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MY APPROACH

MY APPROACH to Commotio Cordis ☆

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Commotio cordis describes ventricular fibrillation and sudden death induced by a blunt blow of an external object to the chest. It is among the leading causes of sudden death in young athletes. In order for the event to cause ventricular fibrillation, the location of the impact must be directly over the heart, and the timing of the impact has to occur during a critical vulnerability period, just prior to the peak of the T wave. Based on animal models, the hypothesis is that impact causes cell membranes to stretch and activates ion channels. This in turn creates dispersion of repolarization and subsequent ventricular fibrillation.

The vast majority of cases of commotio cordis occur in teenage males, presumably due to that age group's high rate of participation in recreational and competitive sports. In addition, incomplete development of the chest wall allows for transmission of external forces to the heart. Based on registry data, survival from commotio cordis has improved, likely due to the availability of automated external defibrillators and increasing recognition.

The initial approach to a patient who has been resuscitated from sudden cardiac death in whom commotio cordis is suspected is not unlike the care and considerations provided to any patient in such a situation. Supportive care early on is provided, including therapeutic hypothermia if indicated.

The history of the event can be very helpful in suggesting commotio cordis as the cause of cardiac arrest. The timing of the arrest relative to localized chest wall blunt trauma is obviously very suggestive of commotio cordis. However, such patients should undergo a thorough workup to rule out any other cause of sudden cardiac death. This should include electrocardiography, echocardiography, stress testing, ambulatory ECG monitoring, and consideration of MRI. Electrocardiographic features suggestive of long QT and Brugada syndrome should be pursued if appropriate.

In the absence of any underlying cardiac disease, there is no indication for any medical or device therapy for survivors of commotio cordis. Such individuals, generally, should have no restrictions for returning to athletic activity. There are some animal data that suggest individual susceptibility to commotio cordis so that recommendations for return to athletics may take into account avoidance of sports that carry with them a high likelihood of chest wall impact. In younger patients, maturation of the chest wall should serve as a protective mechanism. Current commercially available chest wall protectors have not been shown to protect against commotio cordis in an animal model.

Prevention of sudden cardiac death from commotio cordis should be focused on wider availability of automated external defibrillators and prompt recognition and resuscitation of victims.

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