

Essential Hypertension in Ten & Half Years Old Boy: A Case Report

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Abstract

Childhood hypertension (HTN) is important cause of morbidity and mortality. Most of the cases of childhood HTN are secondary to an underlying disorder. In this case report a ten & half yr old boy presented with neck pain associated with headache. Both of his parents are hypertensive. Most of the time he spent at home playing games in computer and watching television. On examination, blood pressure (BP) was 140/95 mm of Hg which was above 99th percentile for his age and height. Examination of eyes and other systems revealed normal. Ultrasonography of abdomen was normal, colour Doppler ultrasonography of renal vessels showed normal, and CT scan of abdomen was also normal including normal adrenal gland and sympathetic chain. Then the child was treated with tab. losartan potassium, then gradually BP become bellow 90th percentile. Ultimately the child was discharged when his blood pressure was 100/70 mm of Hg, which was on 50th percentile with counselling and advised for follow up. [J Shaheed Suhrawardy Med Coll, 2013;5(1):69-71]

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Introduction

Childhood hypertension (HTN) has become an important health issue due to its rising prevalence and associated sequelae. Most of the cases of childhood HTN is secondary to an underlying disorder, like renal, endocrine and cardiovascular or may be due to some drugs^{1, 2}. Recent reports suggest an increased prevalence of childhood HTN, particularly essential HTN³. HTN in US children has increased, affected up to 5% of adolescents⁴. Prevalence of HTN in other countries has been reported to be between 1 and 22%^{4,5}. Hospital based study shows more primary HTN which is about 22.7%⁶. but in screening study among school children shows prevalence of primary HTN 0.46-11.7%⁷. Essential HTN is the most common form of HTN in adults and it is recognised more often in adolescent than in younger children⁸. Essential HTN is a diagnosis of exclusion⁹. Significant risk factors for essential HTN include family history of HTN and increased BMI⁹. In the

year 2001, 7.6 million premature deaths were attributed to HTN worldwide¹⁰. Roughly half of the stroke and ischemic heart disease events occur during the same period.

Case Report

A ten & half yr old boy who was previously in good health 3 months back, developed neck pain and decreased sleep. Neck pain was gradually increasing in intensity, later on associated with headache, which was so worsening that disrupts his daily activity. He had no history of haematuria, oligouria, fever, rash, joint pain or convulsion. Both of his parents are hypertensive and they have dyslipidemia. Most of the time he spent at home playing games in computer and watching television. He preferred to take fast foods regularly in home and also his tiffin at school. On examination, he was well alert; all the vital signs were within normal limit except blood pressure (BP) which was 140/95 mm of Hg, above 99th percentile for his age and

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height. Consecutive 3 measurements revealed BP 125/80mm of Hg, 120/90mm of Hg, 120/85mm of Hg, all were above 95th percentile. There was no difference in BP in both upper and lower limbs. His weight was 37Kg, above 50th percentile, height was 132cm, on 10th percentile and BMI was 21.2, which fell above 90th percentile according to Centre for Disease Control and Prevention growth chart 2000. Examination of eyes and other systems revealed normal. His haemogram showed normal picture, routine biochemistry revealed random blood sugar 5.6mmol/L, lipid profile serum cholesterol 143mg/dl, serum HDL cholesterol 41mg/dl, and serum LDL cholesterol 79 mg/dl, serum triglycerides 111 mg/dl. Screening for renal function, Urine routine microscopic examination was normal, serum electrolyte normal (serum sodium-138mmol/l, serum potassium-4.5mmol/l, serum chloride-97mmol/l, serum TCO₂-27mmol/l), serum creatinine 0.58mg/dl, his ECG and Echocardiography also normal, screening for his endocrine diseases, serum aldosterone normal, 24 hours urinary Vanilmandelic Acid was 3.1mg, which is normal. Screening for vasculitis including Serum C3, C4, ANA, Anti-Ds DNA, pANCA, cANCA were normal. Ultrasonography of abdomen was normal, color Doppler ultrasonography of renal vessels showed normal, and CT scan of abdomen was also normal including normal adrenal gland and sympathetic chain. Then the child was treated with losartan potassium tab., then gradually BP become bellow 90th percentile. Ultimately the child was discharged when his blood pressure was 100/70 mm of Hg, which was on 50th percentile with counselling and advised for follow up.



Figure I: The boy presented with childhood hypertension

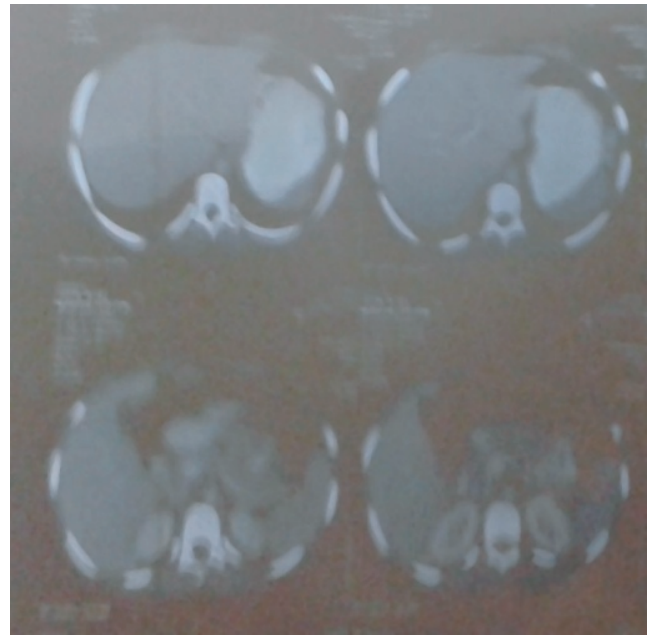


Figure II: CT scan of abdomen shows normal

Discussion

According to the criteria of the Fourth Report on the Diagnosis Evaluation of hypertension in children is defined as systolic BP (SBP) and diastolic BP (DBP) less than 90th percentile for age, sex and height, whereas hypertension is defined as SBP and/or DBP persistently 95th percentile or more, measured on at least three separate occasions with the auscultatory method⁹. The pathogenesis of essential HTN is likely to be multifactorial. Obesity is the main contributor. Other factors are insulin resistance, activation of sympathetic nervous system, sodium homeostasis, renin angiotensin system and genetic factors^{8,11}. According to the Centre for Disease Control and Prevention growth chart 2000, overweight is classified as BMI above 85th to 95th percentile, while in obesity BMI is above 95th percentile. Recent studies in United States and European countries show that prevalence of overweight and obesity is increasing¹². In a meta analysis in India shows prevalence of overweight is 12.0% and obesity is 3.0%¹³. The metabolic syndrome is almost always encountered in obese children and is associated with hyperlipidemia, insulin resistance and HTN. The sympathetic nervous system (SNS) plays a role in energy balance and metabolic syndromes as fasting suppresses and meal ingestion induces SNS activity¹⁴. Central fat distribution is also associated with disturbance in the hypothalamic-pituitary-adrenal axis, suggesting that a disturbed axis might be implicated in the development of the metabolic syndrome¹⁵. In a recent systemic review and meta analysis, the evidence was found to be strong for BP tracking from childhood to adulthood¹⁶. HTN is the major risk factor for atherosclerosis, leading to the development of cardiovascular disease (CVD). HTN is also a risk factor for the progression to end stage renal disease, thus early detection and intervention are crucial. So, childhood HTN

increases the risk of cardiovascular morbidity and mortality. Another important contributing factor is a strong family history². About 50% of hypertensive children have family history of HTN and the reason is thought to be due to shared environmental exposures (obesity, salt intake, life style etc.) and genetic susceptibility¹⁷. The effect of physical activity in the prevention and treatment of HTN is well established in adult, but in children and adolescents however are conflicting^{18,19}. In obese children the amount of time spent watching television is associated with both HTN and the severity of obesity²⁰.

In this patient, he had strong family history of HTN; he was overweight & ate fast food and he lived sedentary lifestyle. Children and young adolescent with BP >90th percentile for age have 3 fold greater likelihood of becoming adult with HTN compared to their peers with BP at 50th percentile⁸.

Conclusion

Now a day due to food habit and life styles, like other non communicable diseases essential hypertension is also coming up in children. So every child, who have headache BP should be measured in outdoor clinic or in inpatient department. If BP found raised, then secondary causes should be excluded as well as complications to be evaluated and treated. Primary HTN needs lifelong attention with pharmacological and non pharmacological approach like change of food habit and lifestyle modification.

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