

Comment On: Sarcopenia is a Prognostic Outcome Marker in Children with High-Risk Hepatoblastoma Sarcopenia in Children? A Repechage or ‘Better Late Than Never’

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Comment On: Sarcopenia is a Prognostic Outcome Marker in Children with High-Risk Hepatoblastoma

Sarcopenia in Children? A Repechage or ‘Better Late Than Never’

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Dear Editor,

With much interest, we have gone through the recently published article (Sarcopenia is a prognostic outcome marker in children with high-risk hepatoblastoma) by Ritz et al.¹. We wish to congratulate the authors for measuring total psoas muscle area as a prognostic risk factor in children with hepatoblastoma. They have measured the cross-sectional muscle area at two distinct lumbar levels (L3-4 and L4-5) on computed tomography or magnetic resonance imaging using a freely-available online *z*-score calculator tool.²

Herewith, our point of concern is two-fold; we would like to comment on the use of the term ‘sarcopenia’ in children and on the lack of functional evaluation. Regarding the former, it is well-known that sarcopenia is age-related loss of muscle mass and muscle function, which ensues as early as in 5th decade (at middle

age) but not in children or young adults. Therefore, we need to note that there is a misunderstanding as regards the definition. Sarcopenia was first described in 1989 as an age-related decline in lean body mass affecting mobility, nutritional status, and independence.³ Of note, it is not muscle wasting or atrophy (due to immobilization, malnutrition, infection, cachexia or any adverse treatment effect) alone and should be accompanied by loss of muscle function as well. Herein, muscle function progressively deteriorates due to motoneuron loss that is not adequately compensated by reinnervation of muscle fibers by the remaining motoneurons.⁴ The aging-related denervation/reinnervation process has a strong impact on the quantitative changes in muscle (e.g. muscle fiber loss and atrophy), resulting in overall loss of muscle mass and muscle function.⁴

Second, the reduced muscle mass in the absence of functional evaluation can/should not be labelled as sarcopenia. Although for decades, this term has been used to describe the loss of muscle mass alone without reference to function, and is still being used in some cancer and other disease-related sarcopenia studies;⁵ after 2010, a big milestone i.e. muscle function (loss) was introduced into the concept/definition of sarcopenia.⁶ This new focus on muscle function is usually defined by muscle strength and power (or physical performance) and these parameters were shown to be more powerful predictors of clinical outcomes than muscle mass alone.⁷ Hence, similar to adults, performance evaluation can possibly be carried out via measuring grip strength (for muscle function) and anterior thigh muscle thickness (for muscle mass) in children as well.⁸ Of additional note, the other important milestone has been the recognition of “age-related sarcopenia (M62.84)” as an independent condition i.e. different from “muscle wasting and atrophy, not elsewhere classified (M62.5)” according to the International Classification of Diseases-10 code in 2016.⁹

Lastly, muscle loss due to aging (i.e. sarcopenia), immobilization or malnutrition (i.e. muscle wasting and atrophy) is not uniform throughout the body, and it is noteworthy that anterior thigh muscles (rich in type 2 fibers) undergo atrophy earlier than the other muscle groups.⁸ Therefore, aside from promptly defining the pertinent clinical scenarios, we emphasize the use of basic but vital functional test (i.e. grip strength) together with the anterior thigh muscle thickness measurements (by ultrasound) in their assessments. This way, loss of muscle mass and function as well as the overall health status can accurately be managed in children.¹⁰

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