Is there a new method for determining aortic root dilatation in children?

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To the Editor,

I read with great interest the article of Madueme et al., who investigated the prevalence of aortic dilatation within a cohort of pediatric patients with mild to moderate kidney disease [1]. Several interesting questions arise as a result of this report. The authors did not describe exclusion criteria including a valvular disease such as bicuspid aortic valve. Bicuspid aortic valve is the most common type of congenital heart defect and is associated with clinically significant cardiovascular complications including aortic root dilatation, aortic valve dysfunction, and ascending aortopathy, predominantly occurring in adulthood [2]. Therefore, the authors should have excluded individuals with disease that has a significant impact on the aortic root and ascending aorta size. An important consideration is to determine whether the aortic root is dilated. In their study, the authors calculated the *z*-scores for aortic dimensions using regression equations from Boston Children's Hospital echocardiography laboratory. These equations include the patient's gender, weight, height, body mass index, and the body surface area. The authors found that children with aortic dilatation had significantly lower weight and body mass index. If the authors had adjusted the aortic root according to the height instead of the body surface area, the aortic root dilatation might not have been found at such a high rate in children with chronic kidney disease with lower weight. The great diversity in age and body surface area in these children has made establishing a single or approximate norm for the aortic root diameter impossible. Therefore, it is very important to create a simple screening tool for identifying aortic root dilatation in the children. Today, a new tool corrects the aortic root diameter purely on the basis of a patient's height because body mass does not significantly affect the aortic root diameter.

Especially, this is why thin or obese patients may be mistakenly classified if *z*-score formulas including body surface area are applied. A recent study showed that the aortic root ratio, which is a simple ratio of the aortic root diameter to a patient's height, does not require access to any nomograms or online *z*-score calculators [3]. This tool allows for rapid and precise assessment of whether the aortic root is dilated. In my opinion, using this method, it may be more accurate to evaluate aortic root dilatation in individuals with low body weight in the study population.

Compliance with ethical standards

Conflict of interest The author declares that there is no conflict of interest.

References

1. Madueme PC, Ng DK, Guju L, Longshore L, Moore V, Jefferies L, Warady BA, Furth S, Mitsnefes M (2020) Aortic dilatation in children with mild to moderate chronic kidney disease. *Pediatr Nephrol* 35:1023–1031
2. Niaz T, Fernandes SM, Sanders SP, Michelena H, Hagler DJ (2020) Clinical history and management of bicuspid aortic valve in children and adolescents. *Prog Cardiovasc Dis* S0033-0620(20):30120–30121. <https://doi.org/10.1016/j.pcad.2020.05.012>
3. Wozniak-Mielczarek L, Sabiniewicz R, Nowak R, Gilis-Malinowska N, Osowicka M, Mielczarek M (2020) New screening tool for aortic root dilatation in children with Marfan syndrome and Marfan-like disorders. *Pediatr Cardiol* 41:632–641

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