



A Single Measurement of elevated blood pressure taken at age 17 is associated with a future increased risk of ESRD - A cohort study of 914,616 healthy young adults



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Introduction

Few data are available on the long term outcomes of adolescents with persistent hypertension. Moreover, the outcome of healthy adolescents, without known hypertension at age 17, but with a single elevated blood measurement detected during routine medical screening is unclear.

Materials & Methods

We conducted a nationwide, population based cohort study using medical data from 1,260,919 seventeen year old boys and girls examined for fitness for military service between 1967 and 1997. Each examinee underwent blood pressure measurement by a trained medical technician while seated at rest. Excluded from the study were participants with early kidney disease or kidney related conditions (37,586 participants). Also excluded from the study were participants with an adolescence diagnosis of hypertension (655 participants). 914,616 healthy adolescents were left for analysis. This group was linked to the Israeli treated ESRD registry. Incident cases of treated ESRD from January 1st 1980 to May, 31, 2010 were included. Cox proportional Hazard models were used to estimate the hazard ratio (HR) of treated ESRD among those healthy young adults with a single elevated, screening-related, blood pressure measurement. Elevated blood pressure cutoff was derived from the updated blood pressure charts for 17 years old and defined as gender and height adjusted systolic or diastolic blood pressure equal or above 95th percentile.

Results

130,233 participants (14.24%) had elevated blood pressure readings, in the hypertensive range, 52% of which were women. Of the normotensive group (n=784,383) only 42% were women. Both groups had BMI within the normal range, with those with hypertensive readings having higher values (22.45 vs. 21.23; p<0.05).

During follow-up period, 300 participants developed treated ESRD (hemodialysis, peritoneal dialysis or kidney transplant). HR for ESRD in healthy adolescents with positive (elevated BP) screening measurement was 1.57 (95% CI 1.19- 2.08). After adjustment to gender HR was 1.68 (95% CI 1.27-2.23). In a multivariate model that included both gender and BMI, high blood pressure in healthy youngsters was still associated with an increased risk of ESRD (HR-1.12; 95%CI 1.09-1.16).

Conclusions

While many of the 17 year old youngsters at the high blood pressure group demonstrate a benign white coat effect at a stressful screening situation, still others give the first clue of white coat hypertension or labile hypertension and possibly future persistent hypertension. For that reason, their future risk for ESRD, albeit very small, is somewhat higher than those with a normotensive screening measurement.

