

17th European Heart Disease and Heart Failure Congress &

2nd International Conference on

Cardiovascular Medicine and Cardiac Surgery

March 15-17, 2017 London, UK

A case of misdiagnosed cardiomyopathy with rising plasma MMP9 long before sudden cardiac arrest

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Introduction: Out-of-hospital cardiac arrest in the absence of structural heart disease is rare and can be due to subclinical cardiomyopathy or primary electrical disorders. Adverse collagen remodeling may occur in cardiac arrest patients; MMP-9 is proven to help risk stratification.

Clinical Case Description: In 2005, R.R, a 35 year old metal-worker, surprisingly began to show high values of MMP9. TIMPs, MMP2, NT-pro-BNP and all the other laboratory tests, abdominal echography, electrocardiogram and echocardiography were within the reference range. 10 years later, R.R suddenly collapsed at home; his wife promptly began a successful cardiac massage, supported by territorial tele-emergency network. R.R was admitted to the intensive unit with frequent ventricular extrasystoles, left ventricular dysfunction. Medical history of his family includes sudden death of two paternal uncles; mother with Takotsubo syndrome. Unremarkable clinical examination and electrocardiogram showed no biochemical evidence of acute myocardial infarction; CRP elevation. Un-obstructed coronary arteries on coronary were revealed in angiography. Chest X-ray showed mild interstitial fibrosis. There were no signs of arrhythmogenic cardiomyopathy on Cardio-NMR.

Discharge Diagnosis: Discharge diagnosis was: "Resuscitated cardiac arrest, in subject without evidence of structural heart disease, treated with ICD bicameral system".

Reviewing Clinical Information & Diagnosis: Familial histories of sudden death, mild endocardial irregularities, left ventricle enlargement, reduced ejection fraction, low EKG voltage are suggestive of familial cardiomyopathy. Welding, chest X-ray fibrosis, RCP is suggestive of welder's lung. Then, reformulated diagnosis: Resuscitated cardiac arrest in sub-clinical familial cardiomyopathy, chronically subjected to professional cardio-toxic damage.

Conclusions & Implications for Clinical Practice: R.R lethal arrhythmia was firstly considered as "idiopathic" in nature, since process laboratory and radiology testing were not analyzed properly. Interestingly, long before cardiac arrest, MMP9 had begun to rise, announcing a cardio-pulmonary adverse remodeling. The case of R.R teaches us that early biomarkers such as MMP9, correct and timely diagnosis, tele-medicine and emergency services network could really save lives of patients at high risk of sudden death.

Biography

Annamaria Vianello completed her Graduation at Medical School, Pisa University where she obtained Specialization both in Internal Medicine and in General Medicine. She completed her PhD in Medical Physiopathology and Pharmacology and in Normal and Pathological Morphology of Cells and Tissues; a second-level Short Specialization Degree in Clinical Pharmacological Research and; second-level Short Specialization Degree in Hypertrophic Cardiomyopathies at Pavia University. She worked as Fellow in Department of Internal Medicine and Sport Medicine, Pisa University. Her research interests include Athlete's Heart Remodeling, Failing Heart Remodeling and Cardio-Renal Remodeling. She is currently coordinating a Tele-Health Project for out-of-hospital care of chronic heart failure. She is an Author of original papers dealing with the clinical role of circulating and tissue profiles of inflammatory biomarkers, MMPs and TIMPs in different models of heart remodeling such as Athlete's Heart, Valvular Heart Disease, Cardio-Renal Failure and Chronic Heart Failure.

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