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SHOULDER, KNEE & SPORTS MEDICINE

Sudden Cardiac Death and Commotio Cordis

Sudden Cardiac Death (SCD) is an extremely rare but catastrophic event that affects otherwise healthy appearing young competitive athletes. The underlying cause is most frequently due to a genetic structural cardiac abnormality called hypertrophic cardiomyopathy (HCM) (25%), but can also be caused by:

- coronary artery anomalies (14%)
- commotio cordis (20%)
- myocarditis, arrhythmogenic right ventricular dysplasia (ARVD)
- aortic aneurysm rupture from Marfan's Syndrome
- valvular heart disease, dilated cardiomyopathy
- atherosclerotic coronary heart disease
- arrhythmic syndromes and ion-channel disorders including
 - long and short QT syndrome
 - Brugada syndrome
 - familial catecholaminergic polymorphic ventricular tachycardia.

Commotio Cordis describes an event when a young child or adolescent gets struck in the chest at a specific time that causes the heart to go into an abnormal electrical rhythm that quickly results in sudden death. Immediate shocks to the chest with a cardiac (heart) defibrillator (within minutes) may help the heart return to a normal rhythm and may be life-saving. Unfortunately, access to a cardiac defibrillator is not so rapid and death is frequent once this occurs. Using softer balls or chest protection has not been able to prevent commotio cordis; but fortunately, commotio cordis is extremely rare so precautions and avoidance of sports are not necessary. When a young, otherwise healthy athlete succumbs to a sudden cardiac death, the surrounding community is often left devastated and some sort of social crisis intervention is usually warranted to assist grieving family members, teammates, schoolmates, and the remaining local community.

Frequent Signs and Symptoms

- None

Etiology (Causes)

In commotio cordis, a young athlete is struck in the chest exactly at a specific time in the heart's electric conduction system producing a fatal cardiac rhythm (electric conduction and muscular contraction that is ineffective resulting in death)



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Risk Factors

- Young athlete with a thin chest and little protection over the heart.
- Sports with hard projectiles and other body contact including baseball, football, soccer, martial arts and lacrosse

Prevention

- Preventive strategies are limited to teaching youth baseball players to turn their chest away from a wild pitch, a batted ball, or thrown ball.
- Prevention methods including softer balls or chest protectors have proved ineffective.

Outcomes

Unfortunately, the outcome of commotio cordis is usually fatal. Resuscitation is only possible with immediate shocks from a cardiac defibrillator. The low incidence commotion cordis makes the provision of cardiac defibrillators at all athletic events impractical.



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