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Diabetic cardiomyopathy

Diabetic cardiomyopathy is a clinical condition which is diagnosed when ventricular dysfunction occurs in the absence of atherosclerosis and hypertension in diabetic patients. Myocardial dysfunction is diastolic at the beginning, but in later stages contraction dysfunction develops and systolic dysfunction also occurs. Heart failure guidelines published in 2013 state that Diabetes Mellitus (DM) is now well recognized risk factor for development of heart failure independent of age, hypertension, obesity, hypercholesterolemia and coronary artery disease. Currently diagnosing diabetic cardiomyopathy is based on noninvasive imaging techniques. In DM, both gluco and lipo-toxicities are responsible for increasing oxidative stress and chronic inflammation which leads to micro-vasculopathy. Reduced coronary microcirculation leads to chronic myocardial ischemia which causes pathological cardiac re-modeling which in turn leads to subsequent Diastolic Dysfunction (DD). Both reduced Coronary Flow Reserve (CFR) and DD are associated with Left Ventricular (LV) concentric remodeling, hypertrophy, abnormalities of angiotensin-renin system and with endothelial dysfunction. Therefore, it is proposed that coronary micro-vascular damage plays a mechanistic role for DD. Myocardial fibrosis and collagen deposition are the primary structural changes observed in diabetic cardiomyopathy. Therefore, impaired LV function observed in diabetic patients can be the result of fibrosis and altered collagen structure. Left Ventricular Hypertrophy (LVH) has been associated with DM independent of other factors (such as obesity, hypertension, or age). Prevalence of DD in diabetic patients is high, ranging from 21% to 75%. Diastolic dysfunction is considered as the first marker of diabetic cardiomyopathy. Both LVH and DD can be demonstrable by echocardiographic techniques. Subclinical LV dysfunction in asymptomatic diabetic patients may be assessed by speckle tracking echocardiography. Subclinical LV longitudinal dysfunction is frequently observed in asymptomatic diabetes patients with normal ejection fraction. Diabetes is an independent risk factor for heart failure. Micro-vasculopathy, myocardial fibrosis and myocardial steatosis all play a role in the pathogenesis of diabetic cardiomyopathy. Echocardiography can demonstrate the functional changes in diabetes such as LVH, DD and myocardial longitudinal function.

Biography

Sibel Catirli Enar, FESC, FACC, FASE is an associate Professor of Cardiology. She graduated from Istanbul Medical School in 1981. She completed her specialization in anesthesiology and critical care in Istanbul Medical School in 1985 and in Cardiology at Istanbul University Institute of Cardiology in 1992. She has also worked as research fellow at Cleveland Clinic of Foundation, USA from 1996-1998 and at University of Alabama at Birmingham, USA from 2006-2008. She is currently working as a cardiologist at Sur Hospital/Sisli Memorial Hospital in Istanbul/Turkey. Her main area of interest is echocardiography. She has publications in national and international journals, served as speaker and moderator in national and international congresses, and participated in multicenter studies. She is also author of chapters in several books: 1) Metabolic syndrome in women (2015), 2) Interesting cases in echocardiography (NC Nanda) 2017.

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