

Meeting abstract

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2036 Acute alcohol-induced myocardial inflammation as visualized by cardiac magnetic resonance

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from 11th Annual SCMR Scientific Sessions
Los Angeles, CA, USA. 1–3 February 2008

Published: 22 October 2008

Journal of Cardiovascular Magnetic Resonance 2008, **10**(Suppl 1):A305 doi:10.1186/1532-429X-10-S1-A305

This abstract is available from: <http://jcmr-online.com/content/10/S1/A305>

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Introduction

Intoxication with large amounts of ethanol is known to induce a systemic, inflammatory reaction including excretion of several cytokines, most often leading to the so-called "hangover". We hypothesised that the systemic inflammatory imbalance leads to a transient sterile myocardial inflammation which can be visualized by cardiac magnetic resonance (CMR) employing the techniques established for the diagnosis of inflammatory myocardial injury.

Methods

In 10 healthy volunteers (age mean \pm SD 31.6 ± 2.8 yrs., BMI 22.6 ± 2.0 , 3 female) a hangover was induced experimentally by consumption of large amounts of vodka. After 1 week of abstinence from alcohol, participants were examined in a 1.5 T CMR-System before, 12 h and 1 week after alcohol intake. The CMR protocol included cine-imaging for cardiac function and volumes, T2-weighted techniques for detection of cardiac edema (T2-ratio: ratio of signal intensity of myocardium/skeletal muscle), "early" global relative enhancement (gRE, axial spin-echo sequence comparing myocardial and skeletal uptake of contrast agent) and late hyperenhancement for detection of myocardial scarring. Blood alcohol level (BAL) was assessed 45 min. after termination of alcohol intake. The study was approved by the local ethics committee.

Results

All participants suffered from a clinical "hangover" 12 h after alcohol intake (headache, nausea, fatigue, tremulousness, tachycardia). The mean BAL at "top-of-drinking" was $1.1 \pm 0.3\%$ (1.4 ± 0.4 g/l). In CMR, a significant increase in signal intensity on T2-weighted images was observed on the day after drinking (T2-ratio 1.7 ± 0.2 vs. 1.9 ± 0.2 , $p = 0.04$). In 8 participants (80%) gRE after drinking was significantly enhanced as well (3.9 ± 1.3 vs. 6.8 ± 3.1 , $p = 0.03$). The CMR-parameters returned to baseline values within 1 week after alcohol intake in 9 participants (90%). Left ventricular function and volumes remained unchanged during all three CMR exams. On late hyperenhancement images, no areas of focal necrosis were detectable.

Conclusion

This study supports the hypothesis that even moderate alcohol-intoxication leads to a transient myocarditis-like inflammation of the myocardium which is detectable by CMR. Larger studies are required to verify the present findings.