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Cardioprotection by preconditioning and postconditioning: influence of risk factors

Péter Ferdinandy MD, PhD, MBA
Department of Pharmacology and Pharmacotherapy, Semmelweis University, Budapest;
Pharmahungary Group, Szeged, Hungary

Ischemic pre- and postconditioning are well described endogenous adaptive responses of the heart to protect the myocardium against ischemia/reperfusion injury. Most experimental studies on cardioprotection have been undertaken in animal models, in which ischemia/reperfusion is imposed in the absence of other disease processes. However, ischemic heart disease in humans is a complex disorder caused by or associated with known cardiovascular risk factors including hypertension, hyperlipidemia, diabetes, insulin resistance, atherosclerosis, and heart failure; additionally, aging is an important modifying condition. In these diseases and aging, the pathological processes are associated with fundamental molecular alterations that can potentially affect the development of ischemia/reperfusion injury per se and responses to cardioprotective interventions. Hyperlipidemia causes massive alteration in gene expression profile, and among several possible mechanisms, the pathological increase in reactive oxygen and nitrogen species, alteration in matrix metalloproteinase activation, use of the mevalonate pathway inhibitor statins, reduced expression of connexin-43 may disrupt major cytoprotective signaling pathways thereby significantly interfering with cardioprotective signaling. The aim of this presentation is to review the evidence that comorbidities (focusing on hyperlipidemia) modify responses to cardioprotection. We emphasize the critical need for more detailed and mechanistic preclinical studies that examine cardioprotection specifically in relation to complicating disease states. These are now essential to for successful development of rational approaches to therapeutic protection for patients with ischemic heart disease developing as a consequence of modifying comorbid conditions.

CURRICULUM VITAE

Name: Péter Ferdinandy, MD, PhD, MBA
Birth date: 1966, Hungary
Citizenship: Hungarian
Address: Department of Pharmacolgy and Pharmacotherapy, Semmelweis University, Nagyvárad tér 4, Budapest, 1089 Hungary.

Education, scientific degrees:

2004	DSc in medical sciences, Hungarian Academy of Sciences
2000-2004	MBA (Masters of Business Administration, Finance and Quality management), Budapest Technical University, Hungary
1999	Designation as registered Clinical-Pharmacologist
1997-1999:	Postdoctoral training, Dept Pharmacology, University of Alberta, Edmonton, Canada
1995	December: PhD in biochemisry (score: excellent, "summa cum laude")
1991-1995:	PhD training, Departments of Physiology and Biochemistry, University of Szeged, Hungary
1991	September: MD diploma (score: excellent, "summa cum laude")
1985-1991:	University of Szeged, Hungary

Current Positions:

2011-present:	Director, full professor, Department of Pharmacology and Pharmacotherapy, Medical Faculty, Semmelweis University, Budapest, Hungary. (www.semmelweispharma.com)
2005-present:	Professor of Biochemistry (part-time), Head of the Cardiovascular Research Group, University of Szeged, Hungary (www.cardiovasc.com),
2003-present:	CEO of Pharmahungary Group (www.pharmahungary.com), Szeged, Hungary.

Teaching experience:

2004 -	Lecturer in Pharmacology, Semmelweis University, Budapest
1993 -	Lecturer in Biochemistry, Universiy of Szeged, Hungary
1998-1999	Lecturer in Pharmacology, University of Alberta, Edmonton, Canada
1991-1994	Lecturer in Physiology, Universiy of Szeged, Hungary

Scholarships, fellowships:

1989-1991	Scholarship of Hungarian Republic
1997-1999	Postdoc Fellow, MRC Canada, University of Alberta, Canada
2001-2005	Szechenyi professorship, Hungarian Academy of Sciences

Major awards:
Winner, Young Investigator Award, International Society for Heart Research, 1999.

Current major memberships:
- president, International Society for Heart Research, European Section
- vice chairman, Working Group Cell Biolology, Europen Cardiology Society

Editorial board memberships:
Br J Pharmacol, J Mol Cell Cardiol, Basic Res Cardiol, J Pharmacol Toxicol Methods

Languages:
Native language: Hungarian
English (fluent), German (basic understanding)

Scientometric data:
Number of papers in international peer-reviewed journals: 106 (source PubMed)
Cumulative impact factor of full papers: over 450
Total number of citations: over 4000 (source Google Scholar)
Patents: 5