Implantable cardioverter defibrillator therapy for secondary prevention in spontaneous coronary artery dissection: to place or not to place? This is the matter

To the Editor,

We read with interest the article by Çimci et al. (1) concerning a case of spontaneous coronary artery dissection (SCAD) in a young woman presenting with cardiac arrest due to ventricular fibrillation. Although SCAD is a known leading nonatherosclerotic cause of sudden cardiac death (SCD) related to myocardial ischemia presenting with life-threatening ventricular arrythmias in 3% to 11% of reported series, to date, data regarding the use of implantable cardioverter defibrillator (ICD) therapy in this population are limited (2). Current guidelines do not support early ICD placement after an aborted episode of sudden cardiac arrest due to ventricular arrythmia related to a potentially reversible cause (3). Nevertheless, the reversibility of SCD risk in SCAD patients is still a matter of debate. In the SCAD registry by Sharma et al. (4), several variables were significantly correlated with a higher risk of SCD, including tobacco use, ST-segment elevation myocardial infarction at presentation, pregnancy status, and SCAD recurrence. The latter has been reported with an estimated rate of up to 30% at 4 to 10 years of follow-up and is favored even by angiographic features (like coronary tortuosity and fibromuscular dysplasia), as well as by modifiable risk factors (including arterial hypertension, precipitating stressors, and low adherence to beta-blocker therapy) (2, 4). However, although such predictors have been shown to be linked with a propensity for an ongoing risk of SCD, current data from the literature do not support their utility in decision-making regarding ICD implantation, as opposed to other reported variables, like recurrent ventricular arrhythmias, uncomplete coronary revascularization, or persistent left ventricular systolic dysfunction at hospital discharge and during follow-up (3). Previously published series reported the frequent occurrence of angiographic spontaneous healing of SCAD lesions, as well as a quick recovery of left ventricular ejection fraction. Furthermore, a decreased propensity for SCD in patients with SCAD may be obtained by acting on modifiable risk factors, like smoking cessation, avoidance of future pregnancies, and better titration of beta-blocker therapy (2, 4). Finally, preliminary outcomes from SCAD series did not show a favorable risk–benefit ratio for patients who underwent ICD therapy without a guideline-based approach and whose clinical value was limited by lack of therapies delivered from the devices (2). In-hospital complication risks after ICD procedures have been reported in 11% to 16%, with an increased rate of re-interventions compared with implantation of right ventricular pacing leads. This is most likely related to the more complex structure, wider gage, and increased stiffness of high-voltage leads. Furthermore, gender differences, anthropometric parameters, and physician factors have also been reported to have a significant effect on the rate of complications after ICD placement (4, 5). In conclusion, the role of ICD therapy in secondary prevention in SCAD patients remains a challenging matter of debate, due to its unclear risk–benefit ratio and lack of SCD risk predictors that can be used in decision-making about ICD implantation. Further, larger trials are needed to guide the decision strategy of ICD placement in this population.

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Author`s Reply

To the Editor,

We appreciated the valuable comments on implantable cardioverter defibrillator (ICD) therapy in our patients with spontaneous coronary artery dissection (SCAD) (1). We did not consider ICD implantation for two reasons: 1. Cardiac arrest occurred in

the setting of ongoing ischemia, which was relieved by coronary revascularization; 2. Left ventricular ejection fraction (LVEF) was, at the time of the acute event, 40% to 45% and subsequently recovered to normal. It is notable that in the large prospective Canadian registry including 750 SCAD patients, mean LVEF at presentation was 55%, and only 3.8% of patients had LVEF <35% (2). In case of persistent severely impaired LVEF following revascularization in a patient with SCAD, we would have first considered a wearable cardioverter defibrillator. If there was persistent LV dysfunction beyond 40 days due to large myocardial infarction, we would have then recommended an ICD as in any post-myocardial infarction patient. However, we acknowledge that, as stated in the 2018 American Heart Association SCAD scientific statement, the role of wearable cardioverter defibrillators as well as of ICD implantation in patients presenting with sudden cardiac arrest temporally related to ischemia has not been studied (3).

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Alternative treatment methods for spontaneous coronary artery dissection

To the Editor,

We have read the paper by Çimci et al. (1) with great interest. The authors presented a coronary artery dissection case treated using stent implantation in the mid-segment of the left anterior descending artery (LAD), which spread to the proximal segment (1). The dissection did not reach the left main coronary artery. According to the classification by Saw et al. (2), dissection was suitable for type 2A coronary artery dissection, and there was thrombolysis in myocardial infarction-1 flow. The first wire could not be advanced to the LAD. However, with the support of a microcatheter and olive tipped wire, wiring of the distal true lumen was achieved and confirmed. The stent was implanted in the mid-segment, but the intramural hematoma was spread to the proximal segment of LAD. In Video 1, the intramural hematoma advanced through the first diagonal artery, demonstrating the involvement of the proximal LAD by dissection. First, when spontaneous coronary artery dissection (SCAD) is required, the stent should be implanted at a distance of 5 mm to a proximal lesion. A decision should be made according to the distal lesion because, without lesion covering, dissection tends to be advanced in the proximal segment (3). In a case where it is not possible to cover the entire lesion by stent implantation, cutting balloon angioplasty with or without stenting may be considered. The balloon size should be at least 0.5 smaller than the caliber of the vessel being intervened. In particular, short cutting balloons of either 6 or 10 mm sizes with low inflation of 4 atm should be considered (3, 4). Second, because of the propagation of SCAD to the diagonal artery, a cutting balloon with or without stenting may be chosen as the primary treatment strategy, especially in the proximal part of the coronary arteries, such as the ostial LAD or circumflex artery SCAD. Third, if resources are limited in the catheter laboratory, plain ballooning using a buddy wire may be considered. Cutting balloon angioplasty with fenestration and decompression of the false lumen may be preferable to stent implantation for preventing proximal extension of an intramural hematoma and the need for a long stent (5). Intramural hematomas may be resolved with cutting balloon angioplasty; chronic total occlusion wires may be used as an alternative treatment strategy in SCAD (6).

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