



**American
Society of
Echocardiography**
Heart and Circulation Ultrasound Specialists



Retired NFL Linemen at Greater Risk than non- linemen for Cardiovascular Disease

Heart Ultrasound Screenings, simple measurements and blood tests of Retired NFL Players Detect Important Cardiovascular Risk Factors

Baltimore, MD, June 3, 2006—Research released today at the American Society of Echocardiography (ASE) annual Scientific Sessions indicates that retired National Football League (NFL) linemen may be at greater risk for cardiovascular disease than smaller players. The first study found that some retired NFL linemen have enlarged hearts, possible remnants of Athlete’s Heart from their active player period. A second study, also released today, found that half of all retired NFL linemen have the Metabolic Syndrome, a combination of abnormalities including large body size, hypertension, diabetes, elevated triglycerides (a form of fat) and low high- density lipoprotein cholesterol (HDL).

Using heart ultrasound (echocardiography) and other testing methods, the Living Heart Foundation (LHF) organized and conducted the examination of heart health in retired NFL players who frequently showed no symptoms or knowledge of having cardiovascular problems such as the Metabolic Syndrome. The Mount Sinai School of Medicine analyzed the results.

A major explanation for these findings may be that former NFL linemen have a larger body mass index (BMI) than non-linemen, an established risk factor for cardiovascular disease in the general public.

“NFL linemen are required to increase their size and strength to remain competitive, which may expose them to health risks later in life,” said ASE member Martin E. Goldman, M.D., Director of the Echocardiography Lab at Mount Sinai Heart and the Arthur and Hilda Master Professor of Medicine at the Mount Sinai School of Medicine in New York.

“Waistlines are expanding in the NFL and in the general population,” he added. “We are hopeful that these study findings lead to lifestyle changes that improve the health and nutrition for athletes and non-athletes who are large in body size.”

Although ASE does not recommend that all athletes get a heart ultrasound routinely, if an athlete does elect to have the test, ASE advises that it be performed by a qualified,

experienced cardiac sonographer using ASE guidelines and analyzed by a cardiologist who has specific knowledge of the subtle yet important differences between the “athletic”, “normal” and “pathologic” heart.

“Over the past three years we have performed fourteen voluntary screenings in NFL cities around the country involving more than 800 players,” said Dr. Archie Roberts, Founder of LHF and former NFL quarterback. “The studies affirm what we have long believed, that retired NFL athletes may want to consider having heart ultrasound tests, metabolic screenings and obstructive sleep apnea assessments to detect cardiovascular health problems *before* they become advanced and more likely to harm them. We have, for the first time, determined the actual risk profile for retired NFL players. Fortunately, all of these risk factors can be treated successfully, with early intervention. We believe that lifestyle changes and specific treatments will lead to an improved quality of life for the players and increased longevity. However, it will take the LHF an additional 5-10 years of follow-up to scientifically prove the relationship between player risk factors and health outcomes (heart attack, stroke, sudden death) in the unique population of NFL players. In the meantime, we are encouraging the retired players to be proactive by consulting with their physicians and getting the necessary testing.”

Thick Hearts Detected by Heart Ultrasound

Retired NFL players have a history of vigorous strength training, from high school through the professional ranks, which can lead to persistent increased left ventricular mass (LVM) and left atrial area (LAA); both established risk factors for cardiovascular disease, stroke and death in the general population. An enlarged heart is not uncommon in active pro-athletes— often referred to as “athlete’s heart”—however, these study findings show that many retired NFL football players also have persistent enlarged hearts. Generally, it is believed by physicians that the enlarged athlete’s heart of active trained competitors reduces to normal size with deconditioning or retirement.

Mount Sinai and LHF researchers used heart ultrasound, a non-invasive method to detect serious cardiovascular risk factors, to measure the LVM and LAA in more than 300 retired NFL players who participated in a multi-city screening.

Findings: Overall, retired NFL linemen were 54 percent more likely to have an enlarged heart as compared to former non-linemen. There was no difference in age, years in retirement or years played between the two groups. Retired NFL linemen also had greater septal (IVS) thickness, diastolic LV internal diameter (LVID), posterior wall thickness (PWT), LVM, and LAA. A significantly greater percentage of linemen also had an LVM/Height of ≥ 126 g/m, when compared to non-linemen.

Linemen Have a Greater Incidence of Metabolic Syndrome

Metabolic syndrome is characterized by a group of cardiovascular risk factors in one person that include high blood pressure, obesity (high BMI), low level of protective cholesterol (HDL), insulin resistance (pre-diabetes) and elevated triglycerides. A person must have three or more of the risk factors to have metabolic syndrome, by one common definition.

Researchers from Mount Sinai, LHF and the Pennsylvania State College of Medicine sought to determine the prevalence of metabolic syndrome in retired NFL players by position: linemen versus non-linemen. For this study, nearly 400 retired NFL players were evaluated in a multi-city voluntary health screening.

Findings: The study revealed that retired NFL linemen compared to non-linemen have a greater incidence of metabolic syndrome: a greater fasting plasma glucose level (diabetes) and left ventricular mass (thicker hearts), and a higher prevalence of obesity and

hypertension. Retired NFL linemen were nearly 130 percent more likely to have metabolic syndrome than the national average of 21.8 percent. Retired NFL lineman had a 50.7 percent incidence of metabolic syndrome while non-linemen actually fell slightly below the national average with a 20.3 percent.

Implications

Heart ultrasound is a safe, valuable, non-invasive and comprehensive heart test to determine heart function and size. More research needs to be done, however, in the area of enlarged hearts and metabolic syndrome within the retired NFL player population to determine the implications for improving their long-term health. Correlations between the presence of these cardiovascular risk factors and the occurrence of adverse clinical outcomes need to be made over years of follow-up.

Linemen Have a Greater Prevalence of Obstructive Sleep Apnea (OSA)

OSA is a sleep disorder that is characterized by irregular breathing, snoring, inadequate oxygenation of the blood and daytime drowsiness. There are varying degrees of OSA severity and recent evidence shows that OSA is associated increasingly with hypertension, stroke, cardiac arrhythmia and possibly heart disease.

Findings: A separate third and ongoing study in 100 retired NFL players was conducted by the LHF, in conjunction with the Mayo Clinic and New York University. In the total group of players including all positions, the prevalence of OSA approximated 50%. In linemen, the prevalence increased to 75% and the majority had a “severe” category of this disorder. The national average for OSA in the general public is about 10%. However, commercial truckers, who tend to be large men, have a somewhat similar prevalence of sleep disordered breathing compared to retired NFL players.

Implications

OSA is treated with a face mask or nasal cannulae attached to a positive pressure air source (CPAP) or, in milder cases, with an oral dental device which extends the jaw forward and expands the airway in the back of the throat. Treatment is effective but patient compliance is a long-term problem. There is some evidence that certain cardiovascular problems are reduced by effective treatment of OSA, but more research needs to be done in this important area.

About ASE

The American Society of Echocardiography (ASE) is a professional organization of physicians, cardiac sonographers, nurses and scientists involved in echocardiography, the use of ultrasound to image the heart and cardiovascular system. The organization was founded in 1975 and has more than 11,000 members nationally and internationally. For more information on ASE, visit www.asecho.org.

About Mount Sinai Heart

Mount Sinai Heart, in New York City, takes an integrated approach to clinical care, basic research and clinical research to dramatically improve the heart health of individuals globally. Mount Sinai Heart encompasses The Zena and Michael A. Wiener Cardiovascular Institute and the Marie-Josée and Henry R. Kravis Center for Cardiovascular Health at The Mount Sinai Medical Center, preeminent resources for the study and treatment of heart and blood vessel diseases. Committed to finding new and improved methods of diagnosis, treatment and prevention, they comprise a multidisciplinary effort that brings together the expertise of Mount Sinai School of Medicine and The Mount Sinai Hospital.

About Living Heart Foundation

The Living Heart Foundation (LHF) is a nonprofit organization under IRS 501 (c) (3) code. It was established by retired cardiac surgeon and ex NFL player, Arthur “Archie” Roberts, M.D., in April 2001 to combat cardiovascular disease and to provide risk stratification with early intervention for cardiac, pulmonary, and metabolic conditions through on-site screening and integrated health programs. LHF has been dedicated to providing these services to specific groups that traditionally have been overlooked, especially high school, college and professional athletes. The LHF study of retired NFL players began in the summer of 2003. The health screening process is supported by the NFL Players Association (NFLPA), Pfizer, Chapters of the American College of Cardiology and a national network of dedicated physicians and hospitals. For more information on LHF, visit www.livingheartfoundation.org .

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