

Impact of Revascularization for Patients Who Survive Life-Threatening Ventricular Arrhythmias

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In this issue of the *Journal of the American Heart Association (JAHA)*, Nageh et al reported the mortality and incidence of appropriate implantable cardioverter defibrillator (ICD) therapy in patients who experienced sustained ventricular tachycardia (VT) or ventricular fibrillation (VF) before or after surgical revascularization.¹ A small portion (7%) had unexplained syncope with inducible VT. The authors chose patients who met secondary prevention criteria because the data showing survival benefit are limited in patients who undergo implantation of an ICD for secondary prevention after surgical revascularization. To be clear, the patients they studied met the approved criteria specified in the National Coverage Decision for secondary prevention and should not be confused with patients requiring an ICD for primary prevention, for whom a 3-month wait is mandated by the Centers for Medicare and Medicaid Services.

Prior studies have shown that ICD therapy is underutilized, even when age and comorbidities are taken into account.² Although the reasons for this are complex and are not completely understood, patients with a history of VT or VF unrelated to transient causes are at risk of not receiving an ICD. For patients with VT or VF who undergo revascularization, this risk may be related to confusion about the indications or the specified waiting period, the focus on expediting recovery and discharge from the hospital, a misperception that revascularization eliminates the need for an ICD, or the assumption that the need for an ICD can be addressed when the patient returns home. In some instances, patients may be discharged from the hospital with the expectation that an ICD will be implanted after they return

home and recover from surgery, but during transitions in care and failure to communicate long-term recommendations, the need for an ICD may be overlooked.

The data acquired by Nageh et al reflect a single-center experience within the Kaiser system, in which coordination of follow-up would be more direct than at some referral centers. The authors identified patients who received an ICD and then focused on those in whom it was implanted for secondary prevention. It is not clear whether there were any patients with VT or VF who met the indications for an ICD based on criteria for secondary prevention but did not undergo the implant during this hospitalization. Among those who received the ICD, which is the focus of this study, good follow-up was achieved over a mean of 49 months.

Nageh et al demonstrate that, during long-term follow-up, the total mortality (38%) and the incidence of appropriate ICD therapy (30%) are substantial. Although there is no control group to demonstrate the survival benefit of ICD therapy, most physicians probably would feel that a control group would be unethical based on our knowledge of risk and standards of care. My interpretation that is the data confirm that the National Coverage Decision is appropriate for patients who require an ICD for secondary prevention after surgical revascularization.

It is important to recognize that the risk of recurrent VT or VF during follow-up is comparable regardless of whether the initial arrhythmia occurred before or after surgical revascularization.¹ Physicians should not assume that revascularization eliminates this risk because it does not. The impact of surgical or percutaneous revascularization in patients who survive VF or suffer VF around the time of revascularization has been evaluated in several studies,³⁻¹¹ and there is evidence that ICD therapy improves survival in patients with VT or VF who undergo revascularization.^{4,7} Although patients who undergo percutaneous coronary intervention may differ in some respects and were not included in this study, it is likely that the risk of recurrent VT or VF is similar in patients who undergo percutaneous coronary intervention and that ICD therapy is also appropriate for secondary prevention in this group. The confounding factors that affect survival after revascularization include left ventricular ejection fraction, severity of heart failure, whether the arrest was associated

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with acute myocardial infarction, prearrest angina, renal failure, and completeness of revascularization.^{3,5–11} Differences in these risk factors complicate our interpretation of the literature.

To use ICD therapy appropriately, the most cost-effective approach would be to focus on patients for whom the risk is distinctly greatest. Although Nageh et al found that total mortality was higher in patients with New York Heart Association Class III–IV symptoms of heart failure and that beta-blocker therapy was associated with lower mortality, no clinical factors were identified that would accurately discern the patients who benefited from ICD therapy from those who did not. As with many other ICD trials, there appears to be a relatively low survival benefit from ICD therapy in the first year after revascularization, but the benefit continues to increase over long-term follow-up.^{12–15} This is important to recognize because if a patient who met the indication for an ICD based on secondary prevention failed to receive the ICD and was seen for follow-up months or even years later without a recurrence of VT or VF, physicians should not assume that the risk is gone. In such cases, the risk persists, and the patient should have an ICD implanted unless the patient makes an informed decision not to undergo the implant or there are clinical reasons not to do it.

Disclosures

None.

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