Cardiac Arrest Triggered by Subepicardial Aneurysm Without Cardiac Rupture

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Figure 1. (A) Electrocardiogram during cardiopulmonary resuscitation. Pulseless electrical activity (idioventricular rhythm) was recorded immediately after onset of subepicardial aneurysm (SEA). Arrows, idioventricular rhythm. (B–D) Echocardiogram of SEA. (B) Transthoracic echocardiogram showing an abnormal cavity communicating with the left ventricle (LV) through a small hole (neck) at the apex, which expanded during systole and collapsed during diastole (Movie S1). (C) Blood is seen to flow through the hole from the LV in diastole on Doppler color flow imaging (Movie S1). The walls of the aneurysm were thin, and the myocardium showed sudden discontinuity at the neck of the aneurysm. (D) Thrombus was observed on the dividing wall between SEA and the LV. (E) Enhanced computed tomography showing SEA adjoining the LV. Ao, aorta; LA, left atrium.
Subepicardial aneurysm (SEA) is an infrequent complication after myocardial infarction (MI). SEA is defined as abrupt interruption of the endocardium/myocardium without interruption of the epicardium. The chief morphological feature of SEA consists of a narrow neck between the left ventricular (LV) chamber and the aneurysmal space.

Thirty percent of SEA patients progress to frank rupture and die if they do not receive surgical repair. SEA without cardiac tamponade, however, has been found in autopsy cases of MI, indicating that SEA can lead to death by causes other than cardiac free wall rupture and cardiac tamponade. We describe here the first case of cardiac severe arrhythmia caused by SEA.
Cardiac Arrest Due to Subepicardial Aneurysm

Elective cardiac surgical repair can completely ameliorate the pathological condition. SEA with impending rupture could be a novel arrhythmogenic anatomical substrate of life-threatening ventricular arrhythmia. Cardiac surgical repair should be considered as soon as possible when SEA is found, to prevent not only irreversible severe pump failure but lethal arrhythmia.

Disclosures

None.

References


Supplementary Files

Supplementary File 1

Movie S1. Echocardiogram (Doppler color image) of subepicardial aneurysm (SEA; Figure 1C). An abnormal cavity communicating with the left ventricle through a small hole at the apex is observed. Blood flows through the hole from the left ventricle in diastole.

Supplementary File 2

Movie S2. Enhanced computed tomography series (whole body images of Figure 1E). Subepicardial aneurysm adjoining the left ventricle is seen.

Please find supplementary file(s):