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Reply to the Letter by Sharma and Chan: Is Transcranial Doppler for the Detection of Venous-to-Arterial Circulation Shunts Reproducible?

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We agree with Sharma and Chan [1] that the recent study by Belvis et al. [2] is further evidence that transcranial Doppler (TCD) is a simple, reliable and minimally invasive approach to the diagnosis and quantification of venous-to-arterial circulation shunts (v-aCS).

Our study clearly demonstrated the importance of optimising and then standardising the preparation of microbubbles [3]. We also believe that standardising the provocation tests, particularly the Valsalva manoeuvre, is important in achieving reliable and reproducible results.

In addition to anatomical reasons why the number of bubbles traversing the heart may be higher in the sitting rather than supine position, our experience is that a more stable TCD signal can be maintained in the sitting position [4, 5].

We agree that power M-mode TCD may improve the detection and quantification of v-aCS. It may be possible to adapt the criteria for v-aCS used in our study if the number of microbubbles detected by power M-mode TCD can be compared with the number on standard TCD; if power M-mode detects 50% more microbubbles, our definition of a 'significant' v-aCS would be ≥ 20 microbubbles. Whilst a study to compare power M-mode and standard TCD would be worthwhile, we are concerned with Sharma and Chan's suggestion of repetitive testing for v-aCS. There have been 5 case reports of transient ischaemic attack and 1 of stroke following intravenous injection of agitated air and saline during echocardiography [6, 7]. Our practice is to limit the number tests wherever possible and to stop testing once a large shunt has been demonstrated for safety reasons.

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