Evaluation of cardiac structure by echoreflectivity analysis in acromegaly: effects of treatment

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Objectives: cardiac echoreflectivity is a non-invasive tool for evaluating cardiac fibrosis. The present paper aimed to study the modification of cardiac echoreflectivity in a group of acromegalic patients before and after therapy, and to assess possible correlations with serum levels of procollagen III (PIIINP), a peripheral index of collagen synthesis.

Design and methods: cardiac echoreflectivity (as assessed by analyzing 2-D echocardiograms digitized off-line into a personal computer) and PIIINP levels were evaluated in 16 acromegalic patients of new diagnosis not affected by arterial hypertension (10 males, six females, age±SD: 38±10 years), and in a group of 16 sex-and age-matched healthy subjects. All the patients were re-evaluated after surgical and/or medical therapy for acromegaly. The echo patterns were analyzed by software that supplies the derived collagen volume fraction (dCVF), and index of fibrosis.

Results: at baseline, acromegalic patients showed significantly higher dCVF values and PIIINP levels than healthy controls (3.1±0.5% *vs* 1.6±0.3%, $P<0.01$ and 8.7±2.2 *vs* 3.1±1.1 ng/ml, $P<0.05$, respectively, by unpaired Student's t-test). After therapy, dCVF and PIIINP levels normalized in the six controlled patients (that is, GH of <2.5 μg/l and IGF-I within normal range) (dCVF from 2.8±0.4% to 1.4±0.2%, $P<0.001$; PIIINP from 8±2.7 to 3.3±1.9 ng/ml, $P<0.05$), while no significant changes were found in non controlled patients (dCVF from 3.3±0.6% to 2.9±1.2% and PIIINP from 9.1±1.9 to 7.9±3.5 ng/ml, *P*=NS). A positive correlation between dCVF and PIIINP ($r=0.75$, $P<0.001$) and between IGF-I and both dCVF and PIIINP ($r=0.65$ and 0.61, respectively, $P<0.05$) was found in acromegalic patients.

Conclusions: cardiac echoreflectivity, which may be a reflection of hart collagen content, is increased in patients with active acromegaly and correlates with PIIINP concentrations. After cure or adequate control of the disease, both parameters revert to normal. Echoreflectivity analysis could be a useful adjuvant parameter in the assessment of the activity of acromegalic disease.