エナジードリンクは心機能を変化させる（Abstract: SSC02-06）

心臓MRI画像によりエナジードリンクが左室収縮能を増強させることが示された

Cardiac MRI images show that energy drinks increase systolic left-ventricular contractility

健康な成人がカフェインおよびタウリンを多く含むエナジードリンクを摂取すると1時間後の左室収縮能が有意に上昇するとのスタディ結果が、2013年Radiological Society of North America年次集会で発表された。現在進行中のこのスタディにおいて研究者らは、男性15人および女性3人（平均年齢27.5歳）の計18人において心臓磁気共鳴画像検査を用いてエナジードリンク摂取の心機能に対する影響を測定した。各々のボランティアがタウリン（400mg/100mL）およびカフェイン（32㎎/100mL）を含むエナジードリンク摂取前および1時間後に心臓磁気共鳴画像（MRI）を施行された。スタディ参加者がエナジードリンクを摂取して1時間後に施行した心臓MRIでは、ベースラインの画像と比較し、左心室のピークストレインおよびピーク収縮期ストレインレートが有意に増加することが示された。心拍数、血圧および左室駆出率はベースラインと2回目のMRI検査の時とで有意差はなかった。エナジードリンクを摂取することによる長期の心臓リスクについてはいまだ不明であるが、小児や既知の不整脈を有する人々は、心収縮の変化が不整脈のきっかけとなる可能性があるため、エナジードリンクの摂取を避けるべきである、と筆者らは結論付けている。

Full Text

Healthy adults who consumed energy drinks high in caffeine and taurine had significantly increased left-ventricular contractility one hour later, according to a study presented at the 2013 annual meeting of the Radiological Society of North America (RSNA).

"Until now, we haven't known exactly what effect these energy drinks have on the function of the heart," said radiology resident Jonas Dörner, M.D., of the cardiovascular imaging section at the University of Bonn, Germany, which is led by the study's principal investigator, Daniel K. Thomas, M.D. "There are concerns about the products' potential adverse side effects on heart function, especially in adolescents and young adults, but there is little or no regulation of energy drink sales."

Energy drinks represent a multibillion-dollar industry that is growing every day. While teenagers and young adults have traditionally been the largest consumers, in recent years more people of all demographics have begun consuming energy drinks.

A 2013 report from the Substance Abuse and Mental Health Services Administration stated that in the U.S. from 2007 to 2011, the number of emergency department visits related to energy drink consumption nearly doubled, increasing from 10,068 to 20,783. Most of the cases were identified among patients aged 18 to 25, followed by those aged 26 to 39.

"Usually energy drinks contain taurine and caffeine as their main pharmacological ingredients," Dr. Dörner said. "The amount of caffeine is up to three times higher than in other caffeinated beverages like coffee or cola. There are many side effects known to be associated with a high intake of caffeine, including rapid heart rate, palpitations, rise in blood pressure and, in the most severe cases, seizures or sudden death."

For the study, which is ongoing, Dr. Dörner and colleagues used cardiac magnetic resonance imaging (MRI) to measure the effect of energy drink consumption on heart function in 18 healthy volunteers, including 15 men and three women with a mean age of 27.5 years. Each of the volunteers underwent cardiac MRI before and one hour after consuming an energy drink containing taurine (400 mg/100 mL) and caffeine (32 mg/100 mL).

Compared to the baseline images, results of cardiac MRI performed one hour after the study participants consumed the energy drink revealed significantly increased peak strain and peak systolic strain rates (measurements for contractility) in the left ventricle of the heart.

"We don't know exactly how or if this greater contractility of the heart impacts daily activities or athletic performance," Dr. Dörner said. "We need additional studies to understand this mechanism and to determine how long the effect of the energy drink lasts."

The researchers found no significant differences in heart rate, blood pressure or the amount of blood ejected from the left ventricle of the heart between the volunteers' baseline and second MRI exams.

"We've shown that energy drink consumption has a short-term impact on cardiac contractility," Dr. Dörner said. "Further studies are needed to evaluate the impact of long-term energy drink consumption and the effect of such drinks on individuals with heart disease."

Dr. Dörner said that while long-term risks to the heart from drinking energy drinks remain unknown, he advises that children, as well as people with known cardiac arrhythmias, should avoid energy drinks, because changes in contractility could trigger arrhythmias. He also cautions that additional study is needed to address risks posed by the consumption of energy drinks in combination with alcohol.

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RSNA2013特集

Cardiology
エナジードリンクは心機能を変化させる

新たなリハビリテーションデバイスは脳卒中後の運動技能を改善する

Oncology
乳房トモシンセシスはがん検出率を上昇し再検査を減少させる

乳がんリスクは加齢に伴う乳房密度の変化と関連する

MRガイド下超音波により乳がんの非侵襲的治療が施行できる

マンモグラフィーのスクリーニング間隔は乳がんの予後に影響を与える可能性がある

Psychiatry
MRI技術によりADHDにおいて脳内鉄が少ないことが示された

MRスペクトロスコピーにより早産児の脳の違いが示される