

Cardiovascular magnetic resonance : a key to imaging cardiac function

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Valorization

Since the first publication of a cross sectional magnetic resonance image of the human chest in 1977, cardiovascular magnetic resonance imaging (CMR) has emerged as a reliable imaging technique and is currently performed on a routine basis for many patients with heart disease. The burden of cardiac disease in the Netherlands in 2012 was 20 555 cardiac deaths and 202 945 hospital admissions. More than 1 million patients suffer from cardiovascular disease. CMR is an important tool to detect cardiac disease and it is performed to support the treating physicians in finding the correct diagnosis and evaluate therapy. The research presented in this thesis is therefore of value for patients with heart disease and their caring physicians. Since the thesis describes many different aspects of magnetic resonance imaging of cardiac function, a point-by-point evaluation of valorization would result in a repetition of the discussion-chapter. Thus, to underscore the importance of research for daily practice, real-time imaging is chosen from this thesis as an example of a successful implementation of research into practice. With real-time imaging, patient comfort is improved since it is fast and does not require repeated breath-holds and ECG-gating. Images can already be displayed during the process of scanning. The price of improved patient comfort usually is less image quality. However, it could be shown that real-time imaging offers sufficient image quality for several clinical applications. Thus, it has been introduced into daily practice: Real-time imaging is performed in the beginning of every CMR exam for the purpose of interactive scan planning. It saves time and makes the process of planning the correct heart axes easier. Real-time imaging sequences are also currently employed to replace standard breath-hold, ECG-triggered cine sequences in case of suboptimal image quality due to an irregular heart rhythm or the patient is not able to hold his breath.