MICAEL WALDENBORG (1981) is a registered biomedical scientist and has been working in this profession since 2006, the same year in which he received his bachelor’s degree from Örebro University. He started his career at Karlstad Central Hospital, where he was first introduced to the echocardiographic field. In 2008 he was employed as a biomedical scientist at the department of Clinical Physiology, Örebro University Hospital. From then on, echocardiography became his specialty, and shortly afterwards he was introduced to research by Kent Emilsson (MD, PhD), who later on became his head supervisor. In July 2009, he was initially enrolled as a graduate student in the School of Health and Medical Sciences at Örebro University, shortly after he had joined a study project with a focus on takotsubo, initiated by the cardiologist Ole Fröbert (MD, PhD), who became his co-supervisor. Micael resumed his research, after an interruption of the study plan, and was adopted once again as a research student in April 2012. Currently, he is still working as a biomedical scientist at Örebro University Hospital.

Takotsubo cardiomyopathy (TTC), or “broken heart syndrome” that the state is often referred to, is a relatively new diagnosis characterized by transient left ventricular (LV) dysfunction. Typically seen in acute stage, apical parts are associated with wall motion abnormalities and dilation where the LV adopts a look reminding of a Japanese urn; a “takotsubo” (normally used as an octopus trap), hence the name of the syndrome. At onset, the symptoms are similar as in myocardial infarction, which is often the first clinical suspicion. In contrast, however, there are no obvious signs of coronary artery influence (e.g. a significant stenosis). TTC affects mainly postmenopausal women, and often associates with some kind of stress (physical or mental) in connection to the onset. Several possible causes have been suggested, in which the influence of stress hormones often occurs, although the exact pathogenesis is still not fully understood. TTC appears to be rare, but this may well be due to its elusive natural cause or ignorance, thus, further studies are needed.

This thesis presents four studies focusing on patients undergoing an episode of TTC, with differential diagnostic purposes in mind. Main focus is echocardiographic measurements, although multidisciplinary engagement has been applied with correlations and comparisons against other diagnostic tools, as proposed at TTC.