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Letter to the Editor

Quantitative bone ultrasound in pediatric patients with cystic fibrosis

To the Editor,

We read with interest the article by De Schepper et al. [1] on the evaluation of quantitative ultrasound bone sonometry (QUS) at the distal left radius as a selective population pre-screening method to maximize the cost effectiveness and to limit the exposure to dual X-ray absorptiometry (DXA) in young cystic fibrosis (CF) patients.

Parallel to the publication of this study, our group has recently published [2] QUS findings in 35 Spanish children and young adults with CF within a population-based study on bone turnover markers. The mean age was 11.8±5.5 years, and the participants were recruited using methodology similar to that of De Schepper et al., excluding those who were being treated with bone active medication other than corticoids or routine vitamin D supplementation. We measured bone properties using phalangeal QUS and did not find differences between well-nourished CF patients and weight-, height- and age-matched control cohort of healthy subjects. Measurements in the CF group were inside the reference ranges that we have previously described for phalangeal QUS in the Spanish pediatric population [3]. Therefore, we agree with Shepper et al. that QUS can effectively screen out CF patients with normal bone mass.

According to the official position of the International Society for Clinical Densitometry (ISCD) 2007, the diagnosis of bone disorders in pediatric patients still relies on a clinically significant fracture history that includes the number, type and site of fractures. Thus, the effectiveness of a method is dependent on its reliability in discriminating patients with and without fractures. QUS methods are safe, rapid, easy to use, radiation free and cost effective, making them attractive for use in pediatric populations. Phalangeal QUS assesses the skeletal condition using two parameters: AD-SoS (ultrasound wave speed), which mostly reflects bone density, and elasticity and BTT (ultrasound signal transmission time), which is related to cortical thickness and discriminates between different patterns of bone diseases independent of bone density. In a recent study by Mussa et al. [4] that involved 1719 pediatric patients with bone disorders (including 69 with CF with a mean age of 13.8±4.3 years), phalangeal QUS identified fractured pediatric patients with bone disorders, reflected the severity of the causative trauma and showed a high discrimination power for fragility fractures. We agree with De Schepper et al. that DXA cannot replace QUS for CF-related bone disease, but the investigation of pediatric measurement has revealed differences. DXA and calcaneal QUS discriminated patients with positive fracture history [5]; however, this was not the case for radial QUS and metacarpal index, most likely because they primarily measure cortical bone. We believe that the phalanges are more informative for detecting bone-related diseases in diseased children because they comprise both cortical and cancellous bones.

References

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