

Letter to the Editor

What's New in Childhood Hypertension?

Dear Editor,

We are writing in response to the article "What's new in childhood hypertension?" by Dillon MJ.¹ We read with interest that obstructive sleep apnoea syndrome (OSAS) was not mentioned as a cause of secondary hypertension. Obstructive sleep apnoea has been extensively studied in adults, and there is now strong epidemiological evidence that it is an independent risk factor for hypertension, including essential hypertension.² Many cross-sectional and prospective population studies have demonstrated a modest but definite association between sleep disordered breathing and hypertension, independent of confounding factors.³⁻⁵ Nieto et al in a cross sectional sample of 6,132 subjects in the Sleep Heart Health Study found that the adjusted odds ratio for hypertension in patients with OSAS category was 1.37.⁴ The prospective longitudinal analysis from the Wisconsin Sleep Cohort followed up 709 participants over 4 years and found an adjusted odds ratio of 2.9 (CI 1.5-5.6) in new development of hypertension for an AHI of 15 versus an AHI of 0.5. In fact, Silverberg found so many similarities between OSAS and essential hypertension² and the evidence that OSAS contributes to essential hypertension (at least in adults) so compelling, that he urges physicians not to neglect this important reversible factor in assessing any hypertensive patient.⁶

In children, the causal link admittedly is not so strong. Marcus found that those with OSAS had significantly higher diastolic BP during both wakefulness and sleep, compared with primary snoring subjects.⁷ Apnoea index, as well as BMI and age, were independent determinants of BP. Kohyama et al reported similar findings and the absence of nocturnal dip of blood pressure.⁸ We have also found in a study of 96 children investigated for sleep disordered breathing, that those with OSAS were associated with

significantly higher nocturnal BP (unpublished data).⁹

It is also important to bear in mind that OSAS affected 0.7% of 4- to 5-year-old children.¹⁰ Based on a population survey of primary school children for observed apnoea during sleep, we estimated the prevalence of OSAS in this age group to be 1 to 2%.¹¹

As the author noted, obesity is an important part of primary hypertension, and that obese children have approximately a 3-fold higher risk for hypertension. We are also surprised to notice that OSAS was not mentioned by Dillon to play a role in the so-called primary hypertension in obese children. A review by the authors showed that obese children were far more likely develop OSAS which is a risk factor for hypertension as mentioned before.¹² The triad of obesity, OSAS and resulting hypertension pose a far greater cardiovascular risk than the sum of the individual effect of each disease.

In conclusion, we would urge paediatricians to ask for symptoms of OSAS in any children with hypertension. Three questions should be asked when one assess a child suspected of being hypertensive:

1. Do you snore often?
2. Are you sleepy during class?
3. Have you observed apneic episodes during sleep?

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Author's Reply

Dear Editor,

I am grateful to Drs Ng, Leung and Kwok for pointing out the omission of obstructive sleep apnoea syndrome (OSAS) as a possible factor in the causality of childhood hypertension in my recent review article in the *Journal*.¹ Its lack of inclusion was more to do with the need for a degree of selectivity, as reflected by exclusion of other aspects of childhood hypertension, than to do with a lack of awareness of its potential relevance.

I entirely concur with the views that they have expressed both in terms of the role of OSAS in causing increased blood pressure in isolation and in the context of obesity. The latter association, as they pointed out, may carry a significant cardiovascular risk and be a greater problem in time due to the increasing incidence of childhood obesity worldwide.

The mechanisms involved in OSAS causing an increase in blood pressure remain unclear but sympathetic nervous system activation secondary to arousal is thought to play a part with perhaps hypoxaemia also having a contribution.^{2,3}

I am sure that it is, as Drs Ng, Leung and Kwok suggested, important for paediatricians to enquire about symptoms suggestive of OSAS when evaluating children with hypertension and also in those with obesity.

References

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