We Always Need a Pulse, or Do We?

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To the Editor:

With great interest and enthusiasm, I read the recent article by Miller [1] regarding the influence of pulsatile and non-pulsatile mechanical circulatory support on heart failure patients. The author describes that “the clinical trials with continuous flow VADs, including both centrifugal and axial flow, have all shown equal, if not superior end-organ function compared to the first generation of pulsatile flow pumps. Therefore, pulsatile blood flow is not important to normal organ function, which is more dependent on mean arterial pressure”. For this conclusion, he refers to the data published by Lietz et al. [2].

While I thank the author for his valuable review, it is a misrepresentation of the published literature. Lietz et al. clearly mention that they studied a total of 69 patients who underwent HeartMate XVE LVAD implantation at the University of Minnesota Medical Center from October 30, 2001 through June 13, 2006. They excluded from their analysis recipients of other types of HeartMate LVADs, Novacor LVADs, and axial flow devices, as well as those who required biventricular temporary support before device implantation. HeartMate XVE, a volume displacement pump, is a pulsatile ventricular assist device. Thus, there is no comparison between rotary blood pumps (axial and centrifugal) and first generation of pulsatile flow pumps in their study.

Although clinical studies have shown that renal, hepatic, and neurocognitive functions are maintained within a

normal range for durations up to 15 months [3], insufficient data exist to generalize it and further long-term studies are crucial to assess the effect of reduced pulsatility on end-organ function. As controversy still remains on this issue, the development of pulsatile rotary blood pumps would provide a unique opportunity for further research and comparison [4–5].

References

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