

Managing Hypertension Among Obese Children in Primary Care: Updated Evidence

Nichole M. Gralia, MS, CPNP, Karen S. Yehle, PhD, MS, RN, FAHA, Azza Ahmed, DNSc, RN, IBCLC, CPNP, and Michael Ross, MD, MS

ABSTRACT

Primary hypertension (PHTN) is a clinically growing concern in the pediatric population because of the increasing incidence of childhood obesity. PHTN is 1 of numerous consequences linked to childhood obesity that can cause target organ damage and have lifelong implications. To prevent further comorbidities and promote optimal health, it is critical for primary care providers to gain comfort to promote the early detection and management of uncomplicated PHTN. This article describes childhood obesity and PHTN; diagnosing, assessing, and managing uncomplicated PHTN; referral to a specialist; and the role of the primary care provider in the pediatric primary care setting.

Keywords: blood pressure, childhood obesity, family nurse practitioner, pediatrics, pediatric nurse practitioner, primary care provider, primary hypertension

© 2015 Elsevier, Inc. All rights reserved.

Primary hypertension (PHTN), hypertension with no known etiology and once considered a disease in the adult population, is now growing in prevalence across the pediatric population in the United States. The incidence of PHTN in children ages 10 to 19 years old increased from 1% to 2% to 3% to 5% over the last several decades in the US.¹⁻⁵ The incidence of childhood obesity tripled over the last 3 decades and has played a major role in the increased prevalence of PHTN in the pediatric population.^{3,6} In 2008, approximately 20% of children ages 6 to 11 and 18% of adolescents ages 12 to 19 were considered obese.⁶ Approximately 30% of overweight children have hypertension (HTN), confirming a strong correlation between an increased body mass index (BMI) and PHTN.^{7,8}

In children and adolescents, overweight is defined as a body mass index at or above the 85th percentile but lower than the 95th percentile for sex and age, with obesity defined as a BMI at or above the 95th percentile for sex and age.^{6,9,10} PHTN in pediatrics has been described as clinically silent but has significant implications on the physiologic aspect of the human body.¹ HTN alone in children can create chronic consequences, such as target

organ damage, harming organs like the heart, retina, blood vessels, and kidneys.¹¹ These consequences only worsen when combined with obesity.¹²

Approximately 70% of children with a BMI at or above the 95th percentile have 1 cardiovascular risk factor (hypertension, dyslipidemia, or hyperinsulinemia), whereas 39% have 2 and 18% have 3.¹³ At the initial diagnosis, up to 40% of children diagnosed with HTN had left ventricular hypertrophy.^{8,12,14,15} Left ventricular hypertrophy, measured by the left ventricular mass index, is the most clinically useful marker for target organ damage.^{8,14,15} Of even greater concern, 17% had concentric hypertrophy (ventricular wall thickening caused by prolonged volume overload), which is linked with a higher risk for cardiovascular outcomes in adults, and 30% had eccentric hypertrophy (ventricular dilation caused by volume overload), which is linked with intermediate risk for cardiovascular outcomes.^{15,16} Obesity and HTN are strongly linked to adverse vascular changes, including arterial stiffness and endothelial dysfunction. Atherosclerosis of the coronary arteries and the aorta may also be noted in

obese children and HTN.⁸ Studies show obesity and HTN in children are also associated with kidney damage, hyperinsulinemia, insulin resistance, hyperglycemia, abnormalities in neurocognitive function, decreased visual acuity, sleep disorders, and obstructive sleep apnea.^{8,12,13}

Beyond the physical consequences, childhood obesity is a financial burden on an already unstable financial health care system. As of 2009, the cost of treating obesity-related conditions tripled in the last decade, costing \$207 billion.¹⁷ It is predicted that by 2030, 17.6% of health care dollars will be used for obesity-related illnesses, not including the cost of absenteeism, loss of productivity, higher life insurance, and high premiums for disability.¹⁸

Because of this growing health concern, it is important for primary care providers to know the warning signs and act early to prevent PHTN in children. At the rate the prevalence is rising, subspecialists may struggle to keep up with the demand of a condition that could be managed in a primary care setting. In order to meet Healthy People's 2020 goal of decreasing HTN by 10% in children 8 to 17 years old, primary care providers must become knowledgeable and more comfortable managing uncomplicated PHTN.¹⁹ This article describes childhood obesity and PHTN; how to diagnosis, assess, and manage uncomplicated PHTN; when to refer to a specialist; and the role of the primary care provider in the pediatric primary care setting.

CHILDHOOD HTN DEFINED

Blood pressure (BP) measurements in children are assessed using a BP chart to indicate the percentile the BP falls in for the child's age, sex, and stature. The National High Blood Pressure Education Program's (NHBPEP) fourth report defines a normal BP when both systolic and diastolic values are less than the 90th percentile. Prehypertension is defined as having a systolic and/or diastolic BP at or above the 90th percentile but less than the 95th percentile or a systolic and/or diastolic BP greater than or equal to 120/80 mm Hg that is less than the 95th percentile. HTN is defined as having 3 consecutive systolic and/or diastolic BP values at or greater than the 95th percentile. HTN is classified into 2 stages that assist the provider in evaluating and managing individual patients. Stage I

HTN is defined as having a BP value ranging from at or above the 95th percentile to 5 mm Hg above the 99th percentile. Stage II HTN is defined as having a BP 5 mm Hg above the 99th percentile.^{8,20}

Primary Versus Secondary HTN

Primary HTN, also known as essential or idiopathic HTN, is defined as having HTN with no known etiology.^{5,21} Risk factors for PHTN in children include a family history of PHTN or cardiovascular disease, low birth weight, male sex, and ethnicity, with the strongest risk factor being an elevated BMI.⁷ In children, prehypertension and PHTN are often associated with comorbidities of overweight, obesity, insulin resistance, coronary artery disease, sleep apnea, and metabolic syndrome.^{1,8,12} Secondary HTN is more commonplace in children than adults and is more common in children than PHTN. Secondary HTN is defined as having HTN with an identifiable cause such as coarctation of the aorta, renal disease, Wilms' tumor, renal artery stenosis, and medications. Younger patients and those with stage II HTN typically have secondary HTN. All pediatric patients diagnosed with HTN should be further assessed to identify a cause.^{8,22}

White Coat Syndrome

White coat syndrome is defined as a medical condition in which the patient has BP levels that are above the 95th percentile when measured in a clinical setting; however, the patient's average BP is below the 90th percentile outside of a medical setting.^{8,20,23} White coat syndrome has been seen in up to 60% of children referred for HTN and does not appear to be associated with target organ damage.²³ Ambulatory blood pressure monitoring (ABPM) may be indicated to rule out white coat syndrome. ABPM is typically ordered for a 24-hour period using a portable device the patient takes home. ABPM allows BPs to be recorded anytime of the day or night. Because of the special equipment and interpretation required, ABPM should be performed and interpreted by those with experience in pediatric HTN.^{8,12,20}

ROLE OF THE PRIMARY CARE PROVIDERS IN MANAGING HTN

Primary care providers in primary care settings play an integral role in screening and managing PHTN in

Download English Version:

<https://daneshyari.com/en/article/2660404>

Download Persian Version:

<https://daneshyari.com/article/2660404>

[Daneshyari.com](https://daneshyari.com)