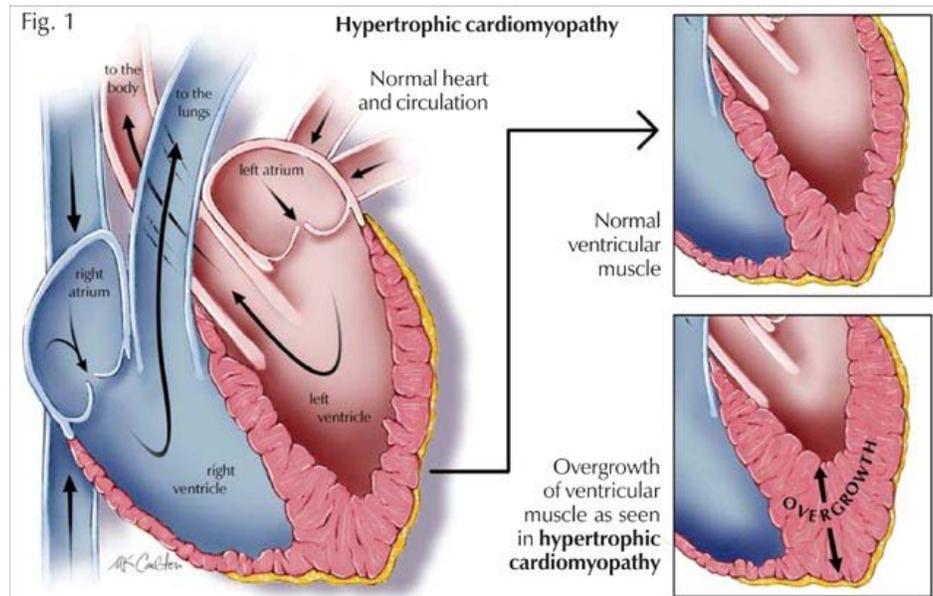


Sudden Death in Athletes

Background:

Sudden death in athletics is something that no athlete, coach, teammate, or family member wants to deal with. Unknown heart defects are the number one reason why an athlete participating in sports may unexpectedly die during activity. It is possible for even the most well trained athletes to experience sudden death while playing their sport, the abnormalities tend to manifest during physical activity. Youth athletes are the common victims of this tragedy but veteran athletes and professionals have also been seen to experience these life-threatening problems.



Cause:

Knowing that cardiac problems are the main cause of sudden death in athletes is a great a place to start. However, it is important to realize that there are numerous different cardiac problems that are responsible for these deaths. Many cardiac problems are present from birth and are a result of heredity or genetic make-up.

- Hypertrophic obstructive cardiomyopathy (HOCM) is the leading cause of sudden cardiac death. This condition (pictured above) is a result of the wall of the heart's left ventricle becoming too thick with muscle. This excess muscle will lead to irregular heartbeat and eventually no blood will be pumped because of improper electrical discharges.
- Abnormal coronary arteries are the second leading cause of sudden cardiac death. Coronary arteries are in charge of supplying the heart with oxygen for proper function. When these arteries are impaired/irregular the amount of blood that the heart is receiving is not as much as the amount of blood that the heart needs. Twisting of the arteries, poorly functioning valves, and imperfect electrical impulses will cause this problem.

- Marfan syndrome is hereditary disorder that is also the culprit of causing sudden cardiac death in athletes. This condition affects the connective tissue of the body, which is vital for proper cardiac function. This leaves athletes susceptible for aneurysms or tears in the blood vessels and causes almost immediate death.
- Lastly, commotio cordis is a common cause of sudden death in young athletes that have no inherited cardiac abnormalities, a normal heart. If a blunt object strikes a young athletes chest during a heartbeat it is possible for the heart to shut down and stop beating. The skeletal immaturity that adolescents have does not allow the bones of the chest cavity to protect the inner organs/heart enough. What may seem like an innocent impact to the center of a young athletes chest could turn out to be life threatening.

Examination:

Prior to a cardiac episode occurring an athlete may experience dizziness, chest pain, fainting, heart palpitations, shortness of breath that last longer than normal, and fatigue. When exercising, all of these traits are signs of possible cardiac problem and if experienced the athlete should be checked by a Physician.

If a sudden cardiac event does occur the athlete will typically look as if they passed-out or fainted. Upon inspection the athlete may have limited to no pulse or breath. The athlete will not be able to respond to verbal or physical stimulus and emergency services should be called immediately.

Treatment:

Initial treatment of someone who is believed to have experienced a sudden cardiac problem is to call emergency services, get an Automated External Defibrillator (AED), and begin CPR. Taking these steps and beginning them as soon as possible will give the athlete the best chances for survival.

Prevention:

Prevention is the best way to ensure an athletes safety from sudden death. Athletes should always have a physical before every year of sports participation. This screening will allow physicians to learn about the athlete's medical history and their family history, which allows them to decide if the athlete needs further cardiac screening. While this is a good step preparticipation physical exams do not pick up every potential cardiac victim. Including an echocardiogram (EKG) to the physical exam paints a much clearer picture for the physician of how the heart is functioning. If the results of the EKG are outside of the normal values the athlete may need to seek further help from a cardiologist. It is justifiable if cardiac conditions are found that the athlete may not be cleared to participate in their sport.

Reporting all signs and symptoms that the athlete is experiencing to their doctor, not smoking, staying well hydrated, not exercising during the hottest times of the day, and avoiding alcohol and caffeinated drinks will increase the chances of avoiding sudden cardiac death.

Athletes At Risk:

Young male athletes that play basketball, football, soccer, and rugby are going to be most at risk for sudden cardiac death. The exertion that is needed to participate in these sports can stress the heart enough to cause cardiac failure in individuals with inherited heart defects.

Athletes that are susceptible for commotio cordis are going to be young male athletes that play a sport with a blunt object that can strike the chest. Such sports as baseball, lacrosse, karate, hockey, and softball are most common for the onset of this event.

Sudden Death in Professional Athletes:

Flo Hyman (Olympic Volleyball), Jason Collier (NBA), Darryl Kile (MLB), and Korey Stringer (NFL)

Relevant Articles:

Sometimes There Are No Answers

http://sports.espn.go.com/chicago/nfl/columns/story?columnist=isaacson_melissa&id=4837804

When Sudden Death Strikes Athletes

<http://www.npr.org/templates/story/story.php?storyId=17971296>

Sudden Death in Bentley Player Raises Questions About EKG Screening Athletes

<http://www.boston.com/dailydose/blogs/daily-dose/2013/06/04/sudden-death-bentley-player-raises-questions-about-ekg-screening-athletes/27RLc0f1tNMhYxiNHdbjQM/blog.html>

Academic Journal Articles:

A Review of Sudden Cardiac Death in Young Athletes and Strategies for

Preparticipation Cardiac Screening

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC155532/pdf/attr_36_02_0197.pdf

Preventing Sudden Cardiac Death in Athletes

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3649790/>

Incidence of Sudden Cardiac Death in National Collegiate Athletic Association Athletes

<http://circ.ahajournals.org/content/123/15/1594.long>

Sudden Cardiac Death in Young Athletes

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1861445/>