

INVITED COMMENTARY

Chewing the Rag: Masseters, Sarcopenia, and Late Survival After Carotid Surgery

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The concept of sarcopenia has been around for over 20 years,¹ but it is only recently that it has gained more attention (and controversy). It is characterised by age related decline in skeletal muscle mass, and is thought to be multifactorial with a prevalence of about 30% among the elderly population.²

Risk factors for sarcopenia include age, low body mass index, and inactive lifestyle. It is closely related to geriatric disease states linked with increased risk of falls and fractures, including osteoporosis and frailty. It is therefore not unexpected that sarcopenia is strongly associated with poorer outcomes and higher mortality following surgery.^{2,3}

Currently there is no universally accepted definition of sarcopenia. In this issue, Oksala et al.⁴ used masseter muscle area (MA) as a surrogate marker of sarcopenia. They reported that MA could be reliably quantified using a CT scan, and, secondly, low MA was a significant predictor of long-term mortality after carotid endarterectomy. This association with late mortality was independent of age, gender, body mass index, renal insufficiency, presence of ipsilateral stenosis, and indication type.

Oksala et al.⁴ did not elaborate in detail how their findings could be used clinically. There was only a brief mention of MA as a potential risk stratification tool for late mortality after carotid surgery. However, in this respect, age (with $p < .001$) was clearly a superior predictor of late mortality than MA (with $p = .023$). Furthermore, the authors acknowledged that they had done an exploratory analysis but their study size was not sufficiently powered to determine a threshold cut off level at which MA can predict late mortality after carotid endarterectomy.

Nevertheless, Oksala et al.'s⁴ findings were novel and have never been reported previously; and their importance lies in raising the awareness of the potential link between sarcopenia and mortality in vascular patients. As mentioned, age was a much stronger predictor of late

mortality after carotid surgery than MA (sarcopenia); however, age is not modifiable whereas sarcopenia is potentially treatable. If we assume causality between sarcopenia and late deaths, the research questions arising from Oksala et al.'s⁴ study are (1) can low MA be increased effectively (i.e., can sarcopenia be reversed?); and (2) can this translate to improved late survival after carotid surgery (or other vascular procedures)?

In terms of treating sarcopenia, no muscle building agents are currently approved in the United States. Resistance training and nutritional supplementation with protein, amino acids, vitamin D, and creatine remain the main options for treating sarcopenia. Future treatments which are currently under trial include selective androgen receptor modulators, myostatin inhibitors, espidolol, ghrelin, and hormone replacement therapy.³

As the population in general ages, the prevalence of sarcopenia is also likely to increase. It is vital to continue to raise awareness of sarcopenia and for this to continue to gain traction so as to reach consensus on accurate diagnosis, treatment, and impact on long-term survival among vascular patients.

REFERENCES

- 1 Rosenberg IH. Sarcopenia: origins and clinical relevance. *J Nutr* 1997;127:990. S–991 S.
- 2 Marty E, Liu Y, Samuel A, Or O, Lane J. A review of sarcopenia: enhancing awareness of an increasingly prevalent disease. *Bone* 2017;105:276–86.
- 3 Marzetti E, Calvani R, Tosato M, Cesari M, Di Bari M, Cherubini A, et al, SPRINTT Consortium. Sarcopenia: an overview. *Aging Clin Exp Res* 2017;29:11–7.
- 4 Oksala NKJ, Lindström I, Niina K, Juhani PV, Lyytikäinen L-P, Juha-Pekka P, et al. Preoperative masseter area is an independent predictor of long-term survival after carotid endarterectomy. *Eur J Vasc Endovasc Surg* 2019;57:331–8.

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