

Left Ventricular Aneurysm and Late Ventricular Arrhythmia After Myocardial Contusion

To the Editor:

The incidence of myocardial contusion after blunt chest trauma is highly variable. The most frequent cause is traffic accident, and it can also result from blows to the body. These injuries can affect the free heart wall, the interventricular septum, valves, subvalvular apparatus, coronary arteries, and the atrioventricular or intraventricular conduction system, and can cause ventricular arrhythmia.¹ In this Letter to the Editor we describe a patient diagnosed as suffering a ventricular aneurysm secondary to myocardial contusion who later had an episode of sustained ventricular arrhythmia. Published reports note that the late appearance of ventricular arrhythmia after myocardial contusion is uncommon.

A 24-year-old woman had suffered a severe chest injury at the age of 4 years from a rock falling off a truck; as a sequela she developed atrophy of the left breast, for which she had undergone reparative surgery 2 years before we saw her. An electrocardiogram done as part of the anesthesiology work-up revealed a Q wave and slight elevation of the ST interval at the V4-V6, I and aVL leads, and negative T waves at V4-V6. Apical akinesis was seen on echocardiography. Myocardial perfusion studies showed nonreversible ischemia in the apical area.

The patient came to the emergency service because of palpitations lasting longer than 90 min. Physical examination was normal. Electrocardiogram showed sustained monomorphic ventricular tachycardia at 205 beats/min, with RBBB morphology. An electrocardiogram performed in the coronary care unit revealed Q waves at the lateral leads and repolarization anomalies inferolaterally. Only one episode of nonsustained ventricular tachycardia was recorded. Echocardiography revealed an apical aneurysm in the left ventricle, with an ejection fraction of 50%. Ventriculography and a coronary angiography also revealed the apical aneurysm, with normal coronary arteries.

The patient was operated on to correct the aneurysm, and a Teflon and pericardium patch was inserted. Two weeks later, electrophysiological studies with stimulation of the right ventricular apex with up to three premature extrastimuli and three different cycle lengths (600, 500 and 400 ms) failed to induce ventricular arrhythmia.

A review of published studies showed that myocardial contusion after blunt chest injury can cause cellular damage. Echocardiography confirmed myocardial contusion (thrombus, altered contractility, pericardial effusion and rupture of the heart or great vessels).² Our patient had sustained severe chest injury which may have caused

myocardial contusion.

Myocardial contusions often resolve spontaneously, but can leave sequelae such as aneurysms.³ In our patient the sequela was discovered several years after the chest injury.

After chest trauma, valvular lesions, fistulae between cavities, and coronary artery anomalies can develop.⁴ Ischemia can arise from coronary vessel spasm against a background of a prior atheromatous lesion in a patient in whom the level of adrenergic stimulation is high. Nuclear cardiology (isotope) studies can locate the damaged area.

Lethal ventricular arrhythmia has been reported to occur immediately and within the first few days after chest trauma,⁵ but the appearance of late ventricular arrhythmia was rarely mentioned in the articles we reviewed. In our patient ventricular arrhythmia was detected 20 years after myocardial contusion, although the patient had suffered episodes of presyncope (possibly well-tolerated arrhythmia) for some years before we saw her. An experimental study found that the arrhythmogenic properties of myocardial contusion increase with the kinetic energy of the contusion, and the mechanism is based on reentry circuits near the line of conduction.⁶

In patients with chronic myocardial infarction and ventricular aneurysm, aneurysmectomy has been shown to prevent recurrence of arrhythmia in 89% of the patients.⁷ At our center, patients with chronic myocardial infarction and ventricular arrhythmia who undergo aneurysmectomy for ventricular aneurysm had no recurrences of arrhythmia, nor was arrhythmia induced in postoperative electrophysiological studies.⁸

The therapeutic strategy we advocate is to perform aneurysmectomy (when resection is technically possible), together with postoperative electrophysiological studies to determine whether an automatic implantable defibrillator is indicated (when ventricular arrhythmia is induced).

The interest in our report lies in the late appearance of ventricular arrhythmia in a patient with ventricular aneurysm secondary to myocardial contusion. We note that aneurysmectomy was effective in controlling ventricular arrhythmia. During the first year after the operation there were no recurrences of ventricular arrhythmia in the patient described here.

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Erratum

In the June 2003 issue of REVISTA ESPAÑOLA DE CARDIOLOGÍA errors have been identified in the following article:

Muñoz MA, et al. *Rev Esp Cardiol* 2003;56(6):586-93:

- Page 588, Table 1: In the row showing data for PA<140/90 mm Hg (%), the correct figures are: 62.1, 52.9, and .008.
- Page 589, Table 2: In the row showing data for PA<140/90 mm Hg (%), the correct figures are: 55.8, 57.2, and NS.
- Page 589, right-hand column, last paragraph, last four lines. For «Patients receiving multiple therapy had better control of their blood pressure (77.5% vs 60.1%; $P<.001$) and lipid profile (21.6% vs 8.7%...)» read «Patients receiving multiple therapy had better control of their lipid profile (21.6% vs 87%...)»
- Page 590, Table 3: In the row showing data for PA<140/90 mm Hg, the correct figures are: 50.0, 52.6, 57.8, 50.0, and NS.
- Page 590, right-hand column, second-to-last paragraph, last four lines. The following text should be deleted: «Nevertheless, the percentage of patients with systolic pressure lower than 140 mm Hg and diastolic pressure lower than 90 mm Hg was greater in the patients over the age of 64 years.» Therefore this paragraph should conclude with the sentence that ends «...one of the main cardiovascular risk factors in older people.²⁰»