

## Hypertension in Pediatric Patients

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**A**n increasing number of healthy children and adolescents across the world are being diagnosed with hypertension, which is an emerging problem that no pediatrician can afford to ignore. The evidence from developed countries indicates a recent increase in the prevalence of hypertension in children and young adults. In a school-based study in the United States that involved 5102 children with a mean age 13.5 years, the prevalence of hypertension was 4.5%(1). Primary hypertension, once considered a rare occurrence in pediatric patients, is seen more often particularly in obese patients. Other factors that are responsible for increased prevalence of hypertension in children include life style changes such as physical inactivity, increased intake of high-calorie, high-sodium and low-potassium foods, use of caffeinated and alcohol beverages, smoking, mental stress and sleep deprivation(2).

Recent scientific advances have enhanced our understanding of the pathophysiological mechanisms involved in hypertension. Recognition of monogenic genetic disorders such as Liddle's syndrome, glucocorticoid-remediable aldosteronism, and syndrome of apparent mineralocorticoid excess, have made it possible to diagnose and treat effectively a group of patients who in the past would have been diagnosed as having 'essential hypertension.' Advances in diagnostic tools and the availability of a variety of newer antihypertensive medications, many of which have undergone successful clinical trials in pediatric patients, have made it easier to diagnose and treat hypertension in children.

In 2004, the Fourth Task Force of the National High Blood Pressure Education Program (NHBPEP)

Working Group published its recommendations on the diagnosis, evaluation and the treatment of high blood pressure in children and adolescents in the United States(3). These recommendations, in spite of some limitations, provide an excellent resource that is bringing some consistency in the management of pediatric patients with hypertension. Soon after its publication, a consensus meeting of experts of the Indian Pediatric Nephrology group resulted in the publication of a consensus statement on the "Evaluation and Management of Hypertension" in children in India(4). These recommendations provide a good starting point in the diagnosis and the management of hypertension in children in India.

Unlike adults, the blood pressure in children varies with age and nothing helps in the diagnosis of hypertension in children more than knowing the normal blood pressure distribution in the local age-appropriate population. In this issue of *Indian Pediatrics*, Raj and colleagues report normal blood pressure distribution in healthy, non-obese, children from Kerala State in India(5). The study involved a large cohort of 20,263 students in the age group of 5-16 years. To keep it consistent with the Fourth Task Force report, the authors derived the blood pressure percentiles for all age groups based on age, gender and height of their patients. This is helpful because it allows using the same definitions for pre-hypertension and various stages of hypertension as used in the Task Force report and the Indian consensus statement.

Besides providing invaluable data on normal BP in children aged 5 to 16 years in Kerala, the study by Raj, *et al.*(5) makes an interesting observation of

higher diastolic BP in boys as well as girls and higher systolic BP in girls in comparison to the published US data. Similar trends in BP distribution have been reported by a few more studies from the region. This observation needs to be confirmed by more studies, and if found to be true, the possible explanations for this variation need to be investigated.

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