A Comparative Study of the Clinical Presentation & Prognosis of Stroke among Diabetic Vis-Ã-Vis Non Diabetic Patients

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Stroke is a leading cause of mortality and morbidity in India. Diabetes mellitus increases the risk of stroke, and pathophysiologic changes of diabetic cerebral vessels may differ in comparison with non-diabetic ones.

Aim: To study the difference in clinical presentation and severity of stroke among diabetic and non-diabetic patients.

Methods: This was a cross sectional study carried out in medicine wards of RIMS, Imphal in 180 patients of stroke (90 diabetic & 90 non diabetic) diagnosed by imaging modality during the period of October 2014 to September 2016. We used Canadian neurological scale for assessing stroke severity at the time of admission.

Results: The mean age of the study population was 65.63±11.37 and the majority were males (57.2%). Prevalence of infarction was more in diabetic cases (81.1% vs 61.1% in non-diabetics, p-value=0.003). Basal ganglia and internal capsule were the most common sites of infarction (34.3%), followed by cortical lacunar (25.8%). MCA territory infarction was significantly higher in diabetics (p = 0.008). In diabetic patients with ischemic stroke, there was a higher prevalence of severe stroke (n = 18/24, p-value=0.049). Dyslipidemia was found in 61.66% of study subjects with high prevalence in infarction patients [67.96% vs 46.15% in haemorrhagic patients (p-value=0.006)]. There was a significant difference in the mean total serum cholesterol among diabetic and non-diabetic subjects (193.22±56.528 vs 169.02±58.001, p-value=0.005).

Conclusion: There was a significant high prevalence of infarction in diabetics and hemorrhage in non-diabetics. MCA territory infarction was more common among diabetic ischemic stroke. Among the ischemic diabetic stroke patients, there was a significant high prevalence of severe presentation at the time of admission. Mean serum fasting total cholesterol level was found significantly higher in diabetic patients.

Hypertension and Young Stroke

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Background and Objectives: Cerebrovascular disease is the most common life threatening neurological disease and is a concern in young patients especially in developing countries. This study aims to identify aetiology, risk factors, clinical presentation and radiological profile of patients presented with stroke between the ages of 15-45 years.

Methodology: 100 patients (68 males and 32 females) were included in the study. Detailed history taking and clinical examination were done and neurological deficits were identified. Other than routine investigations lumbar puncture for CSF analysis, electrocardiography, lipid profile, homocysteine levels and CT scan, MRI Brain were done for all the patients. Other investigations such as echocardiography, Doppler etc were done as clinically indicated.

Result: The sex ratio was 2.12:1 (M: F). the mean age was 36.0±6.58 years and that of male and female patients were 37.94±5.85 and 32.9±6.82 years respectively. Most common risk factors in descending order, Hypertension was seen in 22% cases, diabetes mellitus was the risk factor in 17% cases, hypercoagulability was the risk factor in 12% cases, dyslipidemia in 10% cases and smoking in 8% cases . Brain imaging findings revealed ischemia stroke in 66%, hemorrhagic stroke in 28% cases. Multiple site lesion as seen in embolic stroke were seen in 6% cases.

Most common aetiology was atherosclerosis seen in 40% cases. This was followed by hypercoagulability disorders seen in 12%, cryptogenic stroke in 12%,hypertensive bleed in 9% cases, tubercular meningitis 4%,atrial fibrillation (valvular as well as non-valvular) in 6% cases. Certain uncommon causes like takayasu arteritis, moyamoya disease and neurofibromatosis were also found in our study.

Interpretation & Conclusion: The major risk factors for stroke in young patients were hypertension, diabetes mellitus,hypercoagulability disorders and dyslipidemia. Hypercoagulability disorders are important risk factors and should be thoroughly investigated to prevent a further episode of stroke. Cerebral venous sinus thrombosis is an important cause for stroke commonly seen in women with OCP use. Atherosclerosis is the most common etiology in stroke. Cryptogenic stroke is an important entity in young ge stroke and should be dealt seriously to prevent a recurrence and reduce morbidity.
A Study on Short Term Outcome of Stroke in a Rural Tertiary Care Center – Correlation with Different Risk Factors (Hypertension, Diabetes, Dyslipidaemia, Heart Disease)

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Background: Stroke is the second most common cause of mortality in the world, causing immense morbidity and economic burden. In a developing country like India, where rehabilitative measures are limited, proper knowledge of the factors which influence poor clinical outcome in stroke is utmost important to the clinicians.

Objective: To find out the association of outcome of stroke with different risk factors particularly Hypertension, Diabetes, dyslipidaemia, heart disease e.t.c.

Methods: A descriptive observational design study was formulated for a period of six months on hundred stroke patients in internal medicine unit of at North Bengal Medical College & Hospital, India. Patients were selected after proper screening by inclusion and exclusion criteria. The “In-hospital-outcome” of CVA patient was determined by Glasgow outcome scale. The neurological condition was determined by National Institute of Health Stroke Scale (NIHSS). The Modified Rankin Scale and Barthel Index were utilized to assess disability status of patient in different period of hospital admission. The data were analyzed by EPI INFO software.

Results: Clinical outcome showed statistically significant (P<0.05) correlation with age, sex, blood pressure, diabetes. Other parameters like dyslipidemia, presence of heart disease, smoking, alcoholism, family history, although showed poorer clinical outcome, their correlation was not statistically significant.

Conclusion: In-hospital outcome of stroke as determined by Glasgow outcome scale correlates with diverse clinical parameters including various risk factors.

Comparision of ARBS v/s CCBS on LVH, Biochemical & Side Effects in Hypertensives

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Introduction: Hypertensive heart disease is the result of structural and functional adaptations leading to LVH due to chronically elevated afterload, sympathetic overstimulation and myocardial fibrosis. Aggressive control of hypertension (HTN) can regress LVH and reduce risk of cardiovascular diseases.

Aims & Objectives: To compare the effects of Azilsartan and amlodipine on left ventricular hypertrophy, biochemical parameter and adverse effects in patients of hypertension.

Materials & Methods: The study dealt with 120 patients of newly diagnosed essential hypertension patients from the OPD and indoor department of the age of 18 and above according to stage 1 JNC-7 criteria. These patients were randomly divided into two groups one in which ARB’S Azilsartan 40 mg OD dose, and in another amlodipine 5mg in OD doses was administered. ECG, Biochemical parameters and adverse effects were recorded initially and after 6 months of therapy.

Results: The 6 months study revealed significant reduction in Mean Systolic and Diastolic Blood Pressure. The ARB’S Azilsartan lead to a greater regression in LVH than AMLO (15 & 12 patients respectively). It also caused a rise in Serum creatinine, Serum Uric acid and HDL and a significant decrease in Serum Cholesterol, whereas the group taking AMLO showed only a rise in Serum Creatinine. The most common adverse effects observed in Azilsartan group was Diarrhea (8.7 %) Dizziness (5.5 %) and in AMLO group was Pedal edema (24%).

Conclusion: In this case study Azilsartan was found to have better efficacy (greater LVH regression), superior tolerability and significant improvement in biochemical parameters.

The Comparative Effects of Azilsartan Medoxomil and Olmesartan on Resting Blood Pressure.

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Aims and Objectives: The current study assess the antihypertensive efficacy and safety of investigational angiotensin receptor blocker (ARB). Azilsartan Medoxomil (AZL-M), compared with placebo and the ARB Olmesartan Medoxomil (OLM-M).

Methods: This randomized, double blind, placebo controlled study conducted in Dept. of Medicine, KMCH, Katihar assessed changes from baseline in mean 6 hour sitting systolic blood pressure following 6 weeks of treatment.

Inclusion Criteria: Diagnosis of primary hypertension (defined as sitting through clinic SBP ≥ 130 mm Hg and ≤ 170 mm Hg) prior to randomization.

Exclusion Criteria:
- DBP > 114 mm Hg
- History of Major Cardiovascular event
- Secondary Hypertension
- Poor compliance during the placebo run in period
- Severe Renal impairment (GFR < 30 ml/min/1.73 m²)
- Known or suspected Renal Artery Stenosis
- Type I or Poorly controlled Type II Diabetes

Result: Patient with primary hypertension (n =100) and baseline 6 hour mean systolic sitting pressure ≥ 130 mm Hg
and ≤ 170 mm Hg were studied, 20 received placebo and the remainder received 20 mg, 40 mg or 80 mg Azilsartan-M or 40 mg Olmesartan-M. Mean age of participant was 58±11 years. Baseline mean 6 hour SBP was 146 mm Hg. Reduction in 6 hour mean SBP was greater with AZL-M 80 mg than OLM-M 40 mg by 2.1 mm Hg while AZL-M 40 mg was non inferior to OLM-M 40 mg. The side effects profile of both ARBs was similar to placebo.

**Conclusion:** Data from this study suggest that AZL-M 80 mg is more effective in reducing SBP than the highest approved dose of OLM-M which was considered to be more effective than other in ARB class.

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**Prevalence of Metabolic Syndrome in Patients With Essential Hypertension**

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**Introduction:** The metabolic syndrome consists of a constellation of metabolic abnormalities that thought to occur due to insulin resistance and abnormal obesity which confer increase risk of cardiovascular disease and diabetes mellitus. The major features of metabolic syndrome includes central obesity, hypertriglyceridemia, low levels of high density lipoprotein cholesterol, hyperglycemia and hypertension.

**Material:** The study was a non-interventional, observational study. 172 patients of essential hypertension attending hypertension clinic or indoor department of KMCH, Katihar were selected and their investigations were carried out in a fasting state. The metabolic syndrome in these patients was defined by Adult Treatment Panel (III) Criteria.

**Inclusion criteria:**
- Age between 25-70 yrs
- Blood pressure >140/90 mm of Hg

**Exclusion criteria:**
- age >70 yrs
- age <25 yrs
- Renal failure, hypothyroidism, hyperthyroidism, hypercalcemia, eclampsia

**Observations:** Prevalence of metabolic syndrome was 55.23% in patients with essential hypertension and more common in females in age group between 40-50 yrs (39.60%). Low high density lipoprotein was most common abnormality detected in patients with metabolic syndrome followed by abnormal fasting blood sugar (FBS), abnormal waist circumference and triglyceride level. The FBS and triglyceride were abnormal in 60.3% and 50.7% female patients. The commonest abnormality in male was low HDL in 87.5% followed by abnormal TG level in 65.62% patients.

**Conclusions:** Study demonstrated that all patients of essential hypertension should be screened for metabolic syndrome. As the prevalence is more common in younger age group, screening should start at an early age.

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**Effect of Morning and Bedtime Dosing with Cilnidipine on Blood Pressure in Essential Hypertension**

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**Introduction:** Hypertension is defined as SBP ≥140 mm of Hg, and DBP ≥90 mm of Hg. Essential HTN is high blood pressure that does not have a known secondary cause and tends to be familial and is likely to be the consequence of an interaction between environment and genetic factors. Cilnidipine a 4th generation Calcium channel blocker is a long-acting, unique calcium channel antagonist of the 1,4-dihydro-pyridine type; it has a blocking action against N-type calcium channels in addition to the L-type calcium channel.

**Aims and Objectives:** The aim was to study the effects of cilnidipine on essential hypertension at morning vs bed time dose.

**Method:** The study was a non-interventional, observational study. 39 patients with essential hypertension attending hypertension clinic or indoor department of KMCH, Katihar were selected. Patients were started on 5mg once daily dose and blood pressure measured 6hrly using automated blood pressure monitor device. The dose was gradually increased until blood pressure reached optimal value SBP <140 mm of Hg and DBP <90 mm of Hg or until maximum dose of 20mg reached, and all patients monitored for the next 12 weeks.

**Inclusion criteria:** Age between 50-70 years, SBP: 140 to 179 mm of Hg; DBP: 90 to 109 mm of Hg

**Exclusive criteria:** Coronary artery disease, stroke, chronic kidney disease, diabetes, pregnant female

**Observations:** The average final dose of cilnidipine was 11.2 ± 1.5 mg/day. Morning or bed time dosing of cilnidipine reduce the 24hr average, day time average, night time average systolic and diastolic blood pressure.

**Conclusion:** Cilnidipine was effective as a once daily anti-hypertensive agent. The average final dosing of cilnidipine in this study (11.2 mg /day) is considered efficient to reduce Blood Pressure. Bed time dosing of cilnidipine was found to be more effective than morning dose.
Clinical Study on the Effects of Telmisartan on Hypertensive Patients with Dyslipidemia and Insulin Resistance

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Background: Angiotensin II receptor antagonists are widely used 1st line of treatment in essential hypertension with or without diabetes.

Telmisartan is a unique ARB (angiotensin receptor blocker) as along with RAAS suppression it also shares homology to pioglitazone – a PPAR-γ (a ligand activated nuclear receptor involved in the regulation of aspects of lipid and carbohydrate metabolism).

Materials and Methods: The study was done in the Medicine department of Katihar Medical College after approval of institutional ethics committee for a study period of 24 weeks. Patients meeting the inclusion/ exclusion criteria, assigned randomly into one of the study groups (Ramipril 5mg/d(n=38), Telmisartan 40 mg/d(n=32) given orally.

Results: In the telmisartan group significant difference was noted in weight, body mass index, fasting blood glucose, systolic and diastolic blood pressure, and triglyceride.

In the Ramipril group a reduction in triglyceride, weight and body mass index was found, with no significant reduction in Fasting blood glucose.

Conclusion: Telmisartan not only controls blood pressure steadily and effectively, but also decreases blood triglycerides, increases HDL cholesterol and improves glucose metabolism.

Lipid Profile of Smokers Suffering from Hypertension: A Hospital Based Prospective Study

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Introduction: Smoking in different forms is a major risk factor for atherosclerosis and coronary artery disease and is associated with hypertension. Cigarette smoking elevates blood pressure levels by 5-10 mm Hg during the day. It also leads to increase in the concentration of serum total cholesterol, triglycerides, LDL-cholesterol, VLDL and fall in the levels of antiatherogenic HDL cholesterol.

Materials and Methods: This was a prospective case control study carried out in a tertiary care hospital in Sikkim for a period of one year. This study was done with an aim to determine the alterations in plasma fasting total cholesterol, triglycerides, HDL and LDL cholesterol and BMI in a group of smokers with hypertension who were compared with a group of non-smokers with hypertension matched for age and sex. Data of the patients were collected based on a pretested structured proforma. A total of 182 patients were enrolled in the study out of which 97 patients were smokers and 85 patients were non-smokers. The analysis of the data was done using ANOVA and Odd’s ratio.

Results: In this study a statistically significant difference was found in BMI (P<0.01), total cholesterol (P=0.04) and LDL cholesterol (P<0.001) values between smoker and non-smoker groups.

Association of ACE and ACE-2 gene polymorphism with Essential hypertension.

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Essential hypertension (EH) is a complex disease influenced by genetic and environmental factors. The Renin-Angiotensin-Aldosterone system (RAAS) is an important regulatory system for maintaining normal blood pressure (BP) and electrolyte balance. Angiotensin converting enzyme (ACE) plays a key role in RAAS pathway. ACE-2, a new RAAS component has been found to play a protective role in BP homeostasis. We have undertaken the study to investigate the association of ACE I/D and ACE-2 rs2106809 genetic polymorphism along with different environmental factors in EH among native population of Odisha, India.

Material and Methods: The present study was carried out at VSS Institute of Med. Science and Research, Burla and ICMR, Bhubaneswar during 2014–2016. 524 patients were enrolled in this study. Of them 250 patients were with EH and rest 274 were normal population as control. Detailed anthropometric data, tobacco, alcohol, and food habits were recorded and 10 ml of venous blood was collected for biochemical and genetic analysis. The genomic DNA was extracted and PCR amplification was performed with appropriate forward and reverse primer with appropriate cycling condition. ACE-2 polymorphism was analyzed separately among males and females because of its localization on the X- chromosome. Statistical analysis was done with SPSS version-17.

Results: Out of 250 patients there were 160 males and 90 females. The banding pattern of ACE I/D revealed 3 genotypes e.g. II (Insertion/insertion), DD (Deletion/Deletion), and ID (Insertion/Deletion). It has been found that DD genotype was found higher in hypertensives compared to normotensives (17% Vs. 8%, p<0.001) where as I/D polymorphism was found more in normotensives (50% Vs 44%, p<0.01). In females, I/D polymorphism was significantly associated with hypertension. ACE-2 rs2106809 polymorphism was found significantly more in females than male hypertensive (p=0.013). Combined genetic analysis showed that ACE DD + ACE-2 rs2106809 TT was found to be higher in female subjects (p=0.048). Analysis also showed that tobacco use, alcohol consumption, and hypertriglyceridemia are independent risk factors for hypertension.
Association of Angiotensinogen (AGT) gene polymorphisms among patients with essential hypertension.

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Essential hypertension (EH) is a complex disease influenced by genetic and environmental factors. The Renin-Angiotensin-Aldosterone system (RAAS) has a central role in maintaining normal blood pressure (BP). Angiotensinogen (AGN) is the substrate for RAAS pathway. In humans, AGT gene is present in 1q42-43 locus and 3 single-nucleotide polymorphism (SNPs) have been observed to be associated with serum AGT level which may affect EH. Therefore, we have undertaken the study to investigate the association of M235T, T174M, and G-6A SNPs of AGT gene along with different environmental factors in EH among native population of Odisha, India.

Material and Methods: The present study was carried out at VSS Institute of Med. Science and Research, Burla and ICMR, Bhubaneswar during 2014 – 2016. 504 patients were enrolled in this study. Of them 250 patients were with EH and rest 254 were normal population as control. Detailed anthropometric data, tobacco, alcohol, and food habits were recorded and 10 ml of venous blood was collected for biochemical and genetic analysis. The genomic DNA was extracted and PCR amplification was performed with appropriate forward and reverse primer with appropriate cycling condition for M235T, T174M, and G-6A polymorphisms. Statistical analysis was done with SPSS version-17.

Results: Out of 250 patients there were 160 males and 90 females and 160 males and 94 females in the control group. The mean age of patients was 49.47 ± 10.38 years and of control was 48.82 ± 9.76. In males, M allele of M235T (p=0.005) and M allele of T174M (p=0.003) were significantly higher in patients than controls. Linkage disequilibrium (LD) and haplotype analysis showed that all the 3 polymorphisms are in LD, and the strongest linkage was between M235T and T174M (total population: D’=0.8822, p<0.001, r²=0.4498; males p=0.001 and females p=0.0012). The TMG haplotype in total population (p=0.0039) and females (p=0.0039) and the MTG haplotype in males (p=0.0042) were identified as risk haplotypes.

Conclusion: AGT gene polymorphisms are found to exert gender specific effect on blood pressure and hypertension pathology.

Aldosterone Synthase (CYP11B2) C-344T gene polymorphism in Essential Hypertension.

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Introduction: Essential Hypertension (EH) is a complex multifactorial disease. Salt retention has been considered as a pathogenetic mechanism of hypertension. Aldosterone mediates sodium balance and arterial pressure by influencing intravascular volume and arterial thickness. Aldosterone synthase gene (CYP11B2), encodes for a cytochrome P450 enzyme, involved in the terminal step of aldosterone synthesis. Mutation of -344(C→T) in promoter region upregulates aldosterone production causing EH. In the present study, we investigate C-344T polymorphism of Aldosterone synthase gene in the population of Odisha, India.

Material and Methods: The present study was carried out at VSS Institute of Med. Science and Research, Burla and ICMR, Bhubaneswar during 2014 – 2016. A total of 246 hypertensive subjects (159 male and 87 female) and 274 healthy control (158 males and 116 females) were enrolled. The diagnosis of Hypertension was made according JNC-7 criteria. Blood was collected for detailed biochemical, hematological investigations and aldosterone level. The genomic DNA was extracted from the whole blood using phenol-chloroform method and CYP11B2 C-344T polymorphism was determined by PCR-RFLP.

Results: The aldosterone level in hypertensives are higher than non-hypertensives (330.9±103.6 pmol/L vs 271.4±126.7pmol/L, p<0.001) The frequencies of TT, TC, and CC genotypes were found in 51.5%,39.7%, and 8.9% among hypertensives and normotensives also showed significant differences (p<0.001). Univariate analysis showed that the polymorphism was associated with hypertension in the entire population in dominant, recessive, and additive models.

Conclusion: The present study showed that aldosterone level is high among patients of EH. CT and TT genotype of C-344T of Aldosterone synthase gene polymorphism was found in this population.

Comparative Evaluation of Efficacy of Clinidipine vs Amlodipine in Mild to Moderate Hypertension with Emphasis on Proteinuria

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Background: Hypertension is one of the most common diseases diagnosed in India while the prevalence varying in different ethnic and age groups. In India alone about...
30% of the population is suffering from Hypertension. We investigated the efficacy and safety profile of amlodipine and cilnidipine while studying the effects on proteinuria and pedal edema in patients with mild to moderate hypertension with mild renal disease; in a tertiary level Hospital in Dehradun.

**Methods:** We conducted a observational study with a sample size of 50 patients (26 men and 24 women) within the age group of 48-63 years; with mild to moderate hypertension and mild renal disease (5 Creatinine <3mg/dl) who had been maintained on CCB’s for > 6 weeks were included in the study. Patients with advanced renal disease and severe hypertension (BP >180/100mmHg) were excluded from the study.

The Aim was to study the Effects of the two drugs on the systolic and diastolic BP along with the safety profile of the two drugs and the Reno-Protective effect by either of them First group of 23 patients were on cilnidipine 10-20 mg/day and second group of 27 patients were on amlodipine in dose of 5-10 mg/day; ARB’s (Telmisartan 40mg/day) was added as required for BP control. Patients were evaluated at timely intervals. BP/HR Monitoring was done every day for the first 5 days and then once every 15 days. Every 3rd and 6th month the concentrations of urine protein, urine albumin, serum and urine creatinine (Cr), and serum β 2-microglobulin were determined.

**Results:** The SBP in the Amlodipine group Post Rx was 140+/-10.9 in the amlodipine group and 143+/-6.2 in the cilnidipine group and DBP 79+/-7.0 and 82+/-6.0 indicating no significant difference in either of the groups. The mean blood pressure remained in the 100–106mmHg range until 6 months. The rate of increase in proteinuria at 6 months was 87% of the baseline value with amlodipine and 4% of baseline with cilnidipine, a significant intergroup difference. 6(26.08%%) patients ever complained of pedal edema while 19(70.37%) patients in the amlodipine group had complains of pedal edema.

**Discussion:** Both amlodipine and cilnidipine have shown equal efficacy in reducing blood pressure in hypertensive individuals. These results suggest that cilnidipine results in a greater suppression of the increase in proteinuria and greater reduction in glomerular filtration rate than amlodipine, resembling the action that of RA inhibitors. But cilnidipine being N-type and L-type calcium channel blocker, associated with lower incidence of pedal edema compared to only L-type channel blocked by amlodipine.

**Conclusion:** The present study highlighted the importance of measuring the ambulatory BP monitoring in identifying non-dipping pattern and its risk factors.

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**Study of Prognostic Significance of Acute Systolic Hypertension After Myocardial Infarction (MI)**

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**Aims and Objective:** To observe the presence of systolic hypertension after MI in previously normotensive patient or unestablished hypertension and To assess its prognostic significance after acute MI

**Methods:** The patients for this study will be taken from the S.K.M.C.H, Muzaffarpur, Bihar In this study the patients aged >40 years with acute MI were included & divided into two groups. Test group included 50 patient finally diagnosed as a case of acute MI with systolic hypertension at the time of admission & 30 normotensive patients diagnosed as a case of acute MI were taken as control.

**Results:** Total number of death recorded in test group was 18(36%) and in control group only 8 (26.66%) were recorded. Thirty three (33) out of fifty (50) cases in the test group were found to have previous history of hypertension, while rest had no such history of hypertension. The incidence of cardiac failure, major arrhythmias and mortality in the test group was 18%, 32% and 36% respectively which was higher than that found in the control group and they lose 16.66%, 16.66% and 26.66% respectively. 7 mmHg increase in blood pressure over baseline increased risk of cardiovascular disease by 27%. Student’s ‘t’ test and probability (p) value for systolic blood pressure when compared statistically for the test and control group proved to be highly significant (<0.001).

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**Risk Factors for Non-Dipping Pattern in Newly Detected Young Hypertensive Patients**

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**Object of the Study:** A ‘non-dipping’ blood pressure profile is currently regarded as a risk factor in its own for cardiovascular events and target organ damage. We studied 24 hour blood pressure by ambulatory blood pressure monitoring (ABPM) and risk factors of non-dipping pattern in newly detected young hypertensive patients.
Conclusion: The present study shows that, development of acute systolic hypertension after acute MI increases the risk of cardiac arrhythmia and heart failure and influences the prognosis adversely.

**Association of High Sensitivity C – Reactive Protein and Vitamin D Deficiency in Hypertensive Patients**

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Object of the Study: Vitamin D is currently of great public health interest, because vitamin D deficiency is common and is causally associated with musculoskeletal diseases. We studied the association of low vitamin D levels and hsCRP in hypertensive south Indian population.

Methodology: It is a cross sectional observational study done in hypertensive patients who came outpatient department of NIMS, tertiary care centre. We compared hsCRP levels and Uric Acid in Vitamin D deficient and normal Vitamin D level hypertensive population.

Summary: A total of 203 patients were included in this study with a mean age of 54.4 ±9.2. Among the hypertensive’s vitamin D deficient hypertensive’s (cases) were 134(66.00%) and with normal Vitamin D levels (controls) were 69(33.99%). The mean hsCRP levels among cases and control is 5.2±4.1 mg/l and 5.5±4.8 mg/l with a p value of 0.678. The mean uric acid levels among cases and control is 5.1±2.2 mg/dl and 5.2±2.2 mg/dl respectively with a p value of 0.791. There was no significant differences in systolic and diastolic blood pressures, BMI, lipid profile among cases and controls. There is negative correlation found between the vitamin d and hsCRP (r = -0.080). As the vitamin d level DECREASES, hsCRP is INCREASED but this association is found statistically insignificant (p = 0.319).

Conclusion: The present study highlighted the importance of Vitamin D deficiency and the role in inflammatory processes such as atherosclerosis leading to hypertension.

**The Effects of Smoking in Developing Hypertension**

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Background: Globally, hypertension is considered one of the most important preventable causes of morbidity and mortality. This paper aims to examine the effects of smoking in developing hypertension. The present study suggests that a positive harmful relationship exists between blood pressure and smoking and that smokers are more likely to develop high blood pressure compared to non-smokers.

This study was carried out at Rohilkhand Medical College and Hospital, who attended outpatient department from May 2016 to January 2017 among 200 hypertensive patients.

Results: Prevalence of hypertension was higher (23.5%) in smokers than non-smokers (16.4%). Smoking showed significant correlation with systolic blood pressure, diastolic blood pressure and mean arterial pressure at p ≤ 0.01. Smoking is a significant cause of elevation in blood pressure. Family history of tobacco plays significant role in adopting smoking habit.

Conclusion: The study highlighted the knowledge and lifestyle modification, their linkage with hypertension and compliance to the treatment regimen are important considerations in reducing the unhealthy effect of smoking in developing hypertension. The review revealed the harmful relationship between blood pressure and smoking and that smokers appeared more likely to develop high blood pressure in comparison with non-smokers. The study strongly recommends that to identify the hypertension associated risk factor, the knowledge and awareness programme needs to be suggested at both local and national health levels, in partnership with different governments, non-governments and external development partners to prevent or minimise the potential adverse effects that can be caused by smoking.

**A Study on Obesity Related Hypertension and Its Awareness Among the People**

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Background: In the study it was aimed to evaluate the prevalence of obesity and awareness of relation with the hypertension among hypertensive study population.

Method: This study was carried out at RMCH, who attended outpatient department from May 2016 to January 2017 among 600 hypertensive patients.

Results: Out of 600 patients, majority of patient’s age was less than 55 years i.e 64%. Females constitute majority of study population i.e. 61%. In our study, people with BMI more than 25 more prone to hypertension. Majority of patients are illiterate i.e. 68.7%. Majority (89%) are aware that excess salt and lack of exercise constitute major risk for developing hypertension. Majority patients among hypertensives were aware that they were more prone to heart damage.

Conclusions: Blood pressure is an important modifiable risk factor for cardiovascular, kidney diseases and stroke. The awareness regarding hypertension and its relation with obesity is very poor amongst patients and normal people. Through this study we identified areas of importance to be considered by awareness programs. People should be educated on the risk factors, presenting features and complications of hypertension. This is possible through awareness programme. Shefali Anne, Sasi Shekhar TVD. A study on obesity related hypertension and its awareness among the people.
Hypertension is a silent killer disease. It remains a major problem affecting 76 million, or approximately one third, of adults. While more prevalent in the older population, an increasing incidence in the younger group, including athletes, is being observed. Active individuals, like the young and athletes, are viewed as free of diseases such as hypertension. However, the increased prevalence of traditional risk factors in the young, including obesity, diabetes mellitus, and renal disease, increase the risk of developing hypertension in younger adults. Anxiety & Psychosocial factors may also be contributing factors to the increasing incidence of hypertension in the younger population. Increased left ventricular wall thickness and mass are increasingly found in young adults on routine echocardiograms and predict future cardiovascular events. This increasing incidence of hypertension in the young calls for early detection and prompt treatment to prevent future cardiac events. Apart from Renal other causes like cobs disease, pheochromocytoma, cushing syndrome, Acromegaly & Thyroid disorders are other major aetiological factors.

Study of Serum Insulin Levels in Hypertensive Subjects

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Introduction: The patients with essential hypertension are increasing all over the world. There may be development of insulin resistance and hyperinsulinemia in essential hypertension. An association between essential hypertension and defective insulin secretion has been indentified. Insulin resistance is the fundamental defect in the development of type 2 diabetes mellitus, hypertension and cardiovascular disease.

Methods: We studied fifty patients, 30 patients suffering from hypertension and 20 healthy controls (age and sex matched). The subjects for the present study were grouped as follows viz. Group 1: healthy controls (20) Group 2: Patients suffering from hypertension (30) (a) Non obese hypertension patients (n=15) (b) Obese hypertensive patients (n=15)

Results: Current study reveals that essential hypertension has positive and significant relationship with fasting serum insulin level and insulin resistance

Conclusions: Our cross sectional study reveals that incidence of insulin resistance is higher in essential hypertensive (more in obese compared to non obese) subjects comparison to controls.

Hypertension Among Subjects Referred for Health Check-up in a Tertiary Care Hospital

Bansal Ruby¹, Sarkar Taposhi², Gupta Anish³, Singh Narinder Pal⁴
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Introduction: Hypertension is reported to be the fourth contributor to premature death in developed countries and seventh in developing countries. In India the prevalence of hypertension has increased in both urban and rural populations and presently is 25% in urban adults and 10-15% among rural adults population. The aim of the present study was to determine the occurrence of hypertension and associated co-morbidities among subjects referred for health check-up and its correlation with different biochemical parameters.

Methodology: The present study was conducted among 1828 subjects referred for health check-up at Max Super Speciality Hospital, Ghaziabad. Hypertension was classified as per JNC-7 guideline. Subjects were divided in five groups- Group A Normal (BP < 120/80 mmHg), Group B Prehypertension (BP 120-139/80-89 mmHg without antihypertensive drug). Group C. Controlled hypertension (BP < 140/90 mmHg, with antihypertensive drugs), Group D: Uncontrolled hypertension (BP ≥ 140/90 mmHg with antihypertensive drugs) and Group E Newly Diagnose hypertension (BP ≥ 140/90 mmHg with no history hypertension). Twelve hour fasting blood sugar, Hb, S. creatinine, lipid profile and liver enzymes were done. The upper limit of total cholesterol, TG, LDL cholesterol, HDL cholesterol was defined as ≥240, ≥200, ≥160 and ≤40 mg/dl Data was analysed using SPSS 16.0 and P<0.05 was considered as statistically significant.

Results: Out of 1828 subjects (male: 1160, female 668). 24.07% were hypertensive with mean age (yrs) and BMI of 47.33 ± 11.97 and 28.23 ± 4.64 respectively. Around one fourth of the subjects had normal BP and majority were prehypertensive (table 1). In present study 13.51% had diabetes, 28.23% had family history of CAD, HT, DM and one fourth had habit of smoking and alcohol consumption. Out of 1828 subjects, 13.51% had abnormal blood sugar level above 126 mg/dl and 27.41% were obese. High prevalent of dyslipidemia and abnormal liver enzyme was found in hypertensive patients than normotensive (Dyslipidemia: 14.38% vs 10.72; Liver Enzymes: 6.13% vs 3.88%)

<table>
<thead>
<tr>
<th>Subjects</th>
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<td></td>
<td>99</td>
</tr>
<tr>
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<td>(26.59%)</td>
<td>(8.32%)</td>
<td>(5.41%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(10.34%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>5.85%</td>
<td>3.67%</td>
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</tr>
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</table>

Conclusion: In the present study the prevalence of hypertension was 24.07%. The newly diagnosed hypertension was present in 10.34% abnormal blood sugar was present in 13.51% of populations. High prevalent of
Medicine, Government Medical College, Kozhikode.

Moreover with increasing prevalence of other chronic liver diseases has remained stable or even decreased. NAFLD comprises a wide spectrum of liver damage, ranging from simple macrovesicular steatosis to steatohepatitis, cirrhosis and hepatocellular carcinoma. The prevalence of NAFLD has doubled during last 20 years, whereas the prevalence of other chronic liver diseases has remained stable or even decreased. Moreover with increasing incidence and prevalence, the perception of NAFLD being a benign condition of little clinical significance is rapidly changing. Obesity, metabolic syndrome, type 2 diabetes (T2DM) and dyslipidemia are predisposing factors for NAFLD. All these are directly linked with diet and lifestyle of an individual and hence preventable and modifiable. The study was conducted to identify the prevalence of NAFLD among the first-degree relatives of a patient already diagnosed with NAFLD. The study demonstrated the increased prevalence of NAFLD among the family members. Further risk factor analysis in the study strengthened the role of diet and lifestyle in the aetiology of NAFLD. But the prevalence of hypertension was almost equal in the NAFLD group and Non-NAFLD group.

NAFLD & HTN in First Degree Relatives of those with NAFLD

Amrutha Prabhakaran RK*, Geetha P**, PK Sasidharan***
*Resident, Dept of Medicine, Government Medical College, Kozhikode; **Professor, Dept of Medicine, Government Medical College, Kozhikode; ***Retd. Professor and Head of Dept. of Medicine, Government Medical College, Kozhikode.

Non Alcoholic Fatty Liver Disease (NAFLD) includes a spectrum of hepatic pathology that resembles alcohol-induced liver disease but develops in individuals who deny a significant history of alcohol ingestion. NAFLD comprises a wide spectrum of liver damage, ranging from simple macrovesicular steatosis to steatohepatitis, cirrhosis and hepatocellular carcinoma. The prevalence of NAFLD has doubled during last 20 years, whereas the prevalence of other chronic liver diseases has remained stable or even decreased. Moreover with increasing incidence and prevalence, the perception of NAFLD being a benign condition of little clinical significance is rapidly changing. Obesity, metabolic syndrome, type 2 diabetes (T2DM) and dyslipidemia are predisposing factors for NAFLD. All these are directly linked with diet and lifestyle of an individual and hence preventable and modifiable. The study was conducted to identify the prevalence of NAFLD among the first-degree relatives of a patient already diagnosed with NAFLD. The study demonstrated the increased prevalence of NAFLD among the family members. Further risk factor analysis in the study strengthened the role of diet and lifestyle in the aetiology of NAFLD. But the prevalence of hypertension was almost equal in the NAFLD group and Non-NAFLD group.

Prevalence of Prehypertension and Hypertension and Associated Cardiovascular Disease Risk Factors among Asian Indian Children & Adolescents

Partha Sarathi Datta
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Background: In India, only a few studies have been undertaken to investigate the prevalence of cardiovascular disease (CVD) risk factors among children and adolescents. Most of the studies carried out on the adult population.

Objectives: The present cross-sectional study was aimed to find out the prevalence of prehypertension and hypertension and investigate the association of high blood pressure with associated cardiovascular disease (CVD) risk factors in urban, suburban and rural children and adolescents.

Materials and Methods: This study was carried out among 741 (376 boys and 365 girls) children and adolescents, aged 10 to 15 years from 12 high schools situated in rural, suburban and urban areas in West Bengal, India. Anthropometric measurements, such as stature, body weight, circumferences at mid arm (MUAC), minimum waist (MWC) and maximum hip (MHC), skinfolds at biceps (BSF), triceps (TSF), sub scapular (SSSF) and supra iliac (SIF) regions etc., were measured using standard methodology. Systolic (SBP) and Diastolic (DBP) blood pressure were recorded according to a proper methodology. Lipid profiles, such as total cholesterol (TC), triglyceride (TG), high (HDL), low (LDL), very low-density lipoprotein (VLDL), and blood glucose were also measured from each participant. A schedule was used to collect data on the socio-demographic profile, birth records, behavioural activity, weekly physical activity and family history of hypertension. The weekly consumption of food was collected using a food frequency schedule.

Results: The urban participants have higher mean values of weight, stature, body mass index (BMI), minimum waist circumference (MWC), maximum hip circumference (MHC) and waist-hip ratio (WHR), but significantly, mean values of systolic blood pressure (SBP) & diastolic blood

Prevalence and Associated Factors of Prehypertension and Undiagnosed Hypertension Among Rural Population of Kozhikode District

Rabiya Koori, Thulaseedharan N K
Govt Medical College, Kozhikode

Hypertension is a risk factor for cardiovascular morbidity and mortality; even prehypertension is a risk factor for these diseases, and identifying them can help in early intervention like lifestyle and diet modification. The study was conducted to estimate the prevalence, risk factors, and co morbidities of prehypertension and hypertension in a rural area of Kozhikode district. It was a cross sectional study and the study population was selected by simple random sampling. Out of 300 participants, 51.3% were males, 48.7% were females and mean age was 42.13 years. 43.3% were normotensives, 29.3% were prehypertensives and 27.3% were hypertensives. Out of 82 hypertensives, 54.9% were already diagnosed hypertensives, of which 91.1% were on treatment, in which only 46.3% had controlled BP. 12.3% were newly diagnosed hypertensives during the study. Both prehypertension and hypertension were significantly associated with increasing age, low income, low socioeconomic status, smoking, added salt use, family history of hypertension, physical inactivity, BMI >23 and increased waist circumference. Hypertension was also associated with female sex, low educational status, sedentary work, fast food, stress, diabetes, dyslipidemia. Prevalence of prehypertension and hypertension was high in the population. Health education alone was advocated to the identified pre hypertensive people aiming to prevent or delay the onset of hypertension and its complications.
pressure are almost similar in participants from different habitat variation. No significant sex difference is observed for SBP and DBP. Mean values of blood sugar and lipid profile are slightly higher in the urban participants in comparison with the suburban and rural participants. The family history of hypertension, physical inactivity, and faulty food habits was found to be significant association with hypertension in the participants.

**Conclusion:** The study showed that the prevalence of prehypertension and hypertension and other related cardiovascular disease risk factors were high in both urban, sub urban and rural participants. Since hypertension starts mid and late adult age in life, the cardiovascular morbidity & mortality will be enormous in later life of the participants, if these trends continue. Prevention should begin during early ages in life, when a modification in lifestyle can reduce the incidence of cardiovascular disease. Therefore, there are need an effective preventive strategy and health awareness programs at local & national level, targeting the children & adolescent to encourage and improve their unhealthy life style, so that they do not become the epidemics of the 21st century.

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**Resistant Hypertension**

Virendra Kr. Goyal

Associate Professor & HOD, Deptt. of Internal Medicine, GBH American Multispeciality Hosp., & Medical College, A.I.I.M.S., Udaipur - 313001, Rajasthan

Failure to achieve goal BP (<140/90 mmHg) using 3 different drugs with pharmacologically complementary mechanisms, one of which is an appropriately dosed diuretic.

All three drugs given in maximally tolerated doses. Failure to control blood pressure (BP) inevitably heralds renal deterioration as well as accompanying increases in cardiovascular morbidity and mortality.

CKD itself is a predictor of cardiovascular events as a result of failure to achieve adequate BP control.

BP control should be a role in management of CKD & diabetes mellitus.

A resistant hypertension in CKD & DM, results poor prognosis, high mortality, more prone to terminal cardiovascular events.

From time to time, various committees has described resistant hypertension in different definitions. All refractory hypertension should not be taken as refractory hypertension, as pseudorefractory & secondary hypertension may also simulate in one way or other. Even white coat hypertension should be clearly separated before putting a level of resistant hypertension.

Compared with patients with white-coat hypertension, true resistant hypertension is associated with male gender, longer duration of hypertension, smoking, diabetes, target-organ damage (as measured by presence of LVH, impaired renal function, microalbuminuria, documented CVD.

All of these associations are weak. Demographics have a low discriminating value for the diagnosis of resistant hypertension.

ABPM is desirable for correct diagnosis and management.

For true resistant hypertension along with available drugs (excluding secondary hypertension, and ensuring normal renal functions), renal denervation should be considered when both kidneys are normal in terms of anatomy, vasculature without stenosis/stenting of both renal arteries.

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**Cardiovascular Risk Factors Central Obesity, Stress and Sedentary Lifestyle are more Prevalent in Subjects with Prehypertension than Normotensive Individuals**

Narendra Kumar, Anupam Prakash

Department of Medicine, Lady Hardinge Medical College & associated hospitals, New Delhi

**Background:** Hypertension is associated with metabolic and phenotypic abnormalities. Recently, even prehypertension has been associated with metabolic and atherosclerotic alterations. However, there is no specific study from India on prevalence of various cardiovascular risk factors in adult subjects with prehypertension. The present study aimed to determine prevalence of various cardiovascular risk factors in prehypertensive and normotensive individuals aged ≥18 years.

**Methodology:** Cardiovascular risk factors were studied in 100 prehypertensive subjects and compared with equal number of normotensive subjects. Obesity (BMI), Central obesity (Waist circumference), glycemic status, lipid levels, lifestyle/physical activities and stress/mental health status were evaluated in both groups.

**Results:** Prehypertensive subjects had greater prevalence of elevated waist circumference (79% vs. 21%), sedentary lifestyle (46% vs. 14%) and mental stress (35% vs. 18%) than normotensive subjects (p<0.05). Lipid parameters and glycemic status did not differ between the two groups.

**Conclusion:** Central obesity, mental stress and sedentary lifestyle are significantly elevated in prehypertensive population as compared to normotensive population.

The presence of these factors in prehypertension subjects stresses on the need for early detection of these patients. Preventive strategies should be targeted at this population subset so that progression to hypertension can be prevented and cardiovascular risk mitigated.
Efficacy of ACE inhibitors vis-a-vis ARBs (with or without Hydrochlorothiazide) in Achieving 24 Hour Blood Pressure Control

Atit Chopra, Anupam Prakash
Department of Medicine, Lady Hardinge Medical College & Asso. Hospitals, New Delhi

Introduction: Angiotensin receptor blockers (ARBs) have similar efficacy to angiotensin converting enzyme inhibitors (ACEIs), but have better tolerability. Although recommended as once daily dosing, the actual therapeutic effect may last less than 24 hours. The present study aimed to determine if 24 hour control is achieved with enalapril and losartan with/without hydrochlorothiazide (HCTZ) in essential hypertension.

Method: A convenient sample of 200 hypertensive patients was studied; 100 on enalapril 5 mg ± HCTZ 12.5mg OD (Group 1) and 100 on losartan 50 mg ± HCTZ 12.5 mg OD (Group 2). Patients having diabetes, coronary artery disease and cerebrovascular disease were excluded. ABPM apparatus was placed for 24 hours and average 24-hour, awake-time and sleep-time readings were recorded. Subgroup analysis was also performed-subgroup 1a-Enalapril, subgroup 1b-Enalapril+HCTZ, subgroup 2a-Losartan, subgroup 2b-losartan+HCTZ. Unpaired Student’s t-test and ANOVA were used for statistical analysis.

Results: The demographic profile, average 24 hour BP, daytime BP and night time diastolic BP were comparable between the two groups and all the subgroups. Group 1 (Enalapril ± HCTZ) had higher night time systolic BP than Group 2 (losartan ± HCTZ) (122.50±14.73 mm Hg vs 118.62±11.53 mm Hg, p=0.04). Blood pressure in the last 4 hours of dosing interval was higher than blood pressure in the remaining 20 hours of the day in both losartan and enalapril groups. However, the subgroups 1b and 2b (both subgroups with hydrochloorthiazide) had comparable BP in the last 4 hours and the remaining 20 hours.

Conclusion: Losartan helps lower night time systolic BP better than enalapril. Addition of hydrochlorothiazide to losartan as well as enalapril helps achieve 24 hour BP control, which in the absence of hydrochlorothiazide has a tendency to surge in the last 4 hours of the dosing interval.

Association of Serum Testosterone with Hypertension in Type 2 Diabetic Males

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Dept. of Medicine, Lady Hardinge Medical College & Asso. Hospitals, New Delhi-110001

Introduction: The aim of this study is to determine the testosterone levels in type 2 male diabetics (T2DM) & to see its association with (a) hypertensive & (b) normotensive type 2 diabetic males.

Materials: Cross sectional study was conducted in 80 T2DM subjects with duration of diabetes ≥ 5 years and age between 35-65 years. A comparison group of age matched 80 non diabetics was taken. Patients with type 1 diabetes and other risk factors known to cause gonadal insufficiency (CLD, pituitary adenoma) were excluded.

Observations: Serum testosterone level in T2DM was lower than non-diabetic subjects (341.11±177.63 vs 435.97±149.69; p <0.001). 30% (n=24) of T2DM subjects had low serum testosterone. 18 subjects of T2DM had hypertension out of these 18 subjects 11had low Serum testosterone level.

Conclusion: Low serum testosterone levels were found in about one third of T2DM subjects. More than 50% of subjects with low serum testosterone were hypertensive. Hence it will be pertinent to watch diabetic patients with hypertension for quality of life & serum testosterone levels.

Association of Serum Uric Acid Levels with Various Hypertensive Groups Among Subjects Referred for Health Check up in a Tertiary Care Hospital

Sarkar Taposh, Bansal Ruby, Gupta Anish, Kathuria Danish, Singh Narinder Pal
Department of Medicine and Allied Specialities, Max Super Specialty Hospital, Vaishali, Ghaziabad, Uttar Pradesh

Introduction: Serum uric acid (SUA) has been shown to, be strongly associated with hypertension. Elevated UA independently predicts development of future hypertension and subsequent cardiovascular events. The aim of the present study was to determine the association of Serum Uric Acid levels with various hypertensive groups among subjects referred for health check up in a tertiary care hospital.

Methods: A total of 1158 subjects came to our hospital for the health check up. The subjects were divided into three groups according to JNC 7 Guideline: Group A: Normotensive (<120/80 mmHg), Group B: Prehypertension (120-139/80-89 mmHg) and Group C: Hypertension (>140/90 mmHg). Hypertensive groups were further divided into three categories: Controlled subjects (BP<140/90mmHg), Uncontrolled subjects (BP > 140/90 mmHg, with hypertensive drugs) and newly diagnosed subjects (BP>140/90 mmHg, with no history of hypertension). Twelve hour fasting serum uric acid was done.

Results: The mean age (yrs) and BMI among the three groups were 46.69±10.73, 47.17±10.67, 54.21±8.51 and 27.59±4.47, 28.28±4.60, 29.01±4.06 respectively. The mean SUA±SD value among Group A, Group B and Group C were 5.14±3.22, 6.03±3.35 and 5.99±1.40 respectively. Prevalence of hyperuricemia among female subjects (SUA> 6.0mg/dl) was 11.90% while in male subjects (SUA>6.8 mg/dl) was 28.85%. Further division of hypertensive groups was done as controlled, uncontrolled and newly diagnosed hypertensive and it was found that slightly high SUA were in controlled hypertensive as compared to
The principal aim of the study was to know the trend in two major NCD, viz. Hypertension and Diabetes Mellitus among the patients attending the ESIC dispensaries.

Materials and methods: Inclusion criteria: All patients with diabetes and/or hypertension who are currently under treatment or have been treated before for the same and who have been worked up at least once in the study period as per existing national/international guidelines.

Exclusion criteria: Patients with incomplete clinical records, patients who have not been worked up as mentioned above.

Methodology: The study was done by reviewing the NCD registers, analysing the clinical records of Insured Persons and their family members who attended the ESIC Dispensaries. Those entries which were incomplete in any respect were not considered for the purpose of estimation of incidence and prevalence of diabetes and hypertension.

The diagnosis of hypertension was made according to the Indian hypertension guidelines. Diabetes was diagnosed based on the WHO criteria.

Results:

1. Percentage of population covered under ESIC Scheme

2. ESI DISPENSARY ARIYANKUPPAM (PONDICHERY): JAN 09 TO FEB. 2012

It can be understood from the chart above that there has been an increase in the number of patients with diabetes and hypertension attending the OPD in ESI Dispensary Ariyankuppam during the period from Jan-2009 to Feb. 2012.

Study of Trends in Non-Communicable Disease with Special Reference to Hypertension Among Beneficiaries of Esic Scheme in Pondicherry

Palash K Sanyal
Chief Medical Officer (NFSG), Dept. of Health (ESI), Pondicherry

Introduction: The incidence and prevalence of Non-Communicable Disease (NCD) among the beneficiaries of ESIC scheme are on the rise in consonance with similar rise elsewhere, as evident from the increasing number of new NCD registrations at the OPDs of various dispensaries. However the exact or approximate burden of the disease is not completely known due to lack of systematic studies. ESIC beneficiaries are those who are covered under the Employees State Insurance Corporation Act. In Pondicherry they form a substantial part of the total population (vide infra). The rise in NCD among these patients is cause for concern as they are working in industries and therefore increasing morbidity will lead to increased sickness absenteeism, fall in industrial productivity and thereby having adverse social and economic implications. At the same time this leads to increasing financial burden on healthcare delivery systems as ESIC beneficiaries get their treatment from the ESIC dispensaries. It therefore became imperative that a study on the trend in NCD be undertaken to estimate the disease burden and generate database for helping in policy formulation for NCD by the ESIC.

Aims and objectives: The principal aim of the study was to know the trend in two major NCD, viz. Hypertension and Diabetes Mellitus among the patients attending the ESIC dispensaries.
It can be understood from the chart above that there has been an increase in the number of patients with diabetes and hypertension attending the OPD in ESI Dispensary Ariyankuppam during the period from Jan-2009 to Feb. 2012.

ESI DISPENSARY MUDALIARPET: TRENDS YEARWISE

2013: HYPERTENSION: AGE & GENDERWISE DISTRIBUTION OF NEW PATIENTS:

2014: HYPERTENSION: AGE & GENDERWISE DISTRIBUTION OF NEW PATIENTS:

2015: HYPERTENSION: AGE & GENDERWISE DISTRIBUTION OF NEW PATIENTS (UPDATED TILL 30th JUNE):

2016: HYPERTENSION: AGE & GENDERWISE DISTRIBUTION OF NEW PATIENTS:

2017: HYPERTENSION: AGE & GENDERWISE DISTRIBUTION OF NEW PATIENTS (UPDATED TILL 30th JUNE):
CUMULATIVE YEARWISE DISTRIBUTION OF PATIENTS WITH HYPERTENSION:

It can be summarised from the above diagrams that over the last five there is demographic clustering of the patients with hypertension towards lower age-groups. While the majority of cases are in the 40-49 years age group, there is an increasing number of cases in 30-39 years age group. A few cases are also seen in 20-29 years age group. It is assumed that with more aggressive screening for hypertension there will be more cases in lower age groups.

Discussion: This is perhaps the first study of patients with hypertension and other NCD attending ESI Dispensaries in Pondicherry. The major challenges include patient education and empowerment so that they can actively participate in management of their NCD. Our experience in the management of NCD proves the point that effective prevention and control of NCD is achievable with available drugs and non-pharmacological measures.

Mean Platelet Volume as a Indicator of Severity of Hypertensive Retinopathy in Hypertensive Subjects

Priyanka Pandey*, Abhishek Singhai, R.K.Jha
*Postgraduate Student, Department of Medicine, Sri Aurobindo Medical College & PGI, Indore

Objective of the study: Hypertensive retinopathy (HR) represents the ophthalmic findings of end-organ damage secondary to systemic arterial hypertension. Platelets play a crucial role in the pathogenesis of atherosclerotic complications, contributing to thrombus formation or apposition after plaque rupture. The aim of our study was to investigate whether Mean Platelet Volume (MPV) is associated with the severity of hypertensive retinopathy in hypertensive patients.

Methodology: This cross sectional study was conducted in Department of Medicine of SAMC & PGI, Indore. Total 250 adult hypertensive patients (BP > 140/90 mm Hg or taking antihypertensive drugs) recruited for the study.

Results: Of the 250 subjects, 158 (63.2%) were male and 92 (36.8%) were female. Elevated MPV > 11.5 femtoliter was observed in 84 cases (33.6%). There was statistically significant relationship between the grade of retinopathy and elevated MPV in hypertensive subjects. (r = 0.52, P < 0.001)

Conclusion: We described a relation between MPV and HR (probably first time in Indian patients). Measurement of MPV is easy to establish and therefore might serve as a valuable predictor of a worse outcome in microvascular complications.

Clinical Utility of Ambulatory Blood Pressure Monitoring (ABPM) in Stage 1 Newly Diagnosed Hypertensive Patients

Salagre SB, Ansari NNA, Khobragade AP
Seth GS Medical College and KEM Hospital, Mumbai

Objective of Study: To evaluate clinical utility of ABPM in stage 1 newly diagnosed hypertensive subjects, to compare ABPM readings with clinic blood pressure (Clinic BP) and to study dipping pattern and white coat hypertension (WCH) in newly labelled hypertensives.

Methodology: After institutional ethics committee approval and written informed consent from participants, an observational cross sectional prospective study was conducted in hypertension clinic of tertiary care hospital over a period of one year on 138 newly diagnosed stage I hypertensive patients. ABPM results were analyzed and compared with clinic BP.

Summary of Results: 86/138 (62.32%) were diagnosed to have true HT by ABPM. WCH was detected in 52/138 (37.68%) which is higher than that reported in international studies (21%). The mean pulse, mean systolic/diastolic BP, mean pulse pressure and MAP were significantly higher (p<0.0001) by clinic BP than ABPM. True hypertensive patients were having higher weight (p <0.001), had higher fasting blood sugar values (P = 0.008) and BUN levels (p = 0.034) than WCH patients. In true hypertensive patients’ retinopathy (45.35%), albuminuria (31.40%), increased echogenicity of kidneys on USG (19.77%) and LVH on ECG (16.28%) were present. Hyperbaric index, was significantly higher for systolic and diastolic BP in true hypertensive patients as compared to WCH patients. True hypertension patients showed significantly higher average real BP variability for systolic BP (p <0.001). WCH patients were predominantly males (71.15%), were younger (41.82 ± 12.77 years) than true hypertensives (46.45 ± 12.20years), (p =0.037) and did not show any end organ damage. 24hr Average SBP and Night time Average Pulse pressure were the factors from ABPM as predictors of organ failure. Dipping was detected in 33 (38.37%), non-dipping in 44 (51.16%) and reverse dipping in 9 (10.47%) patients. In non-dippers, retinopathy was predominant organ involvement (56.10%), followed by albuminuria (34.15%), increased echogenicity of kidneys on ultra sound (24.39%), and LVH on ECG (19.51%).

Conclusions: Our study reflects the clinical utility of ABPM for correct diagnosis of hypertension and detecting WCH.
Metabolic Syndrome in Hypertensives – An Essential Entity to Screen

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Objective of Study: To study prevalence, clinical characteristics, contributors, risk factors of Metabolic Syndrome in Hypertensives and compare them with hypertensives without metabolic syndrome.

Methodology: After ethical consideration, an observational cross sectional prospective study was conducted in hypertension clinic of tertiary care hospital on hypertensive patients. The patients with Metabolic Syndrome (N=160) were compared with respect to Modified ATP III, IDF and WHO criteria. Their clinical and laboratory parameters were compared with age and gender matched hypertensives without metabolic syndrome (N= 138).

Summary of Results: Prevalence of metabolic syndrome in hypertensive subjects was 53.7% (Modified NCEP-ATPIII criteria), 43.3% (WHO criteria) and 47.6% (IDF criteria). Metabolic syndrome was more frequent in male hypertensives (54.4%) and in the age group of 40 to 60 years (60.6%). As per modified NCEP, three criteria were met in 53.8%, 4 in 40% and all five in 6.8% hypertensives. Mean systolic (p=0.01) and diastolic (p=0.04) blood pressure were significantly higher in males as compared to females. Female hypertensives had significantly higher abdominal obesity (p< 0.001). Male hypertensives had significantly higher Cholesterol (p<0.001), Triglycerides (p<0.001), fasting blood glucose (p<0.001). When compared with hypertensives without metabolic syndrome, mean systolic BP (p=0.001), not at goal BP (p<0.001), non-adherence to lifestyle modifications (p< 0.001) was noted in hypertensives with metabolic syndrome. Hypertensives with metabolic syndrome had significantly higher fasting blood glucose, abnormal lipids and higher serum uric acid levels (p<0.001). Azotemia, LVH on ECG and proteinuria were significantly higher (p<0.001) in these patients. Retinal (54.4%), renal (13.8% - p= 0.001), cardiac (30% - p<0.001) and cerebral (16.9%) end organ damage was higher in hypertensives with metabolic syndrome.

Conclusions: Hypertensives should be routinely screened for contributors for metabolic syndrome to prevent end organ damage and morbidity. Early intervention with lifestyle modifications will contribute in reducing vascular disease burden in our country.

Risk Factors of Intradialytic Hypertension in ESRD Patients at a Tertiary Care Hospital – An Observational Study

Mohan V B1, Ravindra Prabhu A2, Shankar Prasad N3, Dharshan Rangaswamy2
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Background: Hypertension is highly prevalent in end-stage renal disease patients on maintenance hemodialysis. Mechanism proposed to explain intradialytic HTN include: Volume overload, renin-angiotensin-aldosterone and sympathetic nervous system activation, removal of antihypertensive medications during dialysis, endothelial cell dysfunction and electrolyte imbalances involving dialysate sodium, calcium, or potassium. (1, 2). Intradialytic hypertension is defined as elevation in mean artery pressure >150mmHg or elevation of systolic blood pressure >10mmHg from pre to post dialysis. It is the most common complication seen in 5-15% patients on regular dialysis. Intradialytic hypertension is commonly seen in patients with older age group, lower BMI, hypoalbuminemia, longer vintage and volume overload state (3,4).

Aim: To detect the various risk factors associated with intradialytic hypertension in ESRD patients on regular dialysis at a tertiary care hospital.

Methods: Single center observational study in all ESRD patients undergoing hemodialysis at Kasturba hospital, Manipal; A total of 130 ESRD patients on regular hemodialysis were studied by a single nephrologist.

Inclusion criteria: All ESRD patients on regular hemodialysis at tertiary care hospital; Exclusion criteria: Acute kidney injury, other stages of CKD, Patients on Peritoneal dialysis

Results:

<table>
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<th>Gender</th>
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<th>Female = 27</th>
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<td>Others =12</td>
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<td>BMI</td>
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<td>Overweight=19</td>
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<tr>
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<td>&gt;3kgs=113</td>
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</tr>
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<td>Prescribed HD session</td>
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<td>Pre-HD antihypertensive medication</td>
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References:

Nocturnal SpO2 Study by Polysomnography and its Co-relation with Glucose Status in Patients of Type 2 Diabetes Mellitus: A Population Based Cross Sectional Study
Kapil Kumar Goel
3rd Year PG Resident in the Department of Medicine, SCBMCH, Cuttack, Odisha

Aims and Objective of the Study:
1. To Study the relation of Sleep Disorder Breathing to Type 2 Diabetes Mellitus.
2. To Prove that SpO2 is an independent predictor of glucose metabolism in Type 2 DM patients.

Globally, an estimated 422 million adults are living with Diabetes Mellitus according to the latest 2016 Data from WHO. India has 69.2 million People living with Diabetes Mellitus with a prevalence of 8.7 % as per WHO data 2016. Type 2 Diabetes Mellitus constitute 85 – 90 % of Diabetic Population, is the most prevalent form in India. Sleep Disorder Breathing (SDB) has a major association with Type 2 Diabetes Mellitus patients. Recently, there has been increasing recognition that SDB, a condition characterised by reduction or complete cessation of airflow during sleep, may impair Glucose metabolism. Furthermore, some evidence suggests that diabetes might increase the predisposition for obstructive sleep apnoea. Early identification of obstructive sleep apnoea in patients with type 2 diabetes, and assessment for metabolic abnormalities in those with obstructive sleep apnoea could reduce cardiovascular disease risk and improve the quality of life of patients with these chronic diseases.

Materials and Methods: The Present Study is a Tertiary Care Hospital, Population Based Cross Sectional Study. Around 100 Subjects from either sex, were recruited from OPD or Emergency or admitted in IPD at SCB MCH, Cuttack, Odisha, who meet the following inclusion Criteria are considered for inclusion in this study.

Inclusion Criteria
1. Age: 18 – 70 Years and Type 2 Diabetes Mellitus of any duration, on stable Medication Regimen.

B.P. Apparatuus which one to select? Past to Future of Evaluation of Vital Sign
Kulkarni Shriram Vasant, Sinha Sagar, Kulkarni Om S, Kulkarni Chitra S
KDHCC Kharghar, Navi Mumbai, Kulkarni Nursing Home, Khopoli

Introduction: Measurement methods of Blood pressure make an initial step to control the disease. An uniformity of measurement of BP will aid in proper management of the devastating epidemic of Non Communicable Diseases NCD.

Methods & historical review: Initially all the apparatuses used were Anaeroid, but the issue of calibration was never answered in a recognisable manner. Introduction of Mercury eased our job but many issues related to environmental toxicity & disposal was a big concern. With the invasion of Medical electronics, the digital equipments were available but lacked unifornaty of calibration. Unlike the other national Academic medical bodies we do not have a list of models which are approved by a society. However introduction of an electronic Blood pressure apparatus, which measures BP three times at intervals of 10 seconds & gives an average can be considered as a gold slandered of BP measurement in an un observed situation where the impact of White coat hypertension can be easily eliminated. A method which is available, accesible, affordable, reproducible must be adopted all over the country or Subcontinent.

Future & recommendations: The future lies in an instrument which can be accessed by the health care provider or care giver on a smart phone with the help of a simple android or IOS enabled app made avaiable free to the end user. It will improve the compliance, convenience, reduce cost burden & complications.

A concept of Tubeless BP apparatus using sensors which correlates closely to NIBP taken intra arterially is on the horizon. A concept of machine to man & Machine to Machine talk using IOT (Internet of the things) will add a major input in our all hurdles of Data management, 24 hour Ambulatory management & further research in the field.
To Determine Whether Vitamin D Deficiency is Associated with Increased Risk of Metabolic Syndrome among Adult Hypertensive Patients

Shiv Chadha, Abhishek Singhai, RK Jha
Sri Aurobindo Medical College & PGI, Indore, Madhya Pradesh

Introduction: Vitamin D deficiency is a highly prevalent condition, present in approximately 30-50% of the general population. Vitamin D deficiency predisposes to insulin resistance, pancreatic beta cell dysfunction, and the metabolic syndrome. The aim of this study was to determine whether vitamin D deficiency is associated with increased risk of metabolic syndrome among adult hypertensive patients.

Materials & Methods: This is a cross sectional study, conducted at Department of General Medicine of a tertiary care centre. All adults (age>18 years) diagnosed as essential hypertension were included in the study. 250 residents of Indore city who gave informed consent and met the inclusion criteria were selected as subjects. All subjects were almost equally divided into three groups; depending on serum 25(OH)D level. Following investigations were also done in all patients: Hb, ESR, serum creatinine, fasting blood sugar, serum TSH, and Lipid profile. The Non-parametric test, Pearson’s Chi-Square test has been used for qualitative data.

Results: Hypertensive Subjects were divided into three groups depending on serum 25(OH)D level. Female hypertensive patients were predisposed for vitamin D deficiency. BMI, waist circumference, blood pressure, fasting blood sugar and triglyceride levels were higher in vitamin D deficiency patients. 24% of vitamin D deficiency subjects had metabolic syndrome in comparison to 12% of vitamin D insufficiency subjects and 8% of vitamin D sufficiency subjects had metabolic syndrome.

Conclusion: In summary, vitamin D deficiency also has extra-skeletal effects that impact on the development of various pathologies including those that make up a large majority of morbidity and mortality; metabolic syndromes. Our findings suggested that serum 25(OH)D concentrations were inversely associated with the risk of metabolic syndrome among hypertensive subjects.

Prognostic Significance of Microalbuminuria in Patients with Recent Ischemic Stroke

Swati Kumar, Jyotirmoy Pal, Biman Kanti Roy
R.G. Kar Medical College And Hospital, Kolkata

Introduction: “Cerebrovascular Disease” or “Stroke” is one of the leading causes of mortality and morbidity in adults worldwide, posing serious medical, socio-economic and rehabilitation problems. There is growing interest in unifying mechanisms in ischemic stroke pathogenesis. Microalbuminuria (MA) is thought to be a marker of widespread vascular damage. It is associated with increased mortality in diabetes mellitus, hypertension and acute myocardial infarction. Although microalbuminuria as an indicator of microvascular damage has been well established, its role in the prediction of macrovascular events like cerebrovascular accidents is still left to be fully explored. Hence an attempt has been made to study the incidence of microalbuminuria in recent ischemic stroke patients and shed some light on its association with other risk factors and the prediction of the outcome of such patients.

Materials and methods: The present study included 32 patients diagnosed with ischemic stroke confirmed by CT scan brain, within 12 hours after the onset of symptoms. The control group consisted of 30 age and gender matched subjects examined 6 months after ischemic stroke. Patients with diabetes, hypertension, abnormal urinalysis, renal insufficiency, or systemic infection were excluded from the study. The severity of neurological deficit was measured by the Scandinavian Stroke Scale (SSS). The albumin excretion rate was measured using spot urine collection albumin creatinine ratio. The patients were reexamined 1 month later for assessment of activities of daily living using Barthel Index.

Results: Microalbuminuria was found in 10 of 32 (31.25%) patients with recent ischemic stroke and 2 of 30 (6.67%) controls. Patients with microalbuminuria scored lower on the SSS than patients without microalbuminuria. The patients with microalbuminuria scored lower on the Barthel Index 1 month later.

Interpretation and conclusion: The present study found that patients with recent ischemic stroke were 6.32 times more likely to have microalbuminuria when compared to the controls. Measuring albumin excretion rates seems to be a reliable indicator of stroke outcome 1 month after the stroke.

OSA and Hypertension: A Tale of Two unhappy Bedfellows

DP Singh
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Obstructive Sleep Apnea (OSA) is an independent cause of hypertension, beyond the effect of obesity, gender and age. Patients of sleep apnea have 30-300% more risk of hypertension. OSA is thought to contribute to hypertension by increasing sympathetic nervous system activity, systemic inflammation and endothelial dysfunctions. During the past decades there has been a large body of evidences supporting the relationship between OSA and systemic hypertension (Two unhappy bedfellows). Currently there are data suggesting that OSA is an important secondary and reversible cause of hypertension. OSA is also associated with resistant hypertension and the presence of target-organ damage such as left ventricular hypertrophy and microalbumunuria. Randomised studies suggest that the management of OSA with continuous
positive airway pressure (CPAP) promotes a significant 24 hour blood pressure reduction, more significantly in the sub-group of patients with uncontrolled and resistant hypertension. Despite the availability of effective therapy OAS remains an underdiagnosed and undertreated condition. Lack of physician’s awareness is one of the primary reason for this deficit in diagnosis and treatment. Systemic search for OSA among hypertensive patients should be made from accurate sleep history to full polysomnogram (PSG). PSG should be done in hypertensive obese patients, resistant hypertensive, nondippers or revers dippers in ABPM. Reversal of hypertension with CPAP is multifactorial depending upon the stage at which treatment is started. The best therapy is the early therapy before the development of hypertension. Don’t wait for Retinopathy to treat DM.

**Hypertension and its Risk Factors among Adult Population in a Rural Community of Singur Block, Hooghly District, West Bengal**

**Nabarun Karmakar, Indranil Saha, Rabindranath Sinha, Aparajita Dasgupta, R Partha Sarathi, Somnath Das**

*Tripura Medical College & Dr. BRAM Teaching Hospital, Agartala*

**Background:** Chronic non-communicable diseases (NCD) like hypertension, is emerging as a major health problem in India with increasing prevalence significantly in both urban and rural population. This is largely due to preventable and modifiable risk factors like physical inactivity, unhealthy diet, obesity, tobacco and inappropriate use of alcohol.

**Objective:** To find out the prevalence and risk factors of hypertension; and its association with hypertension among study population, if any.

**Methods:** A community-based study with cross-sectional design was conducted for 1 year from May, 2013 to April, 2014 among 651 adults (age 20 years and above) in rural communities of Singur, Hooghly District of West Bengal which is the rural field practice area of All India Institute of Hygiene and Public Health, Kolkata. Blood pressure measurement and information regarding socio-demography, behavioural risk factors and family history of hypertension were collected.

**Result:** The overall prevalence of hypertension was 26.1% (male 21.8% and female 29.9%). Prevalence increased with increase in age group (P< 0.05). Muslim religion, less education; different modifiable risk factors like tobacco usage, obesity and sedentary life styles were found to be significantly associated with hypertension (P< 0.05). Multivariate logistic regression analysis (Forward Conditional method) showed that Age, type of family, tobacco usage, abdominal obesity, physical inactivity and diabetes mellitus together contributed 21.3 – 31.3% variation of hypertension.

**Conclusion:** The prevalence of hypertension in the rural population was found to be on the higher side compared to previous reports from India. The modifiable risk factors of hypertension in rural communities were found to be increased indicating implementation of strong public health measures to combat hypertension and its consequences.

**Key Words:** Hypertension, Risk Factors, Adult, Population, Community, Rural.

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**Stroke in Youngs: Impact of Hypertension**

**PS Karmakar, J Pal, P Banerjee**

*RG Kar Medical College, Kolkata*

Stroke is a global health problem. While a specific definition of “young stroke” is lacking, the vast majority of authors consider “young stroke” to pertain to individuals under 49 years of age. We performed an observational study on 50 young (15 – 49 years) new onset (within 48 hours) stroke patients in search for the types, etiologies and risk factors of stroke. In our study, we found that the incidence of ischaemic stroke was higher than haemorrhagic stroke in young Indian patients. 24(48.0%) patients were in haemorrhage group and 26(52.0%) patients were in infarct group. We searched for the risk factors in causal relationship with stroke in youngs and it was found that 21 (42%) patients were hypertensive, 4(8%) patients were diabetic, 11(22%) patients were smoker, 27(54%) patients had high BMI, 15(30%) patients had family h/o CVA, 23(46%) patients had dyslipidaemia and 13(26%) patients were alcoholic. Higher percentages of hypertensive patients 17(81.0%) suffered from ICH. This association was statistically significant (p=0.00007). Similarly, among 24 ICH patients,17 (70.8%) had hypertension as a risk factor. In the infarct group 15.4% had hypertension. It was found that 22(44%) patients were drug defaulter i.e they had poor compliance to the antihypertensive and antidiabetic drugs. Out of the 25 drug defaulter patients,16(64%) suffered from ICH because of poor compliance to antihypertensive drugs. Higher percentages 18(81.8.0%) of patients were found to be drug default positive in haemorrhage group. This association was statistically significant (p=0.0001). Under multivariate analysis significant risk of haemorrhage was found 17.10 folds more for Hypertensive patients. This is in commensurate with other similar studies performed in search of stroke risk factors among young patients. So, we can make a conclusion that early diagnosis of hypertension and its optimal treatment could reduce the incidence of stroke significantly.