Journal of Cardiovascular Magnetic Resonance

Meeting abstract

2078 High prevalence of cardiac hypertophy without detectable signs of fibrosis in patients with untreated active acromegaly: an in-vivo study using magnetic resonance imaging and integrated backscatter analysis

Elisabetta Strata*[1], Giovanni Donato Aquaro[1], Fausto Bogazzi[2], Chiara Sardella[2], Vitantonio Di Bello[3] and Massimo Lombardi[1]

Address: [1]Institute of Clinical Physiology – CNR, Pisa, Italy, [2]Department of Endocrinology and Metabolism, University of Pisa, Pisa, Italy and [3]Cardiothoracic Department, University of Pisa, Pisa, Italy

* Corresponding author

from 11th Annual SCMR Scientific Sessions
Los Angeles, CA, USA. 1–3 February 2008

Published: 22 October 2008

Journal of Cardiovascular Magnetic Resonance 2008, **10**(Suppl 1):A347 doi:10.1186/1532-429X-10-S1-A347

This abstract is available from: http://jcmr-online.com/content/10/S1/A347

Introduction

Left ventricular (LV) hypertrophy and myocardial fibrosis are considered the main pathological features of acromegalic cardiomyopathy. Cardiovascolar Magnetic Resonance (CMR) allows to detect myocardial gross fibrosis using the delayed enhancement (DE) technique. Myocardial echointensity as derived by integrated backscatter (IBS) echocardiographic analysis is considered an index of myocardial collagen content.

Purpose

The aim of the study was to evaluate the proportion of LV hypertrophy and the presence of gross fibrosis and microscopic collagen content in acromegalic cardiomyopathy in vivo.

Methods

Fourteen consecutive patients (eight women, mean age 46 ± 10 years) with untreated active acromegaly were submitted to two-dimensional (2D) colour Doppler and integrated backscatter (IBS) echocardiography and CMR. CMR was performed using to 1.5-T MR scanner (CV/I, GE, Milwaukee, WI). LV volume, mass and wall thickness were obtained using FIESTA short axis images (8 mm slice thickness, no gap, 30 phases) covering the entire LV.

Delayed enhancement images were acquired in short axis views 10 minutes after contrast media(gadobutrol 0.2 mmol/Kg) injection. A software developed ad hoc was used to quantify delayed enhancement techinque. A detailed IBS methodology has been described previously [1]. Control settings for the imaging chain, such as preprocessing, focus position, persistence, compression, frame installments and postprocessing, to were maintained constant for all the participants. End-diastolic IBS parameters to were then indexed for IBS pericardial values at the posterior wall (IBSpwi). The pericardial interface reflectivity was considered, for to static reflectivity pattern, to be equal to 100% of the IBS reflectivity of the cardiac structures. The reflectivity of the posterior wall was indexed for pericardial reflectivity to optimize the comparability of each patient, avoiding the reflectivity differences linked to artefacts two to attenuation phenomena. Normal IBSpwi was defined <45%.

Results

On echocardiography: mean LV mass (LVM) and LVM index (LVMi) were 209 ± 48 g and 110 ± 24 g/m2, respectively; hypertrophy was revealed in five patients (36%); abnormal diastolic function [evaluated by isovolumic relaxation time (IVRT) or early (E) to late or atrial (A) peak velocities (E/A ratio)] was found in four patients

(29%). Systolic function evaluated by measuring LV ejection fraction (LVEF) was normal (mean 72 ± 12%) in all patients. Six patients (43%) had increased IBS (mean 57.4 ± 6.2%). On CMR: mean LVM and LVMi were 151 ± 17 g and 76 ± 9 g/m2, respectively; 10 patients (72%) had LV hypertrophy. Delayed hyperenhancement was absent in all patients; on the contrary a mild enhancement was revealed in one patient. IBSpwi was abnormal in 6 patients (42.8%). Systolic function was normal in all patients (LVEF 67 ± 11%). LVMi was not related to serum IGF-1 concentrations or the estimated duration of disease.

Conclusion

CMR is considered to be the gold standard for evaluating cardiac hypertrophy, fibrosis and systolic function. Using CMR, 72% patients with untreated active acromegaly had LV hypertrophy, which was only detected in 36% patients by echocardiography. However, cardiac fibrosis was absent in all patients irrespective of the estimated duration of disease. Although a very small increase in collagen content (as suggested by increased cardiac reflectivity at IBS), not detectable by CMR, could not be ruled out, it is unlikely that it would significantly affect cardiac function.

References

1. Bogazzi F, Di Bello V, Palagi C, Delle Donne MG, Di Cori A, Gavioli S, Talini E, Cosci C, Sardella C, Brogioni S, Mariani M, Martino E: **Improvement of intrinsic myocardial contractility and cardiac fibrosis degree in acromegalic patients treated with somatostatin analogues: a prospective study.** *Clinical Endocrinology* 2005, **62:**590-596.