

PLAYERS TEST THEIR HEART

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PHILADELPHIA -- A routine, pre-season electrocardiogram (ECG) ended the 13-year career of Colorado Avalanche forward Steve Konowalchuk less than a week before the start of the 2006-07 NHL season.

It may also prove to have saved his life.

The culprit known as "long QT syndrome," is the latest cardiac condition to impact the health of a National Hockey League (NHL) player, preceded by the genetic form of hypertrophic cardiomyopathy (HCM) (Detroit's Jiri Fischer), and the atrial fibrillation (Philadelphia's Mike Knuble and Pittsburgh's Mario Lemieux).

Amidst rule changes and the Collective Bargaining Agreement (CBA), hockey writers and fans alike, have received a crash course in pathophysiology in the span of less than a year.

Hypertrophic cardiomyopathy, a thickening of the wall of the heart's left ventricle or main pumping chamber, is relatively common genetic disorder, and gained notoriety in a decade ago with the deaths of National Basketball Association (NBA) players Hank Gathers and Reggie Lewis. On average, 1:500 persons in the general population are diagnosed with HCM, and accounts for almost half of the non-traumatic sudden deaths seen in athletes under the age of 35.

Lemieux retired in January 2006 due to atrial fibrillation, while Knuble reports no further incidents and is not being treated with medication.

"In Steve's case, the abnormal (ECG) reading prompted further tests which revealed he has "long QT Syndrome", a genetic disease involving electrical conduction which can lead to irregular heart rhythms," said cardiologist Dr. Steve Friedrich on the team's website.

So what exactly is "long QT syndrome?"

The various components of each heartbeat, depicted as a "wave" on the ECG are identified alphabetically beginning with the "P" wave which measures the upper chambers of the heart, and the QRS complex that measures the lower chambers of the heart. The T wave signals the resting phase of the heart.

Measured on the ECG, the distance from the beginning of the Q wave (part of the QRS) to the end of the T wave (known as the "QT interval"), is a critical moment in the electrical cycle of the heartbeat, as this is the time that the heart's natural pacemaker is preparing to electrically send the next signal to contract.

Unlike atrial fibrillation, another disordered electrical conduction, "long QT syndrome" is a genetic disorder predisposes patients to an increased risk of potentially, lethal ECG abnormalities (dysrhythmias) rendering the heart unable to generate blood flow and a life-sustaining blood pressure.

For some patients, sudden cardiac death from ventricular fibrillation is the initial manifestation of the disease.

While the exact impact of sudden cardiac death in this population is not precisely known, according to at least one study, the risk of sudden death is exponentially increased in athletes, with a 9:1 male-to-female ratio.

Drs. Kelly Shirley and Terry Adirim reported in Pediatric Emergency Medicine that over 90% of sudden cardiac death occurs during or immediately following practice or live competition, and that only 3% of trained athletes who experienced sudden death were previously suspected as having a cardiovascular abnormality.

In young athletes with cardiovascular disease, the risk for sudden death according to other studies was 2.5 times higher when compared with non-athletes.

Approximately 1 in 10,000 individuals is a carrier of the long QT syndrome gene, and according to one study, may be responsible for up to 4000 cases of sudden death per year in the United States.

Konowalchuk told the Rocky Mountain News that while there is another family member with long QT syndrome, tests revealed that his two children, ages 6 and 8, did not have the disorder.

Over 100 medications currently prescribed for varying medical conditions have shown to prolong the QT interval of the electrocardiogram in normal subjects, including a number of commonly used over-the-counter drugs. The combination of certain drugs and foods such as grapefruit has produced long QT syndrome.

Patients with long QT syndrome can develop potentially lethal, cardiac dysrhythmias from a variety of mechanisms ranging from physical exertion and auditory/emotional triggers (ringing of a telephone or an alarm clock during sleep), while others are shown to be at increased risk during periods of inactivity and rest.

Published less than six weeks ago, the 2006 Guidelines for Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death by the American College of Cardiology/American Heart Association Task Force and the European Society of Cardiology recommend that, "all patients affected by long QT syndrome avoid competitive sports activity."

Medications used in the treatment of cardiac disorders such as beta blockers are known to impact athletic performance and their use, along with other anti-dysrhythmic medications, have not been studied in professional athletes. Such evidence resulted in the 36th Bethesda Conference on Eligibility Recommendations for Competitive Athletes with Cardiovascular Abnormalities to conclude that "when the evidence of disease is clear, physicians should not hesitate to recommend against sports participation."

For more information on long QT syndrome, visit the American Heart Association website, www.americanheart.org.

Agree? Disagree? Questions? Send all comments to: topcatsports@canoemail.com