

# Achilles tendon: normality curves for children with a possible marker for familial hypercholesterolemia

*Tendão de Aquiles: curvas de normalidade em crianças como possível marcador para hipercolesterolemia familiar*

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The human aging process, as well as aging-related diseases, such as hypercholesterolemia, must be followed up on a regular basis, considering the wealth of studies in the literature approaching metabolic and hormonal components, and inflammatory markers in children, most notably in the obese ones. The literature points towards atherosclerosis starting early in the childhood, because of increased plasma cholesterol levels. In Brazil, as in most developed countries, cardiovascular diseases represent the main cause of morbimortality, occurring at early ages and causing a significant loss of years of productive life. Moreover, cardiovascular diseases are further aggravated by smoking, use of oral contraceptives, sedentary habits, hypertension, inadequate diets, obesity and hypercholesterolemia<sup>(1)</sup>. As extreme poverty is eradicated, obesity emerges as a more frequent and more serious problem than malnutrition. The increase in the prevalence of obesity in Brazil is significant and is proportionally higher in low-income families. Besides that, obesity is commonly associated with a number of other diseases, such as hypertension, dyslipidemias and diabetes mellitus type 2, in a syndrome that has been denominated plurimetabolic syndrome, in which all of its components constitute risk factors for cardiovascular diseases<sup>(2-6)</sup>.

In imaging diagnosis, ultrasonography is the method of choice for evaluating children, whenever possible. Among many advantages, such as portability, absence of ionizing radiation and reproducibility, one deserves special mention: the possibility of performing the procedure without the need for sedation. Ultrasonography also plays a key role in the musculoskeletal segment<sup>(7)</sup>, with applications for evaluating alterations in the intrauterine development to the human aging.

With respect to the morphometric study of the Achilles tendon and its possible relation with familial hypercholesterolemia, and therefore increased risk for cardiovascular diseases, the study developed by Bezerra et al.<sup>(8)</sup>, "Measurements of the calcaneal tendon in the first year of life", published in the present issue, justifies the research in the absence of normality curves by age, weight, length and gender in the childhood, which in many occasions, makes the early diagnosis of some diseases more difficult. The authors report that "No study was found in the literature that have measured thickness and width of the calcaneal tendon in children up to 12 months of age" and, in fact, as usual in the academic community, little research has been dedicated for defining normality standards and variations, emphasizing the investigation of the diseases, particularly in our specialty. In the literature, there are descriptors for normality values for Achilles tendon measurements with large age intervals in relation the childhood<sup>(9,10)</sup> and adulthood<sup>(10-12)</sup>.

Another relevant point mentioned on the text, is the inter- and intraobserver analyses. The authors report that the examinations were performed by a "single radiologist with experience in musculoskeletal ultrasonography". Such procedure may seem questionable in principle, but it is in consensus with other authors, including when compared with magnetic resonance imaging studies<sup>(13,14)</sup>.

Finally, the research application. Why should the thickness of the Achilles tendon be analyzed in children under the age 1? The authors say that the measurement of the Achilles tendon thickness and width in eutrophic

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children by means of ultrasonography, can help in the quantitative assessment of possible metabolic damage caused by familial hypercholesterolemia. And it can. A recent study developed by Tsouli et al.<sup>(15)</sup> demonstrates a direct response in Achilles tendon thickness, with a reduction, after specific treatment for familial hypercholesterolemia.

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