Ventricular Tachyarrhythmia Associated with Cardiac Sarcoidosis: Its Mechanisms and Outcome

HIROSHI FURUSHIMA, M.D., MASAOMI CHINUSHI, M.D., HIROTAKA SUGIURA, M.D., HIDEHIRO KASAI, M.D., TAKASHI WASHIZUKA, M.D., YOSHIFUSA AZAWA, M.D.

The First Department of Internal Medicine, Niigata University School of Medicine, Niigata, Japan

Summary

Background: Cardiac sarcoidosis is increasingly recognized and is associated with poor prognosis. Ventricular tachycardia (VT) associated with cardiac sarcoidosis is the most likely cause of sudden death in most patients, but the mechanism has not been well established.

Hypothesis: This study investigated the mechanisms and outcome of VT associated with cardiac sarcoidosis.

Methods: The study included eight consecutive patients (five men, three women, aged 54 ± 19 years) who had sustained monomorphic VT associated with cardiac sarcoidosis in our hospital.

Results: The average ejection fraction was 43 ± 11%. Twenty-two VTs were observed in these patients, and mean heart rate during VT was 192 ± 29 beats/min (range 144–259). The phenomenon of transient entrainment was documented in 10 of 22 (45%) VTs by ventricular pacing (eight in the active phase). Another five (23%) VTs could not be entrained, but could be initiated by programmed stimulation and terminated by rapid pacing, reproducibly. In 3 of the 22 (14%) VTs, cardioversion was required urgently because of the fast rate, while the remaining 4 (18%) could be induced during electrophysiologic study.

Conclusions: In this study, there was a high possibility that the mechanism of 15 (68%) VTs was reentry. Reentrant substrate is formed not only in association with the healing of cardiac granulomas in the inactive phase of cardiac sarcoidosis but also in the active phase. Ventricular tachycardia with cardiac sarcoidosis, even if this mechanism is reentry, has different inducibility between the active and inactive phases in an electrophysiologic study. This makes the therapy for cardiac sarcoidosis (e.g., corticosteroids, antiarrhythmic agents, and catheter ablation) difficult. The implantable cardioverter-defibrillator is an effective treatment for ventricular tachyarrhythmia with cardiac sarcoidosis.

Key words: cardiac sarcoidosis, ventricular tachycardia, electrophysiologic test, reentry

Address for reprints:
Hiroshi Furushima, M.D.
First Department of Internal Medicine
Niigata University School of Medicine
1-754 Asahi-machi-dori
Niigata, 951-8510 Japan
e-mail: chimiri@med.niigata-u.ac-jp

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