

Sudden Cardiac Death in Young Athletes

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Sudden Cardiac Death (SCD) in young athletes (>35 years) is a distressing event and an unexpected one, considering the top physical and cardiovascular health of such individuals. While injuries in sports are common and may lead to life-threatening circumstances, SCD is comparatively rare but more and more cases are emerging. The incidence of SCD is reported at 1-2 per 100,000 per year and athletes are at a 2.5 times higher risk [1]. The sudden death of Cameroonian international football player Marc-Vivian Foé during a semi-final match of the 2003 FIFA Confederation Cup against Columbia received a lot of media attention and highlighted the genetic condition that affected thousands of young athletes around the world: hypertrophic cardiomyopathy.

Since the nineteenth century, more than 80 footballers have died on the football field due to what came to be known as hocus/hokum in the footballing circles [2]. Hocus was a non-threatening nickname for the life-threatening condition: hypertrophic obstructive cardiomyopathy (HOCM). Why this fatal disorder got the attention it deserved in the last 15 years can probably be attributed to the wide coverage that such televised events get: greater visibility means greater attention. Another life-threatening heart related disorder, arrhythmogenic right ventricular cardiomyopathy/dysplasia (ARVC), came to light during a 2007 football match between Bolton Wanderers and Tottenham Hotspurs at the famous White Hart Lane stadium. In that FA cup match, 23 year old Bolton Wanderers player, Fabrice Muamba, collapsed 43 minutes after kick off, garnering immense media coverage. Thankfully for him, immediate medical attention was at hand to save him but he had to retire.

HOCM or HCM is the thickening of a part the heart muscle, most commonly at the septum between the ventricles, below the aortic valve. This leads to stiffening of heart walls and abnormal aortic and mitral heart valve function, both of which can lead to obstruction in flow of blood from the heart. ARVC, on the other hand, occurs if the muscle tissue in the right ventricle dies and is replaced with scar tissue. This disrupts the heart's electrical signals and causes arrhythmias. These genetic anomalies usually show up between the ages of 10 and 20 and are effectively symptom-less, causing death before being detected. HCM is the more common of the two and has believed to affect 1 in every 500 people; new studies suggest that it may be more common than previously believed [3]. This is a worrying trend, one that needs to be addressed, at various stages of development in children and young adults.

Other common causes and risk factors of SCD are congenital coronary anomalies (malformation of coronary vessels), dilated cardiomyopathy (enlargement of the heart), myocarditis (inflammation of the heart muscle), long QT syndrome (irregularities in the heart rhythm), aortic rupture (due to Marfan syndrome) and commotio cordis (blow to the chest). While these disorders might differ in characteristics and prevalence, all of them affect young athletes and should be checked for.

What Should Parents Know?

For one, it has to be the collective responsibility of all in charge of the physical development of a child, from parents at home to sports coaches at school to ensure his or her well-being. It is an imperative to ensure fitness of the heart before focussing on fitness of the body. In United States, United Kingdom and many parts of Western Europe, many schools require a pre-participation physical examination of the aspiring student athlete by a licenced medical practitioner. This is a good platform to find signs and symptoms that can warrant further investigation. For athletes in Europe, it is compulsory to undergo a history and physical exam in addition to electrocardiogram (EKG or ECG) to monitor the electrical activity of the heartbeat and look for irregularities [4]. Such is not the case in most developing countries, such as, India and Bangladesh.

While it might take time (several decades) for it to become the norm in developing countries, parents can take their children for such tests on their own to check for risk factors. Most of these examinations are pain-free, without side-effects and reasonably priced in most healthcare institutions. Early detection of such disorders is essential and an examination by a registered practitioner is the best way to go about it. Parents should also keep an eye on any symptoms during any physical activity that may be suggestive of an underlying heart problem, such as, dizziness or passing out and immediately seek medical attention. If there has been any unexplained premature death in the family, or if there is a history of any kind of heart abnormalities, parents should inform the child's paediatrician before he or she begins a sport.

What Can Coaches and Physical Trainers Know and Do?

The role of a sports coach or a physical trainer goes beyond improving the fitness and technique of their students/clients; they are supposed to look after their wellbeing as well. That is why it is a must for certified trainers and coaches to have formal training in giving cardiopulmonary resuscitation (CPR) and basic life support (BLS) including using an automated external defibrillator (AED). These coaches should always be on the lookout for any symptoms that may warrant medical attention. It is also crucial to have an AED machine at the place of training and at any sports events for emergency medical care. As was highlighted in the case of Fabrice Muamba, emergency medical care can be the difference between life and death in cardiac arrest cases. Muamba was given oxygen and CPR before 15 300 Joule defibrillation shocks and that's what probably distinguishes his case from several others who did not survive.

What Can Others Do About It?

Learning to administer CPR and AED can be a life-saving skill and can be learnt in a short time at most of the healthcare institutions around us. We should try to learn about it and en-

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courage others to do it as well: these skills can help us save our loved ones and those in need.

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