Tissue Doppler and speckle tracking strain echocardiography

From evaluation in healthy children to follow-up after surgery for a congenital heart defect

Liselotte Maria Klitsie



Financial support by the Dutch Heart Foundation for the publication of this thesis is gratefully acknowledged.

ISBN/EAN: 978-94-6108-573-3

Lay-out: John Tillema

Druk: Gildeprint Drukkerijen

The copyright of the published articles has been transferred to the respective journals or publishers.

Copyright 2014, L.M. Klitsie, Leiden, the Netherlands. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without prior permission of the author.

Cover Page



Universiteit Leiden



The handle http://hdl.handle.net/1887/22985 holds various files of this Leiden University dissertation

Author: Klitsie, Liselotte Maria

Title: Tissue Doppler and speckle tracking strain echocardiography: from evaluation in

healthy children to follow-up after surgery for a congenital heart defect

Issue Date: 2014-01-09

Tissue Doppler and speckle tracking strain echocardiography

From evaluation in healthy children to follow-up after surgery for a congenital heart defect

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof.mr. C.J.J.M. Stolker,
volgens besluit van het College voor Promoties
te verdedigen op donderdag 9 januari 2014
klokke 16.15 uur

door

Liselotte Maria Klitsie

geboren 6 september 1987 te Rotterdam

PROMOTIECOMMISSIE

Promotor: Prof. Dr. N.A. Blom

Co-Promotor: Dr. A.D.J. ten Harkel

Overige leden: Prof. Dr. F.J. Walther

Prof. Dr. M.G. Hazekamp

Prof. Dr. L. Kapusta (E. Wolfson Medical Center, Holon, Israel)

CONTENTS

1.	General introduction	9
2.	Review: Ventricular performance after surgery for a congenital heart defect as assessed using advanced echocardiography: from Doppler flow to 3D echocardiography and speck tracking strain imaging	ile- 15
		13
3.	Echocardiography in healthy pediatric subjects	
	3.1. Longitudinal follow-up of ventricular performance in healthy neonates	
	3.2. Assessment of intraventricular time-differences in healthy children using 2-	41
	dimensional speckle tracking echocardiography	57
4.	Echocardiographic follow-up after surgical correction of a congenital heart defect	
	4.1. Tissue Doppler imaging detects impaired biventricular performance shortly after congenital heart defect surgery	
	Disparity in right versus left ventricular recovery during follow-up after ventricular septal defect correction	81
	4.3. Left and right ventricular performance after arterial switch operation	99
	4.5. Lett and fight vertificular performance after afterial switch operation	115
	4.4. Enhanced characterization of ventricular performance following coarctation repair in neonates and young children	
		133
5.	General discussion and future perspectives	153
6.	Dutch summary / Nederlandse samenvatting	
		165

7.	Appendices		
	7.1.	Abbreviation list	
			175
	7.2.	Authors & affiliations	
			179
	7.3.	Dankwoord	
			183
	7.4.	List of publications	
			187
	7.5.	Curriculum Vitae	

