



University of Groningen

Characterizing postoperative cognitive dysfunction in the elderly

Hovens, Iris Bertha

DOI:

10.1152/ajpregu.00002.2015

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version Publisher's PDF, also known as Version of record

Publication date:

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

Hovens, I. B. (2015). Characterizing postoperative cognitive dysfunction in the elderly [Groningen]: University of Groningen DOI: 10.1152/ajpregu.00002.2015

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Download date: 11-02-2018

Characterizing postoperative cognitive dysfunction in the elderly

The research described in this thesis was performed at the department of Molecular Neurobiology, University of Groningen, and the department of Surgery and Surgical Oncology, University of Groningen, University Medical Center Groningen, Financial support by the University of Groningen, Research School of Behavioral and Cognitive Neuroscience (BCN), Danone Research – Centre for Specialised Nutrition, Noldus Information Technology, Greiner Bio-One, and Alzheimer Nederland is gratefully acknowleded.











Cover design: Kim Taminiau

The cover design is roughly based on the Vanitas and Memento Mori themes in art that symbolically represent the transient nature of earthly life and incorporates objects related to the research performed in this thesis.

Lay-out: Kortsluiting.com

Printing: Ipskamp Drukkers

© Copyright 2015 I.B. Hovens

All right reserved, no part of this publication may be reproduced or transmitted in any form or by any means, without permission of the author.

ISBN (printed version): 978-90-367-8065-0

ISBN (digital version): 978-90-367-8064-3



Characterizing Postoperative Cognitive Dysfunction in the Elderly

Proefschrift

ter verkrijging van de graad van doctor aan de Rijksuniversiteit Groningen op gezag van de rector magnificus prof. dr. E. Sterken en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op woensdag 9 september 2015 om 14.30 uur

door

Iris Bertha Hovens

geboren op 12 Juni 1984 te Leek

Promotores

Prof. dr. E. Heineman Prof. dr. E.A. van der Zee

Copromotores Dr. B. L. van Leeuwen Dr. R.G.Schoemaker

Beoordelingscommissie Prof. dr. H.W.G.M. Boddeke Prof. dr. J.P.J. Slaets PD. dr. C.R. Pryce



Table of contents

GENERAL INTRODUCTION	9
CHAPTER 2	19
Thinking through postoperative cognitive dysfunction: How to bridge the gap between clinical	
and pre- clinical perspectives.	
CHAPTER 3	51
Postoperative cognitive dysfunction: involvement of neuroinflammation and neuronal	
functioning.	
CHAPTER 4	75
Postoperative cognitive dysfunction and microglial activation in associated brain regions in old	
rats	
CHAPTER 5	91
Surgery-induced behavioral changes in aged rats.	
CHAPTER 6	119
Prior infection exacerbates postoperative cognitive dysfunction in aged rats.	
CHAPTER 7	145
A novel method for evaluating microglial activation using IBA-1 staining: cell body to cell size	
ratio.	
CHAPTER 8	163
The cognitive status before surgery determines the association between the perioperative	
inflammatory response and postoperative cognitive performance	
GENERAL DISCUSSION	185
The involvement of (neuro)inflammation in postoperative cognitive impairment	
REFERENCES	203
SUMMARY	231
SAMENVATTING	241
CURRICULUM VITAE	251
DANKWOORD	255