Shortened Head-Up Tilting Test Guided by Systolic Pressure Reductions in Neurocardiogenic Syncope

To the Editor:

We read with interest and appreciated the article by Pitzalis et al.1 However, an important methodological issue requires further clarification with regard to the Finapres method. Specifically, the authors do not mention whether and how corrections were made to avoid the artifacts in pressure measurements caused by changes in body position during the test. The traces shown in the Figure suggest that the pressure measurements are influenced, during the tilting-up phase, by the change in hydrostatic pressure at the finger-cuff. This is reflected by the presumably fictitious step increase in both diastolic and systolic pressures of about 20 mm Hg in the tracings corresponding in time with the uptilting. Indeed, the reliability of Finapres is not perfectly linear, and may over- or underestimate pressure values at the 2 extremes of the measurement range.2 Imprecision is usually avoided by self-calibration of the instrument every 60 seconds;3 however, if the reference pressure value is not simultaneously verified by other means (eg, a simple sphygmomanometer), the measurement recorded by the instrument may be unreliable, particularly after substantial variations of pressure, and may lead to a substantial number of false-positives. The step increase in pressure shown in the Figure, however, would suggest that pressure values were not checked during changes of position. This is an important issue, as the clinical accuracy per se of Finapres is suboptimal3 and requires scrupulous observance of every possible adjustment.

At our institution, baseline simultaneous measurements of the arterial blood pressure are routinely obtained at the radial artery by Dinamap (Critikon, Tampa, Calif) and traditional (Riva-Rocci, Erká, Germany) mercury brachial cuff in order to assess the agreement between the 2 methods.4 Throughout the whole test (baseline, tilting, and recovery), the beat by beat pressure measurements obtained by the Finapres are compared with the Dinamap measurements every 3 minutes to correct, as needed, the Finapres pressure values either by adjustment of the finger position exactly at the sternal angle to correct differences of hydrostatic pressure,3 or by turning on the automatic servo self adjustment of the Finapres to correct the instrument shift.2

We would appreciate comments by the authors on this issue.

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Response

We appreciate the comments by Romano et al, which give us an opportunity to clarify some points and thus strengthen the value of our results.1 Although the Finapres method is not perfect for continuously measuring blood pressure, it has such a large number of advantages that it is strongly recommended for monitoring blood pressure throughout a tilt test to classify syncopal episodes.2

Romano et al argue that Finapres overestimates the increase in blood pressure at the very beginning of the tilt-up phase, and we agree that this is worth noting. The increase in blood pressure when a subject is tilted up is a well-known phenomenon that is seen regardless of the method used to record blood pressure. As previously noted by Petersen et al,3 the magnitude of the differences between the pretilt and tilt periods is greater when Finapres is used. There are a number of reasons for this bias, but what is important is that Finapres measurements show an acceptable within-tilt precision that closely follows pressure changes.3 The positive increase in systolic bias may have influenced our results, because it may blunt the systolic arterial pressure reductions that otherwise occur during the first minutes of tilt in patients likely to faint. This being the case, it could account for at least some of the few false-negatives seen in our series.

As noted by Romano et al, our figure clearly shows that no automatic self-adjustment was allowed to avoid any loss of information. On the basis of these considerations, as well as the relevant and appropriate observation of Romano et al, we can strengthen the value of the suggested method by showing a negative predictive value of 93%.

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Circulation. 2002;106:e69
doi: 10.1161/01.CIR.0000033848.10727.92
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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