

## L5

## HYPERTENSION AND THE INCIDENCE OF STROKE--A PROSPECTIVE OBSERVATIONAL STUDY IN CHINA.

XH Fang, RA Kronmal, SC Li, XM Cheng, ZC Wang, Beijing Neurosurgical Institute, China and University of Washington, WA

Stroke accounts for 1/4 of the total deaths in large Chinese cities, which suggested that a study of the etiology and prevention of stroke was badly needed. Such a study was carried out in seven large cities in China in 1987. The cities chosen for this study had excellent medical care facilities and a wide range of stroke incidence and mortality (stroke incidence ranged from 150 to 325/100,000 and mortality from 29 to 205/100,000 in 1986). The 37662 subjects enrolled in the study had an average age of 52 (range of 35-98) and 53% were women. A baseline questionnaire on medical history and demographic and life style characteristics was administered. Also, an extensive examination including physical, neurological and laboratory measures was done. In this paper we report the findings on the relationship of systolic and diastolic blood pressure (SBP and DBP) and the risk of stroke. Logistic regression was used to model the relationship of SBP and DBP with stroke incidence after adjustment for age, gender, history of hypertension, treatment of hypertension, history of diabetes, history of heart disease, alcohol drinking, and cigarette smoking. SBP and DBP were divided into intervals to display the data and to determine if the relationship to stroke risk was non-linear. After an average of 3.5-year follow-up, 427 new cases of stroke were identified and the crude 3.5-year incidence was 1.1%. The crude rate and estimated adjusted relative risks (odds ratios, using the lowest interval for the reference group) for stroke are showed below:

SBP(mmHg)	<120-	120-130-	140-150-	160-170-	180-
Crude rate(%)	0.3	0.7	1.1	1.9	2.3
Adjusted RR	1.00	1.50	1.97	2.80	2.70

DBP(mmHg)	<70-	70-	80-	85-	90-	95-	100-	110-
Crude rate(%)	0.5	0.4	0.8	1.2	1.6	2.7	3.0	5.4
Adjusted RR	1.00	0.67	0.88	0.94	0.88	1.17	1.12	1.73

Stroke incidence increased significantly ( $p < 0.00001$ ) with increasing SBP. The increase in stroke risk appears to be nearly linear across the entire range of SBP. In the logistic regression analysis the relationship between stroke incidence and DBP was 'J' shaped. Those with DBP=70-79 mmHg had a lower risk of stroke than those with DBP<70 mmHg. Above 80 mmHg the stroke risk increase with increasing DBP. It is clear from these results that for this population with a wide age range, SBP is a much more important risk factor for stroke than is DBP.

## Key Words:

hypertension, incidence of stroke, risk factor.

## L7

## PREDICTORS FOR THE DEVELOPMENT OF ESSENTIAL HYPERTENSION: LONG-TERM FOLLOW-UP STUDY IN PORTUGUESE CHILDREN.

M. Espiga Macedo\*, M. João Lima, J. Castro, M. Pizarro, L. Lopes, Teixeira Pinto, D. Trigueiros, Altamiro Pereira and A. Falcão de Freitas\*.

Serviço de Medicina III, Serviço de Bioestatística e Informática de Oporto School of Medicine, Centro de Citologia Experimental da Universidade do Porto. Longitudinal studies of children and adolescents have shown that the BP of children is significantly associated with BP on follow-up and related to adult levels. Studies of this type have implications for early detection and perhaps prevention of development of hypertension by appropriate dietary and lifestyle modifications.

**Design and methods:** a longitudinal cohort was constructed from two cross-sectional surveys 17 years apart: 1032 individuals aged 5 to 24 years in the initial study. The predictability of follow-up blood pressure was examined in a stepwise regression analysis. The independent variables were baseline blood pressure, age, weight, BMI, height and skinfold, and changes in these variables from baseline to follow-up.

**Results:** the relative importance of the predictors is indicated by the standardized regression coefficients. The best predictor of follow-up systolic blood pressure level was the change of BMI. Baseline SBP and change in skinfold was also predictive. For follow-up diastolic blood pressure the best predictor was the change in weight, but also the baseline DBP was important. The variability of the follow-up SBP and DBP was respectively 14% and 19%. The present study shows that childhood blood pressure is a good predictor of BP in adulthood, but that weight and BMI gained are also very important. These findings suggest the importance of the measurement of blood pressure in young ages, but also the fight against obesity in this age groups.

## Key Words:

blood pressure, longitudinal studies, tracking, obesity.

## L6

## ISOLATED SYSTOLIC HYPERTENSION (ISH) AND PREVALENCE OF LEFT VENTRICULAR HYPERTROPHY (LVH). W.B. Nielsen, G. B. Jensen. The Copenhagen City Heart Study, Copenhagen, Denmark.

The Copenhagen City Heart Study is a longitudinal prospective cardiovascular study of 19,698 women and men selected from the Civil register in Copenhagen in 1976. Repeatedly examined and followed for morbidity and mortality. The aim of this study was to assess the prevalence of LVH by ECG in subjects with ISH.

Among 6,621 subjects aged 50-80 years old, free of prior cardiovascular disease and not on antihypertensive treatment, the prevalence of LVH assessed by ECG was determined in subjects with ISH (SBP > 160 mm Hg and DBP ≤ 90 mmHg; n = 353). The prevalence of LVH in the population was 5.6% and 3.2% for men and women respectively. The prevalence of LVH in subjects with ISH was 9.2% for men and 5.6% for women. In a logistic regression model, adjustments were made for difference in age, smoking, diabetes and BMI. The adjusted odds ratio for LVH in subjects with ISH compared to normotensives (SBP < 140 mmHg and DBP < 90 mmHg) was 2.9 (95% conf. int. 1.5-5.6) and 2.7 (95% conf. int. 1.2-6.1) for men and women respectively.

The results demonstrate that ISH is strongly associated with LVH as assessed by ECG. Whether LVH in the ISH category is an independent risk factor for future cardiovascular morbidity and mortality, remains to be demonstrated in a prospective study.

## Key Words:

ISH, LVH, prevalence, epidemiology

## L8

## A LONGITUDINAL STUDY OF BLOOD PRESSURE AND OBESITY IN CHILDREN AND ADOLESCENTS. M. Espiga Macedo\*, J. Almeida, M. João Lima, L. Lopes, Teixeira Pinto, Altamiro Pereira e A. Falcão de Freitas. Serviço de Medicina III, Serviço de Bioestatística e Informática de Oporto School of Medicine, Centro de Citologia Experimental da Universidade do Porto.

Longitudinal studies in children and adulthood have shown that hypertension and obesity are related to the risk of coronary artery disease. It is difficult to follow-up children until the time when clinical coronary artery disease may occur. Tracking of blood pressure and obesity data may provide a method of evaluating risks for coronary artery disease. Tracking is defined as the tendency to maintain the relative ranking unchanged over time with respect to a particular observable characteristic.

**Design and methods:** a longitudinal cohort was constructed from two cross-sectional surveys 17 years apart: 1032 individuals aged 5 to 24 years in the initial study. In order to assess the tracking of BP and obesity, the subjects were divided at each examination into three tertiles with regard to their SBP, DBP and BMI. Each subject was designated according to his ranking group at two consecutive examinations, and then calculated the T score and T index.

**Results:** the tracking score (T) for SBP, DBP and BMI were respectively 1.05, 1.06 and 1.17. The tracking index (Ti) is defined as the index in which T is normalized by T random. The results obtained are SBP=1.18, DBP=1.19 and BMI=1.32, which means that there is a positive tracking for all variables. The purpose of a tracking study in childhood is to estimate the degree to which risk factors predict cardiovascular disease in adulthood. There is now evidence that various risk factors are present in childhood and track with age.

## Key Words:

blood pressure, tracking index, obesity