

Downloaded from UvA-DARE, the institutional repository of the University of Amsterdam (UvA)  
<http://hdl.handle.net/11245/2.46194>

---

File ID        uvapub:46194  
Filename      6y.pdf  
Version        unknown

---

SOURCE (OR PART OF THE FOLLOWING SOURCE):

Type            article  
Title            SR Ca content and Ca after-transients in pressure and volume overload  
                  induced heart failure  
Author(s)      A. Baartscheer, J. Fiolet, C. Schumacher, C. Belterman, J. Vermeulen  
Faculty         UvA: Universiteitsbibliotheek  
Year            2001

FULL BIBLIOGRAPHIC DETAILS:

<http://hdl.handle.net/11245/1.426374>

---

*Copyright*

*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), other than for strictly personal, individual use, unless the work is under an open content licence (like Creative Commons).*

---

## **SR Ca CONTENT AND Ca AFTER-TRANSIENTS IN PRESSURE AND VOLUME OVERLOAD INDUCED HEART FAILURE.**

**Antonius Baartscheer**, Jan Fiolet, Cees Schumacher, Charly Belterman, Jessica Vermeulen: Academic Medical Center, Experimental Cardiology, Meibergdreef 9, Amsterdam, 1105 AZ Netherlands

**Background:** delayed after-depolarisations associated with calcium after-transients frequently occur in heart failure (HF). Hypothesis: unbalanced SR calcium load underlies calcium after-transients.

**Methods:** Frequency-dependence of Ca-transients and SR calcium content (with rapid cooling, RC) studied in left ventricular indo-1 loaded myocytes of HF and control rabbits (37 °C). After-transients were evoked after burst pacing in the presence of norepinephrine (NE, 100 nM).

**Results:** with increasing frequency (0.2 to 3 Hz) in HF diastolic Ca increased from 102 (control 44) to 174 (control 103) nM, Ca-transient amplitude decreased from 310 (control 186) to 254 (control 429) nM, SR Ca decreased from 1.25 (control 1.5) to 1.09 (control 2.5) mM and both in HF and control the Ca gradient across the SR membrane decreased by 30% . In HF this gradient was 35% less than in control at any frequency. In HF NE increased SR Ca content and the gradient by 40% and in control 7%. In 14 out of 18 HF rabbits Ca after-transients occurred after burst pacing (10 s) in the presence of NE, but never in control. Appearance of after-transient caused a decrease of SR Ca content by 35%.

**Conclusions:** In HF SR Ca content and Ca gradient are reduced, but can be restored by NE. The high SR Ca content and trans-membrane gradient built during burst in the presence of NE can not be maintained upon cessation of stimulation and spontaneous loss of Ca ensues with generation of Ca after-transients.</SUP>