *et al*[37], (55%). Zampaglione *et al*[38] in (21%) cases.

**HTN:** In the present study, 87.5% of the patients were newly detected hypertensives and only 12.5% were known cases of HTN. Majority of patients in the study by Srinivas *et al*[2] were previously known hypertensive (70 %). Martin *et al*[37] had (83%) known hypertensive. Zampaglione *et al*[38] reports (92%) of known hypertensive. Garcia GM noticed (65.9%), were previously diagnosed hypertensive. sThis suggests, HTN if known, must control BP to avoid target organ damage.

**Blood Pressure Levels:** In our study, 72.91% patients had blood pressure between 170-200mmhg and 27.08% patients had blood pressure above 200mmhg. Highest recorded systolic blood pressure in our study is 210 systolic, while Srinivas K[2], recorded 280 mm Hg with mean systolic blood pressure of 216 ± 25 mm Hg.

**Addiction:** 52.08% of cases were alcoholic in our study. Smoking in 33.33% and Tobacco/Mishri in 29.16%. 27.08% of the subjects were found to be non-addictive. Lee *et al* concluded that between 76% and 91% of young patients with MI are smokers, compared with approximately 40% of older patients[9]. Griffiths D *et al*[10] said heavy alcohol drinking (more than 60 g/day) increases the risk of stroke, cigarette smoking to be an independent risk factor for ischaemic stroke. All types of addictions are seen to be associated with young HTN proving to be significant predisposing factors for the same.

**Dyslipidemia:** 66.3% of the patients had dyslipidemia in our study. These risk factors would have added to premature atherosclerosis and coronary artery disease in these patients predisposing them to acute target organ damage[9, 10]. Metabolic abnormalities (hyperglycemia, hyperinsulinemia, and dyslipidemia) may play a role in the pathogenesis and complications of arterial HTN[6].

**CT brain:** In our study CT Brain study revealed 45.83% infarct, 33.33% ICH, 27.08% SAH and 6.25% were normal. Study by Patne *et al*[4], did neurological evaluation in symptomatic patients with CT ICH in 13 patients, acute cerebral infarct in 6 patients, SAH in 3 patients and normal study in 2 patients.

**Neurological Emergencies:** In our study commonly presented neurological complications are Left Hemiparasis (29.16%), Left sided Hemiplegia (18.75%), Right sided Hemiparasis (16.66%), Monoplegia (4.16%), Drowsy (6.25%), Unconcious (12.5%).In a study by Patne *et al*[4] Neurological deficits varied from hemiparesis (75%), convulsion (16.6%), and visual deficits (8.3%). Hemiparesis accounted for the largest group of patients with neurological deficit.[2]Srinivas *et al*[2] noticed, hemiparesis (80%), convulsions (12%), and visual deficits (8%). Hemiparesis accounted for the largest group of patients with neurological deficit. Motor weakness was most common presentation in all studies.

## SUMMARY

In our study, majority of patients presenting with hypertensive emergencies

- Belonged to the 20-35 years of age group.
- Males (62%) have higher percentage as compared to females (38%).
- 49% subjects were obese, 35% were overweight, Complications were maximum in obese.
- All the study subjects had high blood pressure (>170/100) and high pulse pressure.
- Obesity, addictions, HTN, male sex, dyslipidemia (60%) are major risk factors

- Neurological deficit is commonest complication in young HTN. Motor weakness in (64.8%) in our study.
- CNS patients presented are CVA (Infarction) (45.83%), ICH (35.42%), SAH (12.50%), HTN encephalopathy (8.33%)
- Abbreviations-HTN-Hypertension
- BP-Blood Pressure
- CVA-cerebrovascular accident.
- ICH-Intracerebral Haemorrhage.
- SAH- Subarachnoid haemorrhage

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