Exercise Transcutaneous Oximetry of the Buttocks, External Validation With Computed Tomography Angiography

We read with great interest the paper from Audonnet et al about the accuracy of exercise transcutaneous oximetry (Ex-tcPO₂) of the buttocks to detect stenosis greater than 75% in arteries towards the pelvic circulation.¹ In our study in 2016 we used computed tomography angiography (CTA) as the gold standard.² We tested the accuracy of Ex-tcPO₂ to detect different levels of arterial stenosis of the lower limbs ($\geq 50\%$, $\geq 60\%$, and $\geq 70\%$) using a similar methodology. Of interest, we found quite similar results for the detection of stenosis $\geq 70\%$. In our study, for stenosis $\geq 70\%$, the sensitivity and specificity of proximal minimal DROP were 85.7% [67.7–94.8] and 75.0% [59.6–85.9] respectively with an area under the curve (AUC) of 0.798 [0.683–0.885] whereas in Audonnet et al's study of stenosis $>75\%$ the respective values for proximal minimal DROP were 80.5% and 72.3% with an AUC of 0.805. Cut-offs were quite similar in both studies (-16 mmHg^2 and -15 mmHg^1). In our opinion, these 2 studies strengthen interest in the use of Ex-tcPO₂ to detect arterial stenosis towards the pelvic circulation. However, we would like to underscore that in our study we found a better AUC for the detection of stenosis $\geq 60\%$. In that case, the AUC was 0.894 [0.796–0.956] with 82.5% [67.6–91.5] sensitivity, 85.7% [67.7–94.8] specificity and 83.8% [75.1–92.6] accuracy. The cut-off value was also -15 mmHg . Although our population was small,

it seems that Ex-tcPO₂ with a cut-off $\leq -15\text{ mmHg}$ better predicts stenosis $\geq 60\%$ than stenosis $\geq 70\%$ on CTA. Finally, we would like to add that this technique is also of interest for the assessment of distal claudication (in the calf), especially for patients who have incompressible arteries or a neuropathy where it is difficult to conclude that the pain has a vascular origin.² We hope that based on interest in this technique and the published results,^{3,4} Ex-tcPO₂ will appear in future international guidelines as a second-line tool for peripheral artery disease diagnosis.

References

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