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SARCOPENIA AND HEART VALVE SURGERY

To the Editor:

We read with great interest the article by Okamura and colleagues,¹ who evaluated the impact of sarcopenia on the clinical outcomes after heart valve surgery. They concluded that preoperative sarcopenia defined from the psoas muscle area was associated with long-term survival after valve surgery. Before generating current results, however, we would like to direct readers' attention to some methodologic points.

First, the method of diagnosing sarcopenia in the study of Okamura and colleagues,¹ which was designed retrospectively, was only defined by the calculation of the psoas muscle area at the level of the top of the iliac crest by means of computed tomographic (CT) scan. According to the European Working Group on Sarcopenia in Older People,² sarcopenia is the presence of both low muscle mass and low muscle function (strength or performance). The "presarcopenia" stage is characterized by low muscle mass without impact on muscle function. Okamura and colleagues¹ did not report data for the muscle function of patients and instead classified them as having sarcopenia without any muscle function measurements. Standardization of the terminology is crucial for generalizing the results of the studies. The assignment of sarcopenia in this study therefore seems to be suboptimal.

Second, Okamura and colleagues¹ used the psoas muscle area at the level of the top of the iliac crest calculated by means of CT in all patients to predict low muscle mass. Several techniques, including CT analysis, are available for muscle mass measurement; however, a validated muscle mass measurement made by CT involves a total body muscle mass scan and not a regional measurement of a single muscle mass, such as the psoas muscle.² To the best of our knowledge, the methodology used by Okamura and colleagues¹ has not been validated against the criterion

standards. Moreover, for measurement of muscle mass, the European Working Group on Sarcopenia in Older People consensus report does not advise the use of segmental muscle area calculation such as that described in the article of Okamura and colleagues.¹ The estimation of muscle mass in this study thus also seems to be suboptimal.

We believe that readers of the *Journal* should consider these points when evaluating current results.

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HOW IS PREOPERATIVE SARCOPENIA ASSESSED IN PATIENTS UNDERGOING HEART VALVE SURGERY?

Reply to the Editor:

We read the letter to the Editor by Safer and colleagues regarding the diagnosis of sarcopenia and measurement of muscle mass, with great interest. We fully agree with Safer and colleagues that diagnosis of sarcopenia needs to be comprehensively evaluated. As they point out, the European Working Group on Sarcopenia in Older People (EWGSOP) defined sarcopenia as the presence of both low muscle mass and low muscle function (strength or performance).¹ Both the muscle mass and muscle function of the patient should be taken into consideration when evaluating the impact of sarcopenia on clinical outcomes. To define sarcopenia in patients undergoing valve surgery in our study, we measured the mass of the psoas muscle but not muscle function, because the study was retrospective in design. It is therefore possible that some patients at the presarcopenia stage (low muscle mass with normal muscle function) were included in the sarcopenia group in our study. In any future prospective

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study, both muscle mass and function should be measured to investigate the impact of sarcopenia on the outcomes after cardiac surgery.

Several methods have been proposed for the assessment of muscle mass. The problem is that methods used to measure muscle mass differ among studies, which makes it difficult to interpret and compare studies. The EWGSOP stated that computed tomography (CT) and magnetic resonance imaging are criterion standards for estimating muscle mass in research, and dual energy x-ray absorptiometry is the preferred alternative method for clinical use.¹ Cost, availability, and ease of use also need to be taken into account, however, when determining which modality is used in clinical practice at different institutions. Our study used measurement of the psoas muscle mass as marker of sarcopenia for several reasons. First, preoperative CT scan data were already available, because patients undergoing cardiac surgery at our institution routinely undergo preoperative CT scans for screening purposes. As stated in the EWGSOP report,¹ a CT scan is a very precise imaging tool for estimating muscle mass. Second, measurement of the mass of the psoas muscle is simple and does not require additional software for calculation. We agree that there is a concern that a regional measurement of a single muscle mass may not reflect total muscle mass. Several recently published articles measuring muscle mass for diagnosis of sarcopenia, however, have evaluated the psoas muscle.²⁻⁴ This suggests that measurement of regional muscle mass, such as the area or volume of the psoas muscle, can be performed easily in clinical practice at many centers.

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