New, but still the same old story

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Central Message

POAF after LVAD implantation in patients without previous atrial fibrillation is associated with higher postoperative morbidity and costs, but whether POAF itself is the problem remains unclear.

See Article page 1543.

In this issue of the *Journal*, Hawkins and colleagues¹ report that postoperative atrial fibrillation (POAF) after implantation of rotatory left ventricular assist devices (LVADs) in patients without previous atrial fibrillation is associated with an increase of postoperative complications, longer hospital stays, higher costs, and a higher frequency of discharge into a facility. Their findings mirror what is known about POAF from other types of cardiac surgery, and it seems plausible that this holds true for the most ill patients who are typically seen in LVAD surgery. This has not been demonstrated so clearly before, however, and Hawkins and colleagues¹ are to be congratulated for undertaking this study.

Nevertheless, it should be noted that the article of Hawkins and colleagues¹ is based on a retrospective multicenter study, and that no causal relationship can therefore be determined. In clear words, we do not know that the occurrence of atrial fibrillation causes the complications; it is also possible that atrial fibrillation is only a sign or marker for other more relevant complications, such as right ventricular failure, as supposed by Hawkins and colleagues.¹ This interpretation is supported by the finding that POAF was not associated with an increase of postoperative stroke.

The implementation of rotatory LVADs is a success story. Their use has made the treatment of terminal heart failure with LVAD-implantation much safer,² and for many patients, these machines prolong life with a considerable quality of life. As a result, LVAD implantation is now explicitly recommended under certain circumstances in the treatment of terminal heart failure^{3,4} and will most likely be used more often in the next years. LVAD therapy still has some drawbacks that can have dramatic impact on our patients' lives, however, and it is very expensive. Both aspects place us under obligation to identify patients who are most likely to benefit.

Unfortunately, the study by Hawkins and colleagues¹ provides few hints regarding how to tailor LVAD therapy—but that was beyond the scope of the study. It is not surprising

that patients with POAF were older, more likely to have mitral valve regurgitation, and more likely to undergo tricuspid valve surgery. It is of some interest that POAF was more likely to occur in patients who had a centrifugal, intrapericardial pump than in those with an axial pump, which is usually placed just outside the pericardium. It appears possible that intrapericardial placement may irritate the heart and trigger atrial fibrillation, although a literature search shows that this has not been scrutinized. The literature provides little or no evidence, however, that centrifugal intrapericardial pumps are associated with higher rates of right ventricular failure and with worse outcomes.⁵⁻⁸

It will be the task for future studies to examine factors associated with outcome of LVAD therapy. It seems prudent that such studies evaluate not only mortality itself but functional survival.⁹ Meanwhile, it is still the same old story that careful preoperative evaluation of all patients with special emphasis on right heart function and implementation of all intraoperative and postoperative measures to protect the right ventricle are of uppermost importance in LVAD surgery.

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