

Meeting abstract

Open Access

## The possible link between insulin resistance and increased cardiovascular mortality

Barna Peitl\*<sup>1</sup>, László P Drimba<sup>1</sup>, Róbert Döbrönte<sup>2</sup>, József Németh<sup>1</sup>, Réka Zs Sári<sup>1</sup>, Csaba Pankucsi<sup>1</sup>, Angelika Varga<sup>1</sup>, László Fésüs<sup>3</sup>, József Tózsér<sup>3</sup> and Zoltán Szilvássy<sup>1</sup>

Address: <sup>1</sup>Department of Pharmacology and Pharmacotherapy, University of Debrecen, Hungary, <sup>2</sup>Department of Anesthesiology and ICU, Petz Aladár County Hospital, Győr, Hungary and <sup>3</sup>Department of Biochemistry and Molecular Biology, University of Debrecen, Hungary

Email: Barna Peitl\* - barna.peitl@king.pharmacol.dote.hu

\* Corresponding author

from 13th Scientific Symposium of the Austrian Pharmacological Society (APHAR). Joint Meeting with the Austrian Society of Toxicology (ASTOX) and the Hungarian Society for Experimental and Clinical Pharmacology (MFT) Vienna, Austria. 22–24 November 2007

Published: 14 November 2007

BMC Pharmacology 2007, 7(Suppl 2):A48 doi:10.1186/1471-2210-7-S2-A48

This abstract is available from: <http://www.biomedcentral.com/1471-2210/7/S2/A48>

© 2007 Peitl et al; licensee BioMed Central Ltd.

### Introduction

Hyperinsulinaemia and insulin resistance are considered as independent risk factors of ischemic heart disease. We sought whether hyperinsulinaemia per se is of significant influence on cardiac arrhythmia generation in conscious rabbits.

### Methods

Chronically instrumented conscious rabbits were equipped with a right ventricular electrode catheter for pacing and recording the intracavitary electrogram as well as with arterial and venous catheters for blood sampling, blood pressure monitoring and for insulin and glucose infusions, respectively. Hyperinsulinaemia was produced by 2-step hyperinsulinaemic (35.7 ± 7.4 and 103.2 ± 10.5 µU/ml) euglycaemic (5.5 ± 0.5 µU/ml) glucose clamping. Programmed electrical stimulation (PES) was applied for ventricular effective refractory period (VERP) determination and arrhythmia generation.

### Results

The VERP shortened from 110.4 ± 3.7 to 104.8 ± 2.9 ms, (p < 0.05) and from 109.3 ± 2.9 to 101.4 ± 1.7 ms (p < 0.05) in animals with 35 and 103 µU/ml clamped hyperinsulinaemic euglycaemia, respectively. The incidence of ventricular premature beats, non-sustained ventricular

tachycardia and sustained ventricular tachycardia induced by PES increased from control 11, 0, 0% to 24 (p < 0.05), 5, 0%; and 56, 44 (p < 0.001 for each), 0% in animals with 35 and 103 µU/ml clamped hyperinsulinaemic euglycaemia, respectively.

### Conclusion

The results provide evidence for the "sui generis" proarrhythmic effect of hyperinsulinaemia in otherwise healthy rabbits. The results also suggest that this is underpinned by a hyperinsulinaemia-induced reduction of VERP.