Letters to the Editor

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REFERENCES

Cited “validation” references for the SphygmoCor device

To the Editor: Covic et al describe attempts to measure “central arterial pressure waveforms” in hemodialysis patients in Romania [1]. They claim their noninvasive assessments of “aortic” blood pressure (BP) waveforms using the SphygmoCor device (PWV Medical, Inc., Sydney, Australia) have been validated. However, they cite no data to support this assertion.

The authors write, “The software analytical program also derived in real time from the measured radial artery waveform an aortic BP waveform using a validated transfer function algorithm” [1, p 2636]. However, this is not correct. The two references cited (23 and 24) have nothing to do with the SphygmoCor and have not validated the SphygmoCor’s generalized transfer function (GTF) algorithm.

Reference 23 is a 2-page short report from a 1992 Supplement, a year before both the SphygmoCor radial artery GTF was published [2], and the technique’s United States Patent was granted [3]. Reference 24 did not use the SphygmoCor, but rather involved another GTF developed using a completely different computational technique. This approach has subsequently been shown to be ineffective in 67% of cases, when calibrated noninvasively [4].

A search on Medline reveals a paucity of validation work with the SphygmoCor reported in the literature. Furthermore, no evidence has been provided to support the use of the device in patients with renal failure, let alone in those following hemodialysis. Given this, researchers may wish to exercise caution in making claims about the “validity” of the noninvasive approach, which, at present, remains completely unproven, especially in renal disease.

Eldon D. Lehmann
London, England, United Kingdom

Reply from the author

We thank Dr. Eldon Lehmann for his letter and the interest he has shown in our recent publication [1].

Over the last 2 years Dr. Lehmann, a noted expert in vascular imaging and methodology, with a long-standing interest in arterial compliance, has repeatedly censured other authors of other studies in which similar methods have been used [2-4].

Interested readers are urged to follow this correspondence trail across time, and several journals, the better to appreciate the background to these comments.

The thrust of his comments to us can be summarized as follows. First, is there any justification/supportive evidence for the use of a reverse generalized energy transfer function (GTF), as opposed to an individualized energy transfer function? Second, which parameters can safely be derived using a validated-GTF? Third, has there been any independent validation of the use of such GTFs with noninvasively calibrated brachial artery blood pressure? Finally, have the methodology and algorithms in use in the SphygmoCor device (PWV Medical, Inc., Sydney, Australia) been validated? Our answers (for brevity) are, “yes; aortic systolic blood pressure and augmentation index; yes, but not yet in the public domain; and partly.” We have reason to hope that later this year the answer to all of the questions will be “yes.” Until then, we concede that complete validation of this extremely interesting and potentially useful wave analysis technique is (eagerly) awaited.

David J. A. Goldsmith, for the authors
London, England, United Kingdom

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REFERENCES


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