

[LETTERS TO THE EDITOR]

Sequential Spasm Provocation Tests under Medications Are Indispensable in Patients with Aborted Sudden Cardiac Death due to Coronary Spasm

Key words: sequential spasm provocation test, implantable cardioverter-defibrillator, aborted sudden cardiac death, coronary spasm, acetylcholine, ergonovine

(Intern Med 59: 2211-2212, 2020)

(DOI: 10.2169/internalmedicine.4953-20)

The Authors Reply We appreciate your letter. In previous reports, a majority of cardiologists around the world have recommended implantable cardioverter-defibrillator (ICD) therapy for patients with aborted sudden cardiac death (ASCD) due to coronary spasm positively. Ahn et al. also recommended ICD implantation in patients with ASCD due to coronary spasm. Of the 24 ASCD patients who received ICDs in their study, 6 experienced ventricular fibrillation; 5 of these patients received appropriate treatment, but 1 died due to intractable ventricular fibrillation (1). Appropriate ICD shocks in their study patients were recognized in a quarter of patients who received ICDs, while the remaining three-quarters had no appropriate ICD shocks during follow-up periods. The frequency of appropriate ICD shocks was similar to that in our previous reports [24.1% (33/137)] (2). Furthermore, the medications aside from nicorandil administered to patients were not markedly different between patients with and without ASCD due to coronary spasm, according to Ahn et al. Thus, the number of calcium channel blockers (CCBs) administered was similar between the two groups.

CCBs may not be sufficient to suppress the next fatal ventricular arrhythmias, according to previous reports. At least two CCBs with different working mechanism, such as dihydropyridine and benzodiazepine, should be administered in these high-risk patients before implantation of ICDs. Toyosaki et al. reported that the combination of nifedipine and diltiazem increased the level of serum nifedipine by three-fold, demonstrating powerful efficacy for suppressing coronary spasm (3).

We essentially administer the above two CCBs with nitrates or nicorandil in ASCD patients due to coronary spasm. Under the above medication regimens, including more than two CCBs, we routinely perform sequential spasm provocation tests under medication (4). Acetylcholine

acts by way of the muscarinic cholinergic receptor, while ergonovine acts through the serotonergic receptor. Different mediators may manage different coronary responses of provoked spasm in a clinical setting (5-7). Either or both acetylcholine or ergonovine tests under medications are insufficient for determining the requirement of an ICD in ASCD patients due to coronary spasm. We therefore recommend performing sequential spasm provocation tests, with an acetylcholine test first, followed by an ergonovine test and then an ergonovine followed by acetylcholine test, as a supplementary tool for determining the need for an ICD (8).

In the real world setting, we often experience the provocation of positive spasms by adding intracoronary injection of acetylcholine after an ergonovine test even when no spasm was provoked by either test alone (9). Because spasm provocation tests as previously reported, such as single acetylcholine test or ergonovine test alone, may document one side of provoked spasm, cardiologists should employ these powerful spasm provocation tests to identify the need for an ICD in these high-risk cases of ASCD due to coronary spasm in the cardiac catheterization laboratory.

The authors state that they have no Conflict of Interest (COI).

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Received: March 26, 2020; Accepted: April 2, 2020; Advance Publication by J-STAGE: May 26, 2020

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Intern Med **59**: 1351-1359, 2020.

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Intern Med 59: 2211-2212, 2020