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LOW DIETARY MAGNESIUM IS ASSOCIATED WITH INSULIN RESISTANCE IN A SAMPLE OF YOUNG, NON-DIABETIC, AFRICAN AMERICANS. Suzanne Harvnych, Harvey Kushnir, and Fortuna Falkmer. Allegheny University MCP Division, Philadelphia, PA.

In both humans and experimental animals, dietary induced magnesium (Mg) deficiency is correlated with insulin resistance. The purpose of this study was to determine if dietary Mg intake is associated with insulin sensitivity in a sodium-dietary, young African Americans. We also examined dietary Ca, K, and Na intake. The study was conducted in a sample (n=179) of young adults ages 20.7 +/- 3.5 yrs, that has been followed longitudinally. Nutrient intake was assessed by obtaining a 24 hour recall interview of dietary intake. Intake data were entered into a nutrient analysis program (Nutritionist III), which quantitated microminerals, macronutrients and minerals. Data was analyzed by ANOVA and Pearson's Correlation Analysis to examine dietary and metabolic data i.e. glucose tolerance, insulin clamp, and blood pressure (BP) measurements. We classified the study sample of 90 males and 89 females into insulin sensitive (S) and insulin resistant (R). There is a significant negative correlation of total dietary Mg intake with the sum of insulin levels measured during an oral glucose tolerance test, p=.001. To correct for sex differences in adipose mass, Mg intake was computed as Mg intake in mg/kg of fat free mass (MgFFM). With this adjustment for body size and fat, there were no sex differences in Mg intake. MgFFM was significantly lower in IR (1.27 +/- 1.4) than in S (2.25 +/- 2.2). MgFFM was significantly higher in IR compared to S (p=.022). MgFFM correlated positively with MgFFM for the entire population r=.40 p=.001. This correlation was stronger in males r=.53 p=.001. As Mg intake increased, insulin sensitivity increased. No relationship of Mg intake and BP was detected. The concurrent greater intake of Na, K and Ca in IR compared to S is consistent with previous reports, and supports a role of Mg in insulin resistance. Mg deficiency may be a modifiable risk factor for cardiovascular disease.

Key Words: Magnesium, Insulin, African American, Diet

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HYPERTENSION IN NURSING HOME PATIENTS. J.S. Trilling, J. Fromm, I. H. Gomalin, S.S. Yeh, A.M. Filkin, R.C. Grimson, S. Novin. State University of New York at Stony Brook, Stony Brook, N.Y.

Little is known about hypertension in nursing home patients and whether treatment benefits persons over age eighty and those with significant comorbidity. Medical charts of 804 residents of three nursing homes were reviewed for demographic data, medical conditions, recent blood pressure readings, activities of daily living, antihypertensives and all other medications. Of the total population, 355 (44.2%) were hypertensive and 30.8% age eighty-five years and older. 24.2% were untreated. Of those taking antihypertensives, 54.7% took only a single drug, the most common of which was a calcium channel blocker (30.3%). The average number of total medications was 5.8 days per patient. Hypertensive patients took more cardiac drugs (P<0.001), hypoglycemic (P<0.001) and analytic drugs (P<0.001) than those who are normotensive. An increased prevalence of diabetes, renal disease, vascular disease, neoplasms, gastrointestinal disease, and psychiatric disorders was associated with hypertension.

Blood pressures equal to less than 140/90 were achieved in 89.9% but blood pressure control was significantly poorer in females, P<0.001, in patients with dementia, P<0.001, cataracts, P<0.001, and central nervous system conditions. We conclude that the management of hypertension in nursing home patients is complex and that the association with some comorbid conditions unexplained. An improvement in their therapy may be suboptimal in this patient population, since dietary and data blockers are less frequently used than calcium channel blockers. The large number of daily medications also requires reevaluation of individual therapeutic regimens. Additional research is needed.

Key Words: Comorbidity, Nursing Home, Hypertension

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RESIDENT INVOLVEMENT IN CLINICAL RESEARCH. CM. Broady, JJ. Holland. Northport VA Medical Center and SUNY at Stony Brook School of Medicine, Stony Brook, NY.

The role of medical trainees in clinical research is continually evolving. Medical professionals often wait until their careers are established before engaging in research. Introducing research earlier in their careers may broaden the trainee's experience. Potential benefits for the trainee include advanced education and improved clinical skills. Graduates may be more likely to incorporate clinical research into their medical careers. The potential benefits of research to medical residents are reflected in the American Council of Graduate Medical Education recommendation that all trainees participate in research resulting in publications or presentations.

The National Heart Lung and Blood Institute is currently sponsoring five large antihypertensive trials. Among the largest is the ALLHAT, or Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial, underway at hundreds of clinical sites nationally. Many of these sites are affiliated with university medical centers and training programs. Randomizing hundreds of patients at each site, cooperative studies provide a unique opportunity for medical residents to participate in the current wave of residents in clinical antihypertensive trials is underfunded. Researchers at the Northport VA Medical Center are conducting a study that will determine the extent of resident involvement in the ALLHAT study. The data obtained will help elucidate the role of residents in clinical research.


Key Words: clinical research, residency, hypertension

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Arterial compliance (Cp) decreases with age and HTN. Reduced Cp leads to increased SBP, pulse pressure (PP) and greater LV work resulting in LVH, a risk factor for cardiovascular (CV) morbidity and mortality. It is not known if race and gender differences in Cp exist which may influence the distribution of CV diseases. The current study examined race and gender differences in brachial artery Cp in a random sample of 775 healthy young adults with previous CV risk factor data collected for the Bogalusa Heart Study (46% male, 70% white, 18-38 years). BP, HR and brachial artery pulse curve data were obtained using the Dynapulse 2000 instrument (Pulsewave, Inc., San Diego, CA). Waveforms of actual arterial pressure throughout the cardiac cycle are recorded using an oscillo-metric technique. The calibrated arterial pulse wave is incorporated into a physical model of the CV system to calculate brachial artery Cp (mmHg/mL/m2) and peripheral resistance (BAPR, mmHg/L/min), and dP/dT LVmax (mmHg/sec), a non-invasive estimate of cardiac contractility validated with cardiac catheterization data. Across all age ranges, blacks had higher SBP and DBP than whites when analyzed by gender. Females had higher HR than males. In this age range, Cp decreased in females only (p<0.05). White males had the highest Cp values with males significantly higher than females (p<0.001). These trends remained when adjusted for MAP or PP or when Cp was plotted as a function of PP. BAPR increased with age (p<0.001). Females had higher BAPR (p<0.006) with blacks greater than whites when analyzed by gender (p<0.05). Black males had the highest dP/dT LVmax with blacks significantly higher than whites (p<0.001). We adjusted for afterload (SBP), females had higher dP/dT LVmax than males (p<0.0001) and contractility decreased with age (p<0.05). It is concluded that race and gender differences in Cp and cardiac function exist which may influence the prevalence and expression of disease related to atherosclerosis.

Key Words: Compliance, Race, Gender, Contractility