

1206-166 Comparison of Contrast-enhanced Electron Beam CT and Coronary Angiography in 125 Patients

S. Achenbach, W. Moshage, D. Ropers, J. Nossen, K. Bachmann
Friedrich-Alexander-Universität Erlangen, Germany

Background: Electron beam CT (EBCT) is especially suited for cardiac imaging. We investigated the application of contrast-enhanced EBCT for the visualization of coronary artery stenoses and occlusions.

Methods: 125 patients were investigated by EBCT (104 men, 21 women, mean age 56 years). During intravenous injection of contrast agent (120–160 ml at 4 ml/s), 40 axial cross-sections of the heart were acquired triggered to the ECG in breathhold (3 mm slice thickness, 1 mm overlap). 3-dimensional reconstructions of the heart (shaded surface display) were rendered with a lower threshold of 80 HU to visualize the contrast-enhanced coronary artery lumen. The reconstructions were evaluated as to the presence of high-grade stenoses and occlusions in the proximal 2/3 of the coronary arteries; results were compared to conventional coronary angiography.

Results: 376 of 500 coronary segments (left main, LAD, LCX, and RCA in 125 patients) could be evaluated (75%). 41/52 high grade stenoses and occlusions of the LAD, 14/18 of the LCX, and 14/15 of the RCA were correctly detected by EBCT. The overall sensitivity and specificity was 92% and 94%, respectively.

Conclusion: Contrast-enhanced EBCT permits the reliable non-invasive detection of high-grade coronary artery lesions, sufficient image quality provided.

1207 Blood Pressure in Children

Wednesday, April 1, 1998, Noon–2:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 1:00 p.m.–2:00 p.m.

1207-95 Pediatric Blood Pressure Standards by Circumference-based Blood Pressure Cuff

M.K. Park, S.W. Menard. Arabian Gulf University, Manama, Bahrain, University of Texas Health Science Center, San Antonio, TX, USA

Background: Although national committees have recently made recommendations on the width of blood pressure (BP) cuff to be based on arm circumference for pediatric patients, available BP standards are those obtained by the arm length- (not circumference-) based cuff. We obtained the needed pediatric BP standards using the circumference-based BP cuff.

Methods: Schoolchildren 5 to 18 years old in the San Antonio, Texas, area participated in the study. Three BP readings were obtained in sitting position using BP cuff width 40% to 50% of arm circumference. Data on 6259 subjects (Mexican-American 67%, white 33%) were analyzed.

Results: No consistent ethnicity- or gender-related differences in BP levels were found in children < 12 yrs (P < 0.05). In children ≥ 13 yrs, however, systolic (but not diastolic) pressures in males of both ethnic groups were significantly (P < 0.05) higher (3–12 mm Hg) than those for females. Mean (90th/95th percentile) values for systolic/diastolic (K5) were as follows.

| Females & Males Combined | | | |
|--------------------------|-------------------------|------|--------------------------|
| 5 y | 92 (102/105)/50 (61/64) | 9 y | 98 (108/111)/57 (69/72) |
| 6 y | 93 (103/107)/53 (64/68) | 10 y | 100 (110/113)/57 (69/72) |
| 7 y | 96 (105/108)/57 (67/69) | 11 y | 102 (112/115)/57 (69/72) |
| 8 y | 96 (107/110)/59 (68/71) | 12 y | 104 (114/117)/62 (69/72) |

| Females | | Males | |
|---------|--------------------------|-------|--------------------------|
| 13 y | 105 (114/117)/58 (69/72) | 13 y | 107 (118/121)/56 (68/71) |
| 14 y | 106 (115/118)/58 (69/72) | 14 y | 110 (121/124)/57 (68/72) |
| 15 y | 106 (116/119)/58 (69/72) | 15 y | 113 (124/127)/58 (69/72) |
| 16 y | 107 (117/120)/59 (70/73) | 16 y | 114 (125/128)/60 (71/74) |
| 17 y | 108 (117/120)/59 (70/73) | 17 y | 117 (125/128)/62 (74/77) |

Conclusion: This study provides for the first time pediatric BP standards obtained by the circumference-based BP cuff. Mean values of this study are 2 to 4 mm Hg lower than the length-based NIH data for systolic pressure and are within 1 mm Hg for diastolic pressures.

1207-96 Hypertension Predicted by Tracking of Elevated Blood Pressure From Childhood to Adulthood

M.E. Macedo, A.T. Pinto, A. Pereira, A.F. de Freitas. Serviço de Medicina II, Bioestatística e Informática Médica da Faculdade de Medicina do Porto, IBMC da Universidade do Porto, Portugal

Essential hypertension is poorly understood in its early asymptomatic stages.

for development of hypertension involves complex and multiple mechanisms. The present study examines the predictability of adult hypertensor from childhood BP.

Design and Methods: a longitudinal cohort was constructed from two cross-sectional surveys 17 years apart. 1032 individuals aged 5 to 24 years were seen in the initial study. The predictability of follow-up blood pressure was examined in a stepwise regression analysis. Independent variables included the changes in weight, height, BMI, skinfold and ponderal index from baseline to follow-up. The Tracking Index was calculated according to the method of MacMahon.

Results: in the analysis of both sexes, the independent variables explained 60% and 45% of the variability of the follow-up of Systolic BP and Diastolic BP. For SBP the best predictor was the Δ SBP and the Δ weight with standardized regression coefficients of 0.82 and 1.17 respectively. These coefficients indicate the differences in the follow-up level corresponding to a unit change of the predictor. For DBP the best predictor was the Δ DBP and the Δ weight with a standardized regression coefficient of 0.57 and 0.85. In order to quantitatively assess the ranking of elevated BP, the Tracking Index was calculated for the people whose BP was in the 3th tertile before and after the follow-up. The index was of 1.18 for SBP and 1.1 for DBP, which means that there is a positive and significant tracking. In this group the regression analysis explained 67% of the variability of SBP, being the Δ SBP and Δ ponderal index the best predictors, and 28% of them are hypertensives.

Conclusion: The current study noted that after a longer period of 17 years, the tracking phenomenon from childhood to adulthood really exists. It was also shown that the changes of BP and weight had a strong influence on future blood pressure. This study shows that childhood BP elevation is as a good predictor for elevated BP and hypertension in adulthood, and that weight gain during the growth predicted future hypertension.

1207-97 Diastolic Function and Tachycardia in Hypertensive Children

M.C. Johnson, B.R. Cole. Washington University School of Medicine, St. Louis, MO, USA

Altered diastolic function has been demonstrated in hypertensive adults but few data are available in children. We studied cardiac and non-cardiac determinants of doppler echocardiographic measures of diastolic function in 60 children (mean age 13, range 3–19 years) from a pediatric hypertension clinic. As compared with 39 control children, hypertensive patients had increased body mass index (28 vs. 19 kg/M², p < 0.0001), peak mitral A velocity (57 vs. 43 cm/sec, p < 0.0001), isovolumic relaxation time (67 vs 43 msec, p < 0.0001, resting heart rate (89 vs 74 bpm, p < 0.0001), indexed left ventricular (LV) mass index (32 vs 27 g/M², p < 0.0001) and relative LV wall thickness (0.32 vs 0.29, p = 0.02). Mean age, height, mitral E velocity (89 vs 88 cm/sec), shortening fraction, and indexed LV diastolic dimension were similar in patients and controls. In the hypertensive patients, peak A velocity was correlated with heart rate (r = 0.50, p < 0.0001) and systolic blood pressure (r = 0.35, p = 0.007, age and sex adjusted Z-scores), whereas no relationship was found with age, body mass index, diastolic blood pressure, indexed LV diastolic dimension, LV mass index, or wall thickness. In a multivariate model, heart rate and systolic blood pressure accounted for 30% of the variation of peak A velocity. None of the variables predicted isovolumic relaxation time in the patient group. We conclude that hypertensive children have impaired LV relaxation. Relative tachycardia, however, accounts for more of the mitral inflow abnormality than elevated systolic blood pressure. These data are consistent with the observed association between a hyperdynamic circulatory state and systemic hypertension in children.

1208 Ventricular Tachycardia, Sinus Tachycardia, and AV Nodal Conduction

Wednesday, April 1, 1998, Noon–2:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 1:00 p.m.–2:00 p.m.

1208-68 AV Nodal Bifurcation to Alternans During Ventricular Triggered Atrial Pacing in Humans

K.M. Stein, D.J. Christini, S. Mittal, D.J. Slotwiner, S.M. Markowitz, B.B. Lerman. The New York Hospital-Cornell University Medical Center, New York, NY, USA

Background: In animal models, penodic alternation in AH interval (alternans) has been demonstrated during His-bundle triggered atrial pacing with short HA intervals. Furthermore, this alternation can be suppressed using tech-