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Syncope with Family History of Sudden Cardiac Arrest

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A 28-year old male patient presented with recurrent episodes of syncope. First episode was occurred immediately after intravenous (IV) administration of an analgesic agent. He experienced two episodes of syncope 10 months after the event, and then he was diagnosed with drug-induced anaphylactic shock at other hospitals. He visited to our hospital to be evaluated more about the recurrent episodes of syncope. Of note, his family history included sudden cardiac death (SCD) or arrest (SCA): 1) father underwent implantation of ICD (Implantable cardioverter-defibrillator), likely due to idiopathic ventricular fibrillation (VF) at 48 years old; 2) grandfather and grandfather's elder brother died due to SCD at 43 and 35 years old, respectively.

Resting 12-lead electrocardiography (ECG) showed normal sinus rhythm with 224 ms of PR interval and normal QTc interval. Transthoracic echocardiography showed no structural abnormality. During treadmill test, no remarkable finding was noted. In head-up tilting test, he felt with severe dizziness with prodromal symptoms, such as nausea and blurred vision, during isoproterenol IV infusion. During flecainide challenge test, his ECG changed to Brugada-like ECG pattern in V_{1-2}. Electrophysiologic (EP) study showed inducible sustained polymorphic ventricular tachycardia (VT) during programmed electrical stimulation at right ventricular outflow tract. After implantation of ICD, he has had neither any episode of syncopal attack nor cardiac arrest except just nonsustained VT on the device interrogation.

Family history of SCD is one of the clinical features suggesting arrhythmic syncope which require prompt hospitalization or intensive evaluation.[1] In addition, syncope is an important indicator of arrhythmic risk in the context of inherited arrhythmogenic disorders.[2] Of course, although there is no definition to differentiate a syncopal episode caused by ventricular arrhythmias from an otherwise unexplained syncope, syncope should be excluded events that are likely due to vasovagal events such as those occurring during abrupt postural changes, exposure to heat and dehydration, and emotional reactions.[2]

ICD can be useful when patients have spontaneous type I Brugada-ECG and the history of syncope judged to be caused by ventricular arrhythmias. Although there is no consensus on the value of the EP study in predicting outcome in patients with Brugada syndrome (BrS), ICD may be considered when VF is induced on EP study.[2]

Comprehensive or disease-causative mutation targeted genetic testing can be useful for any patient in whom a cardiologist has established a clinical index of suspicion for BrS based on examination of the patient's clinical history, family history, and expressed ECG phenotype (resting 12-lead ECGs and/or provocative drug challenge testing).[3]

References

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