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Reply

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Reply



We extend our appreciation to Thiran et al. for their insightful response letter regarding our recent publication on the diagnostic efficacy of maximal systolic acceleration (ACC_{max}) in peripheral arterial disease (PAD) by Willems et al.¹ We concur that the growing recognition of acceleration measurements, as evaluated through Doppler ultrasound examination, for diagnostic vascular applications is promising. However, we would like to address several issues raised in the response letter.

First, we emphasize the critical need to differentiate between the ability of a bedside test in diagnosing or ruling out PAD and predicting wound healing. To the best of our knowledge, the diagnostic performance of the acceleration time (AT) has never been described with a reliable reference test. The latter is of utmost importance, as is previously outlined in various systematic reviews^{2–4} and the QUADAS-2 tool⁵ (tool for quality assessment of diagnostic accuracy studies). Therefore, caution must be exercised when drawing conclusions from studies that compare new parameters with other index tests (such as the ankle-brachial index and the toe-brachial index) or the Wound, Inflammation, foot Infection classification (partly determined by index tests), as referred in the response letter of Thiran et al.

It is well-known that the performance of these index tests is poor, particularly in patients with diabetes mellitus and chronic kidney disease.^{2–4} Hence, in our opinion, AT should be investigated more thoroughly first (eg, compared with a reliable reference test), before definitive statements about its diagnostic performance can be established.

Second, an important aspect regarding the methodology used for ACC_{max} measurements was highlighted. As described extensively in our article,¹ we used a velocity and time scale setting, allowing a Doppler waveform covering at least three-quarters of the window and a maximum of three to four heartbeats. It is important that this window is displayed on one full screen. The goal is straightforward: to magnify the Doppler waveform to such an extent that accurate measurement points can be placed. In various experimental studies, there has been a high interobserver agreement for ACC_{max} .^{6,7} Therefore, we differ with the statement made by Thiran et al. characterizing ACC_{max} as a “rough estimate.”

We believe that acceleration measurements (ACC_{max} and AT) exhibit promise and truly provide additional value in clinical settings. Our study¹ demonstrated that PAD can be diagnosed and ruled out accurately (sensitivity of >90%, specificity of >93%) with a reliable reference test (computed tomography angiography), a feature that remains unknown for AT. In the near future, more clarity will emerge regarding the roles of ACC_{max} and AT in patients with chronic limb-threatening ischemia and diabetic foot ulcers, with insights expected from the awaited results of the DIAMACC study.

DISCLOSURES

None.

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Debating over the size threshold for elective repair of abdominal aortic aneurysms



According to the 2018 Society for Vascular Surgery abdominal aortic aneurysm (AAA) practice guidelines, elective repair is recommended for men with an AAA ≥ 5.5 cm and for females with an AAA ≥ 5.0 cm.¹ As stated in a Society for Vascular Surgery implementation document,² “the generally accepted annual risk of rupture exceeds the perioperative risks associated with elective repair at a maximum aortic diameter of 5 cm for women and 5.5 cm for men.” In contrast, Columbo et al support that the optimal size threshold to minimize AAA-related mortality is 6.9 cm for a 60-year-old average health man with a 5.5-cm AAA, and 6.1 cm for a 60-year-old average health woman with a 5.0-cm AAA.³

A propensity-score matched analysis of Medicare patients undergoing elective open (n = 22,830) or endovascular AAA repair (EVAR) (n = 22,830) demonstrated that perioperative mortality rates increased from 0.4% to 0.8%, 1.3%, 1.6%, and 2.7% (for all associations, $P < .001$) for patients undergoing EVAR at ages 67 to 69, 70 to 74, 75 to 79, 80 to 84, and ≥ 85 years, respectively.⁴ Based on these results, a delay in the performance of EVAR may be associated with up to almost seven-fold higher periprocedural mortality rates.

What is the rationale of waiting for a 5.5-cm AAA in a 60-year-old average health man to grow to 6.9 cm, or for a 5.0-cm AAA in a 60-year-old average health woman to grow to 6.1 cm? Because it is almost certain that such 60-year-old patients will eventually require an intervention, why not offer them elective repair at the currently recommended size thresholds,^{1,2} rather than risk having them present with a ruptured AAA, or undergo elective repair at an older age with several-fold higher periprocedural mortality rates⁴?

On the other hand, the 2024 European AAA guidelines have downgraded their recommendation for elective AAA repair at 5.5 cm due to the lack of supporting high-quality evidence.⁵ The excellent Markov model described should be incorporated in the decision-making to understand the relative risk associated with increasing age vs the updated size-based rupture estimates.³ Advanced age or the presence of significant comorbidities should increase the threshold for intervention, as demonstrated by Columbo et al.³

DISCLOSURES

None.

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Reply



We thank Dr Paraskevas for the interest in our recent study assessing the optimal size thresholds at which to repair abdominal aortic aneurysms (AAAs) in current practice. This analysis was predicated on using Markov modeling to estimate AAA-related mortality after repair at different potential aortic diameter thresholds.¹ Dr Paraskevas raises two important points. First is the observation that perioperative mortality for AAA repair is greater among older patients, and second is the observation that the European Society for Vascular Surgery has downgraded its current recommendations for elective AAA repair given the absence of high-quality evidence.

Notably, although advancing age is often associated with increased perioperative mortality for AAA repair, it is important to emphasize that our Markov models were designed to provide population-level estimates, rather than individual patient-specific recommendations. Irrefutably, deferring AAA repair would likely result in some patients' potential rupture. However, given that we remain unable to reliably identify this subset of at-risk patients, it should not necessarily justify the application of surgical repair to all patients with AAA irrespective of risk, or our findings that many more are likely to remain asymptomatic. Accordingly, we believe our conclusions are similar to other current recommendations where routine population-level treatments are not endorsed, such as widespread screening for asymptomatic carotid disease or uniform