



Randomised, double-blind, placebo-controlled trial of human recombinant growth hormone in patients with chronic heart failure due to dilated cardiomyopathy.

Osterziel KJ, Strohm O, Schuler J, Friedrich M, Hanlein D, Willenbrock R, Anker SD, Poole-Wilson PA, Ranke MB, Dietz R.

Franz-Volhard-Klinik am Max Delbrück Centrum für Molekulare Medizin, Charité, Humboldt Universität zu Berlin, Germany. osterziel@fvk-berlin.de

BACKGROUND: Some studies have suggested that treatment with recombinant human growth hormone (rhGH) increases left-ventricular mass and improves haemodynamic and functional status in patients with heart failure due to dilated cardiomyopathy. We did a double-blind, randomised, placebo-controlled study of rhGH in patients with chronic heart failure due to dilated cardiomyopathy. **METHODS:** 50 patients (43 men) were randomly allocated treatment with subcutaneous rhGH (2 IU daily) or placebo for a minimum of 12 weeks. The primary endpoints were the effects on left-ventricular mass and systolic wall stress. The secondary endpoints were the effects on left-ventricular size and function. Data were analysed by intention to treat. **FINDINGS:** Patients in the rhGH group had an increase in left-ventricular mass compared with those in the placebo group (27%, $p=0.0001$). There was no significant difference in left-ventricular systolic wall stress, mean blood pressure, or systemic vascular resistance between the two groups. New York Heart Association functional class, left-ventricular ejection fraction, and distance on the 6 min walking test were unchanged. The change in serum insulin-like growth factor (IGF)-I concentrations (rhGH 77 ng/mL; placebo -19 ng/mL, GH vs placebo $p=0.0001$) was significantly related to the change in left-ventricular mass ($r=0.55$, $p=0.0001$). One patient in the rhGH group was withdrawn at 6 weeks because of worsening heart failure. **INTERPRETATION:** There is a significant increase in left-ventricular mass in patients with dilated cardiomyopathy given rhGH but this is not accompanied by an improvement in clinical status. Changes in left-ventricular mass are related to changes in serum IGF-I concentrations. Whether a longer treatment period would provide clinical benefits and decrease mortality is unknown.