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Echocardiographic methods for preclinical detection of diabetic heart disease and in cardio-oncology

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Introduction: Diabetic heart disease or a chemotherapy treatment of a patient in cardio-oncology can have a profound impact on cardiac systolic and or diastolic function and structure. Especially diabetic patients are at a higher risk for developing heart disease than non-diabetic individual. These patients can also have numerous causes of heart related issues and disease. Detecting and monitoring of non-visual changes in cardiac dimensions and function has become very important.

Methods: Echocardiography techniques are used for an evaluation of cardiac function and detection of early diabetic myocardial disease. Standard Echo measurements are here LV diameters, wall thicknesses, LV mass, fractional shortening, LV volumes and ejection, measured in 2D or better in 3D. Stress Echocardiography can be another diagnostic tool to evaluate cardiac function. Newer analysis tools feature automatic contour detection in 2D or 3D and myocardial tracking for a fast, accurate and highly reproducible global and regional functional analysis of LV myocardial strain.

Conclusion: Automated imaging software that can assist in the management of patients with diabetic heart disease or in chemotherapy is becoming widely accepted over traditional imaging methods. Subclinical markers including the longitudinal strain provide an excellent means of monitoring non visual and regional abnormalities in LV systolic function. Automated software provides a high level of reproducibility which is crucial for the proper management of these patients.

Biography

Bernhard Mumm has completed his Master of Science in Engineering, Computer Science and Cybernetics at the Technical University Munich / Germany in 1983. Since 1990 he is working at TOMTEC Imaging Systems, located in Munich Germany and holds the position as president. He has done 3D Echocardiography research & developments in cooperation with many university hospitals worldwide. He participated in many publications, book chapters, patents and talks at international scientific conferences on this topic.

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