MedicalXpress

Dangers of adolescent energy drink consumption for the heart

April 1 2015

The rapid rise in popularity of energy drinks (EDs), particularly among adolescents (aged 10-19 years) and young adults, has serious implications for cardiac health. In an article published in the *Canadian Journal of Cardiology*, researchers focus on the pharmacology of EDs, adverse reactions to them, and how the marketing of these drinks as a means to relieve fatigue and improve physical and cognitive performance may be ignoring real dangers.

An international research team led by Fabian Sanchis-Gomar, PhD, MD, of the Research Institute of Hospital 12 de Octubre ("i+12"), Madrid, Spain, noted that EDs can trigger sudden cardiac deaths in young, apparently healthy individuals. For persons with underlying heart diseases, the risk of triggering sudden arrhythmic death syndrome (SADS) or other arrhythmias can be significant. Even atrial fibrillation (AF), normally uncommon in children without structural heart disease, has been observed in a 13-year-old adolescent boy during a soccer training session after ingesting EDs.

It is estimated that 31% of 12- to 19-year old adolescents regularly consume EDs. These beverages often contain high amounts of labeled caffeine. However, they can contain "masked" caffeine, in the form of guarana, for example, which comes from a Brazilian plant and is identical to caffeine found in coffee beans, but at twice the concentration. The addition of guarana and other substances such as ginseng and taurine in variable quantities may generate uncertain interactions.

Although caffeine is widely used and generally regarded as safe, serious adverse effects have been reported, especially when consumed in larger doses. With a range of readily available sources, such as EDs, gums, inhalers, and orodispersable sheets, adolescents and young adults can easily overdose. It is estimated that as many as 46% of the 5,448 caffeine overdoses reported in the United States in 2007 occurred in adolescents younger than 19 years.

Dr. Sanchis-Gomar and his co-investigators, Dr. Pareja-Galeano (Universidad Europea de Madrid), Dr. Cervellin, Dr. Lippi (Academic Hospital of Parma), and Dr. Earnest (Texas A&M University), caution that:

- One can (250 mL) of an ED per day is safe for most healthy adolescents.
- ED consumption before or during sports practice should be avoided.
- Adolescents with clinically relevant underlying medical conditions should consult cardiologists before drinking EDs.
- Excessive ED consumption together with alcohol or other drugs, or both, may lead to adverse effects, including death.

"As ED consumption continues to grow, physicians are advised to ask adolescent patients whether they consume EDs, to be aware of the symptoms of ED overconsumption, and to discuss the dangers of EDs alone and mixed with alcohol," explained Dr. Sanchis-Gomar. "It is important for physicians to understand the lack of regulation in caffeine content and other ingredients of these high-energy beverages and their complications so that parents and children can be educated about the risk of cardiac arrhythmias and the potential development of anxiety and phobias accompanying excessive ED consumption."

The authors also urge that concerns should be communicated to parents

and educators, who may be inadvertently guilty of promoting overconsumption of caffeine.

More information: "Energy Drink Overconsumption in Adolescents: Implications for Arrhythmias and Other Cardiovascular Events," by Fabian Sanchis-Gomar, PhD, MD, Helios Pareja-Galeano, PhD, Gianfranco Cervellin, MD, Giuseppe Lippi, MD, and Conrad P. Earnest, PhD, DOI: dx.doi.org/10.1016/j.cjca.2014.12.019. The article is published online in advance of the *Canadian Journal of Cardiology*, Volume 31, Issue 5 (May 2015)

Provided by Elsevier