



Universiteit
Leiden
The Netherlands

Electrocardiographic assessment of repolarization heterogeneity

Hooft van Huysduynen, Bart

Citation

Hooft van Huysduynen, B. (2006, June 8). *Electrocardiographic assessment of repolarization heterogeneity*. Retrieved from <https://hdl.handle.net/1887/4430>

Version: Corrected Publisher's Version

[Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

License: [Downloaded from: https://hdl.handle.net/1887/4430](https://hdl.handle.net/1887/4430)

Note: To cite this publication please use the final published version (if applicable).

Electrocardiographic Assessment of Repolarization Heterogeneity

Bart Hooft van Huysduynen

Electrocardiographic Assessment of Repolarization Heterogeneity

PROEFSCHRIFT
ter verkrijging van
de graad van Doctor aan de Universiteit Leiden
op gezag van de Rector Magnificus Dr. D. D. Breimer,
hoogleraar in de faculteit der Wiskunde en
Natuurwetenschappen en die der Geneeskunde,
volgens besluit van het College voor Promoties
te verdedigen op donderdag 8 juni 2006
te klokke 16.15 uur

door

Bart Hooft van Huysduynen
geboren te Amsterdam
in 1974

Promotiecommissie

Promotores: Prof. dr. M.J. Schalij
Prof. dr. E.E. van der Wall

Co-promoter: Dr. ir. C.A. Swenne

Referent: Prof. dr. N.M. van Hemel (Hart Long Centrum Utrecht,
Nieuwegein)

Overige commissieleden: Prof. dr. A. van der Laarse
Prof. dr. A. van Oosterom (Centre Hospitalier
Universitaire Vaudois, Lausanne)
Dr. H.W. Vliegen
Prof. dr. A.A.M. Wilde (Academisch Medisch
Centrum, Amsterdam)

The research described in this thesis was performed at the Department of Cardiology
of the Leiden University Medical Center, Leiden, the Netherlands

The study described in this thesis was supported by a grant of the Netherlands
Heart Foundation (NHF-2001B177). Financial support by the Netherlands Heart
Foundation for the publication of this thesis is gratefully acknowledged.

Aan mijn ouders

© 2006 B. Hooft van Huysduynen, Leiden, the Netherlands

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission from the copyright owner.

ISBN: 978-90-9020616-5

Cover image: Scanning electron microscope picture of Purkinje fibers at the endocardium of the heart (magnification 300x). The electrocardiogram (lead V5) of dr. P.S. Monraats.

Printed by: Febodruk B.V. te Enschede

Financial contribution to the publication of this thesis was kindly provided by Jacques H. de Jong Stichting, J.E. Jurriaanse Stichting, St Jude Medical, Siemens, Guidant, Novartis, Bayer, Schering-Plough, AstraZeneca, Boehringer Ingelheim, Bristol-Myers Squibb, Servier, Pfizer, Sankyo and Medtronic.

Contents

Chapter 1.	
Introduction: Electrocardiographic assessment of repolarization heterogeneity.	9
Chapter 2.	
Validation of ECG indices of ventricular repolarization heterogeneity; A computer simulation study.	43
J Cardiovasc Electrophysiol 2005; 16: 1097-103	
Chapter 3.	
Hypertensive stress increases dispersion of repolarization.	65
Pacing Clin Electrophysiol. 2004; 27: 1603-9	
Chapter 4.	
Increased dispersion of ventricular repolarization during recovery from exercise.	83
submitted	
Chapter 5.	
Reduction of QRS duration after pulmonary valve replacement in adult Fallot patients is related to reduction of right ventricular volume after pulmonary valve replacement in Fallot's tetralogy.	105
Eur Heart J 2005; 26: 928-32	
Chapter 6.	
Pulmonary valve replacement in tetralogy of Fallot improves the repolarization.	117
submitted	
Chapter 7.	
Dispersion of the repolarization in cardiac resynchronization therapy.	135
Heart Rhythm 2005; 2: 1286-93	
Chapter 8.	
Summary and conclusions	159

Nederlandse samenvatting	164
Dankwoord	168
Curriculum Vitae	169