Hypertension

Non-invasive Detection of Endothelial Dysfunction in Essential Hypertension by Doppler Ultrasonography
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The objective of this investigation was to evaluate the role of hypertension in endothelial function and to evaluate the relation of endothelial dysfunction with various factors like age, sex, Body mass index (BMI), duration and severity of hypertension and with vascular complications of hypertension like albuminuria and retinopathy.

We assessed endothelial function in 45 hypertensive cases and compared with 30 age and sex matched controls. B. mode ultrasonography was used to measure the diameter of the brachial artery. Endothelium-dependent dilatation was assessed as the change in diameter of the brachial artery during reactive hyperemia. Endothelium independent dilatation was evoked, as a control by sublingual administration of glyceryl trinitrate.

Despite similar ages, lipid and glucose levels in the study groups, endothelium-dependent dilatation was less in patients with hypertension (10.86 ± 7.84%) than subjects with normal blood pressure (20.51 ± 9.07%) (p<0.05) whereas glyceryl trinitrate induced changes were similar. Further it was also observed that endothelial function was significantly lower in 50 to 60 years age group as compared to 40-49 years hypertensive subjects (8.20 ± 5.44% Vs 13.36 ± 10.65%, p<0.05). Also there is impaired endothelial function of greater extent in cases with BMI > 25kg/m², duration of hypertension greater than 5 years, and increasing severity of hypertension. The males of age group 40-49 years have mean % FAD (9.86 ± 6.86%) significantly lower as compared to females of age group 40-49 yrs. (19.61 ± 13.64%), whereas mean% FAD was similar in males of age group 50-60 yrs. These results suggest that endothelial dysfunction exists in patients with hypertension and there is decline in endothelial function with increasing age, male gender, BMI, severity and duration of hypertension.

Clinical and Echocardiographic Profile of Hypertension - A Study of 162 Cases
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Aim: To study clinical and echocardiographic profile of hypertension.
Material and Methods: One hundred sixty-two patients of either sex, of hypertension attending OPD/admitted in GND Hospital of Govt. Medical College, Amritsar were studied. Detailed history, examination, routine investigations, ECG, echocardiography was done. Those having congenital, rheumatic, heart disease were excluded. Patient was said to be hypertensive according to JNC-VI, ISH, WHO guidelines. Only those who were detected hypertensive for the first time were included. Those on steroids therapy were excluded.

Observations: Eighty-one patients were Male; 81 female. Mean age of male patients was 52.95 years and of female was 53.06 years. The presenting symptoms were palpitation, dyspnnea, chest discomfort, headache, vertigo, weakness, decrease in work performance. All had systolic murmur 32 (16,16) were <40 yrs; 47 (20, 27) between 41-50; 36 (20,16) 51-60; 38 (19,19) 61-70; 8 (6,2) 71-80 and 1 (0,1) above 80 yrs of age. Mean LVIDd., IVS, PHT, LA was 4.61, 1.11, 1.0, 3.17 cm in male and 4.47, 0.98, 0.90, 2.81 cm in female. 17 (8.9) had RWMA. Mean EF in male was 56.76 and in female 59.08%. 102 (45, 59) had E<A; 53 E>A, 3 E= A, 4 had diastolic dysfunction of abnormal compliance. 29 (9,20) had MR. 5 (2,3) (MR, AR), 1.2 (1,1) AS; 5 (3,2) AR, 2 (x,2), MR, PR, TR, 1 (x,1) MR, TR, 1 (0,1) TR, PR, 3 (3,0), MR, AR, PR, TR 2 (0,2) MR, AR, TR, MVP was present in 2. Rupture of chord. Tend in 1, aortic root was dilated in 4 (4,0), 1 (1,0) expired. Family history of HTN was strongly +ve in younger patients. ECG (evidence of LVH, 57.7 changes, VPCs, AF was present in 9. LVH was of concentric type.

Conclusion: Hypertension often caused silent killer has variable clinical & echocardiogram profile and both may not match. All age groups can be affected. Multivacular, univacular lesions can occur. It should be detected earlier and diastolic dysfunction should be detected and treated early.

 Plasma Homocysteine, Wheather as a Risk Factor for Hypertension in East India
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Indians are reported to have high prevalence of vascular diseases. Apart from traditional risk factors high level of homocysteine are reported to be significant in European population. Mean homocysteine level is found to be high in Europeans. This study looked into the association of serum homocysteine level with hypertension in East Indian population. Study conducted on 29 hypertensive patients and 25 controls who have no hypertension, NIDDM, IHD. Each patient under study had under gone estimation of serum homocysteine, lipid profile, fasting blood sugar level, and mean with standard deviation calculated in each category.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>S. Homocysteine (nmol/ml)</th>
<th>S. Cholesterol (mg/dl)</th>
<th>S. Trygliceride (mg/dl)</th>
<th>LDL (mg/dl)</th>
<th>F.B. Sugar (mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td>32.59 ± 6.21</td>
<td>148.6 ± 15.32</td>
<td>186.11 ± 62.20</td>
<td>210.80 ± 70.11</td>
<td>1.17 ± 0.22</td>
</tr>
<tr>
<td>Control</td>
<td>47.78 ± 12.35</td>
<td>148.4 ± 13.30</td>
<td>176.92 ± 39.02</td>
<td>194.92 ± 56.08</td>
<td>1.30 ± 0.16</td>
</tr>
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Mean age group of patients was 52.59 ± 6.21 and that of controls were 47.78 ± 12.35. Mean homocysteine level among hypertensive patients were 14.86 ± 15.32 nmol/ml, where control value were 14.68 ± 13.30 nmol/ml, difference is not significant. Association with other risk factors such age, S. cholesterol, LDL, plasma glucose level also not significant, when compared with control.

So present study suggests a lack of association between homocysteine and hypertension in East Indian population. Homocysteine and hypertension is still not a proved fact in Indian scenario. However result must be interpreted with caution because of small sample size and larger study should be continued.

Common Carotid Intima Media Thickness: A Sensitive Marker for the Atherosclerotic Complications in Primary Hypertension
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The relationship between common carotid intima media thickness (CCT-IMT) and the presence of classical coronary heart disease risk factors...
such as hypercholesterolemia, hypertension and diabetes mellitus has been an area of ongoing research and there is growing evidence that the thickening of the arterial wall might represent the initial step of the atherosclerotic process.

**Objective:** To study the thickness of the CCA-IMT and evaluate its correlation with various cardiovascular risk factors and atherosclerotic complications in patients with primary hypertension.

**Method:** A cross-sectional study on patients with primary hypertension attending Renal and Hypertension clinic. A total of 32 patients were taken out of which 16 had evidence of one or more target organ damage. The CCA-IMT of the subjects was examined using B mode USG, the reference point for measurement being 8-18 mm proximal to the tip of the flow divider. Mean IMT was determined from the average of 3 images per artery. A part from it, detailed clinical examination and biochemical tests viz. lipid profile, fundus, RFT etc, were performed.

**Result:** Mean CCA - IMT of 0.62 mm (±1.13) in hypertensive individuals without evidence of target organ damage, was statistically significant as compared to normotensive control with CCA-IMT 0.52 mm (±0.077) (P<0.05).

In hypertensives with evidence of target organ damage, the mean CCA-IMT observed 0.74 mm (±0.21) was significant statistically as compared to hypertensives without evidence of target organ damage (P<0.05).

There is direct linear correlation of IMT with LDL cholesterol and total cholesterol levels and inversely with HDL cholesterol.

**Conclusion:** The CCA-IMT being the most sensitive marker for the earliest stages of atherosclerosis, is of great prognostic value in evaluating the various hypertensive and atherosclerotic complications of primary hypertension. Its availability, simplicity and reproducibility makes it an effective screening tool for understanding the complex atherosclerotic complications of hypertension.

### 101 Evaluation of 24 Hour Urinary Sodium Excretion in Hypertensive Patients

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Forty hypertensive patients and 40 normotensive controls were studied to assess the relationship between blood pressure and 24 hour urinary sodium excretion. Patients having known or suspected renovascular disease, significant cardiac, liver disease and patients on antihypertensive drugs were excluded from the study. Mean systolic and diastolic blood pressure of hypertensive patient was 153.30 ± 7.16 mmHg and 97.63 ± 5.18 mmHg respectively and that of normotensive control was 124.20 ± 8.17 and 78.70 ± 5.23 mmHg respectively.

The hypertensive group demonstrated abnormal relaxation pattern of diastolic mitral inflow at rest, which became pseudonormal at peak exercise (E/A velocity ratio, rest 0.86 ± 0.06 vs. exercise 1.19 ± 0.09, p = < 0.05). In the normotensive group, the mitral inflow pattern remained normal even at peak exercise. The deceleration time (DT) and the pressure half time of early mitral inflow at peak exercise were significantly shorter in hypertensive group than those in normotensive group (DT, 181 ± 18 vs. 237 ± 21ms, p = 0.02; pressure half time, 54 ± 5 vs. 70 ± 12 ms, p = 0.01). We conclude that reduced exercise tolerance in hypertensive patients is associated with worsening of LV diastolic dysfunction during exercise.

### 102 Worsening of LV Diastolic Dysfunction During Exercise in Hypertensive Patients

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Exercise tolerance is reduced in hypertension. Hypertension affects left ventricular (LV) diastolic filling by causing abnormal relaxation and decreasing compliance. Aim of the present study was to determine whether worsening of LV diastolic dysfunction during exercise causes decreased exercise tolerance in hypertensives. LV diastolic filling parameters were examined by Doppler echocardiography at rest and peak exercise in 56 hypertensive patients and compared with 56 age- and sex-matched normotensives. Treadmill exercise test was performed according to the Bruce protocol. It was seen that exercise time was significantly shorter in hypertensive group than that in normotensive group (318 ± 29 sec. Vs. 447 ± 38 sec, p = 0.03).

The hypertensive group demonstrated abnormal relaxation pattern of diastolic mitral inflow at rest, which became pseudonormal at peak exercise (E/A velocity ratio, rest 0.86 ± 0.06 vs. exercise 1.19 ± 0.09, p = < 0.05). In the normotensive group, the mitral inflow pattern remained normal even at peak exercise. The deceleration time (DT) and the pressure half time of early mitral inflow at peak exercise were significantly shorter in hypertensive group than those in normotensive group (DT, 181 ± 18 vs. 237 ± 21ms, p = 0.02; pressure half time, 54 ± 5 vs. 70 ± 12 ms, p = 0.01). We conclude that reduced exercise tolerance in hypertensive patients is associated with worsening of LV diastolic dysfunction during exercise.

### 103 Quinapril in Essential Hypertension - A Complete and Comprehensive Agent

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**Introduction:** Quinapril, a new generation ACE inhibitor has the added advantage that it has favourable haemodynamic changes, and improves ventricular and endothelial functions in pts. with various cardiovascular disorders. These effects are mediated through the binding of both tissue and plasma ACE.

Being marketed in India recently, Quinapril was used in 20 pts. of newly diagnosed essential hypertension in our study over a period of 2 months and as a part of a prospective study to assess its role in hypertension primarily, and also in CCF and CAD.

**Methodology:** Of the above 20 pts., 4 were mild and 16 were moderate pts. of hypertension (JNC-VI). Besides routine tests, special emphasis was given to BP check-up, ECG, ECHO study, LFT and RFT at fortnightly intervals. Exclusion criteria: Pregnant or lactating females, pts. with HIV infections, pts. with impaired renal and/or kidney function and pts. who needed another drug for control of hypertension.

**Observations:** Average fall in SBP and DBP at 10 mg and 20 mg was 20.5/10.8 and 30.4/15.6 (mm of Hg) respectively at the end of 2nd month. Echocardiography revealed LVH in 5 of the 20 pts. LV mass, IVS and LVPW thickness were reduced from baseline values of 240.5 ± 30.6 gm, 122.0 ± 8.17 cm and 1.07+0.07 cm to 208.8+30.4 gm, 1.10+0.07 cm and 1.08+0.08 respectively at the end of 2 months. Side effects like cough, and fatigue were seen in only 1 patient.

**Conclusion:** We therefore conclude that Quinapril is a very useful drug in controlling mild to moderate hypertension without any disabling side effects. It reduces LV mass (hypertrophy) within a short span of time. The number of cases being less and time period short, this prospective study should throw more light into a new generation novel antihypertensive-Quinapril.
antihypertensive agents: Amlodipine and enalapril on 24 hour control of blood pressure in the cases adequately controlled in the doctor’s office or casual blood pressure recording.

Methodology: Fifteen subjects on amlodipine and fifteen subjects on enalapril adequately controlled on casual blood pressure recording attending hypertension clinic were included in the study. Besides taking history, detailed clinical examination and routine investigations, 24 hour ambulatory monitoring was done in all the cases.

Summary of Result: Fifteen patients on amlodipine having mean age 58.73 years ± 7.89, 11 males and 4 females, ten were on 5 mg and five were on 10 mg/d. Fifteen patients on enalapril having mean age 52.78 years ± 9.81, 5 males and 10 females, twelve were on 5 mg and three were on 10 mg and one patient was also taking thiazide diuretic were examined. Mean 24 hour BP, mean daytime BP, mean nighttime BP, mean early night BP and late night or early morning BP and blood pressure load was calculated.

Conclusion: Significant late night or early morning peaking was observed in systolic, diastolic and mean arterial pressure in both groups. None of the patient was found to be effectively controlled for 24 hours on ambulatory blood pressure monitoring. Blood pressure load was found to be quite high during night especially during late night or early morning hours.

105 Evaluation of Cerebral Blood Flow by Single Photon Emission Computed Tomography (SPECT) in Young Hypertensive Subjects

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Objective: Hypertension can cause impediment in cerebral circulation and may lead to functional and structural abnormalities in brain. In this study our purpose was to investigate physiological and anatomical abnormalities in brain in young hypertensive subjects.

Methodology: Twenty-six hypertensive patients (21 males and 5 females) and 20 healthy (18 males and 2 females) control subjects were enrolled. Blood samples were obtained after 12-hour overnight fast. Skinfolds was measured by using Lange skinfold caliper. Hypertensive patients were recruited according to the following inclusion criteria: age between 20 to 45 years with raised blood pressure (according to JNC VI & WHO-ISH). Exclusion criteria: diabetes, hyperlipidemia, any h/o neurological deficit, smoking and alcohol consumption. By help of SPECT we measured the regional cerebral blood flow. The subjects were injected Technetium-99m hexamethylpropylene amine oxime (99m Tc-HMPAO) and Technetium-99m ethlen cystin dioxy (99m Tc-ECD) before SPECT. After injections the imaging of brain was carried out within four hours.

Results: Healthy subjects (mean ± SD: 30.2 ±5.1 yrs) were comparatively younger than hypertensive subjects (33.8±5.7 yrs). The hypertensive subjects had significantly higher BMI (mean ± SD: 23.8 ±4.0 kg/m²) (p=0.01) as compared to the Healthy subjects (20.9±3.5 kg/m²). There were no significant differences in the mean values of waist and hip circumferences, sigma 4SF and %BF amongst hypertensive and healthy subjects. The SPECT of brain of healthy subjects was found normal. The details of SPECT results of hypertensive subjects and correlation results shall be presented.

Conclusion: The hypertensive patients have significantly high BMI as compared to healthy subjects. The SPECT of brain of healthy subjects was found normal.

Immunology

106 Antiphospholipid Antibody Syndrome: An Emerging Threat

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Aim: To study the clinical spectrum of antiphospholipid syndrome (APLS) and conditions associated with it.

Material and Methods: Patients admitted to St. John’s Hospital from July 2000 to Dec. 2002 with history suggestive of antiphospholipid syndrome were investigated and diagnosed as antiphospholipid syndrome according to clinical picture and antiphospholipid antibody estimation.

Results: Seventy two patients were included in the study; 51 were female and 21 were male (Female: Male = 2.4:1). Twenty nine patients (40.3%) presented with deep vein thrombosis and autoimmune hemolytic anaemia and idiopathic thrombocytopenic purpura was seen in 16 patients (22.2%). Recurrent abortions occurred in 14 patients (19.5%) and intra abdominal thrombosis and arterial thrombosis together contributed to 13 patients (18%). Lupus anticoagulant test was positive in 42 patients (58.3%) and anticardiolipin antibody (ACA) was seen in 54 patients (75%). One third of patients had both LA and ACA was positive (33.3%). Association of LA and ACA in each clinical condition was also studied. Patients presenting with DVT, or repeated abortions were more likely to have anticardiolipid antibody positive than lupus anticoagulant.

Conclusion: Antiphospholipid syndrome is being increasingly documented. High index of suspicion is required for diagnosis of APL syndrome. Deep vein thrombosis and recurrent abortions are commonest clinical presentations of the APL syndrome.

107 Co-relation of Immunological Status with Clinical Manifestations of Human Immunodeficiency Virus (HIV) Infection

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Key words: HIV, Immunological status

Introduction and Aim: HIV is a pandemic disease caused by a retrovirus that infects human cells bearing CD4 cells and causes CD4 lymphopenia and immune deficiency. Immune deficiency associated with opportunistic infections and malignancies. Co-relation of CD4 cell count with occurrence of different opportunistic infections is mainly based on studies in West. There are not many studies in India. Present study plan to find out the relationship between immunological status (CD4 count) and the clinical manifestations of HIV patients.

Methods: One hundred two HIV positive symptomatic patients included in the study. Detailed clinical examination and investigations including haematological, bio-chemical, microbiological, radiological and CD4 count for immunological status were done and finally patients analysed.

Results: Present study showed 89.8% cases belong to IIIrd and IV decade of age. Unsafe Hetrosexual exposure was the commonest (70.3%) mode of infections. Gastrointestinal system was the commonest system (54.9%) involved followed by nervous and hemopoietic system (44.1%) 89% cases with neurological manifestation and 67.6% cases with respiratory manifestation has CD4 cell count < 200 cells/cmm. 53.6% cases with Gastrointestinal manifestation and 55.5% cases with hemopoietic system manifestation had CD4 cell count <200 cells/cmm. Tuberculosis was the commonest (59.8%) opportunistic infections.