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**Volume 137, Issue 6**, Pages  
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## Endocrine predictors of acute hemodynamic effects of growth hormone in congestive heart failure☆☆☆☆

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Received 15 August 1997; accepted 23 February 1998.

### Abstract

**Background** The aim of our study was to assess whether there could be any clinical and/or endocrine (spontaneous growth hormone [GH] secretion rate, baseline insulin-like growth factor-1 [IGF-1]) predictors and/or determinants of the acute effects of continuous intravenous infusion of recombinant human GH on hemodynamic parameters in 12 patients with dilated cardiomyopathy and congestive heart failure (CHF). **Methods And Results** The study involved 12 male patients with chronic CHF (ischemic in 8 patients and idiopathic in 4). Ten patients were in New York Heart Association functional class III or IV and 2 in class II. The first 24 hours were considered the control period; in fact, during the following 24 hours, all the patients underwent intravenous constant pump infusion of recombinant human GH. Blood samples for GH assay were taken every 20 minutes during the first night of the study (from 10 PM to 6 AM). Moreover, blood samples for GH assay were also taken during exogenous GH infusion. Blood samples for IGF-1 assays were taken at 8 AM of each of the 3 days of the study. Pulmonary artery pressure (PAP) and capillary wedge (PCWP) pressure, cardiac index, and arterial blood pressure were measured 30 minutes after right heart catheterization (baseline 1), at the end of the control period (baseline 2), and every 4 hours during GH infusion. A negative correlation has been found between mean nocturnal GH levels and baseline IGF-1 levels ( $r = -0.47$ ,  $P = .124$ ) and between mean nocturnal GH levels and both postinfusion absolute ( $r = -0.67$ ,  $P < .05$ ) and delta (postinfusion-preinfusion) ( $r = -0.58$ ;  $P < .005$ ) IGF-1 levels. No significant correlations have been found between several parameters of liver function (albumin, bilirubin, and pseudocholinesterase) and mean nocturnal GH. However, baseline IGF-1 levels showed a negative significant correlation ( $r = -0.76$ ,  $P < .01$ ) with total bilirubin and a positive correlation ( $r = 0.72$ ,  $P < .01$ ) with pseudocholinesterase. Baseline IGF-1 levels showed a significant negative correlation with baseline mean PAP ( $r = -0.68$ ,  $P < .05$ ) and PCWP ( $r = -0.70$ ,  $P < .05$ ) and a positive correlation with baseline cardiac index ( $r = 0.71$ ,  $P < .05$ ). Baseline IGF-1 levels also showed a significant negative correlation with absolute mean PAP ( $r = -0.63$ ,  $P < .05$ ) and mean PCWP ( $r = -0.67$ ,  $P < .05$ ) after GH infusion. After GH infusion, IGF-1 levels also negatively correlated with post-GH infusion mean PAP ( $r = -0.50$ ,  $P = .09$ ) and mean PCWP ( $r = -0.66$ ,  $P < .05$ ). The positive correlation between either baseline or postinfusion IGF-1 and the postinfusion cardiac index ( $r = 0.40$  and  $0.43$ , respectively) did not reach statistical significance. **Conclusions** GH has acute functional effects on the heart in patients with CHF, including both an increase in myocardial contractility and a decrease in vascular resistances, and among patients with CHF, those with low baseline IGF-1 are likely to have fewer beneficial effects from GH

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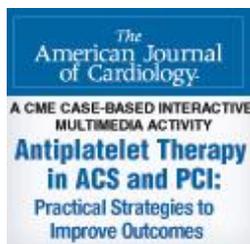
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— Supported in part by the Centro Studi e Ricerche di Neuroendocrinologia, Brescia, and funded by a current research grant of "Salvatore Maugeri" Foundation.

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— 0002-8703/99/\$8.00 + 0 4/1/93849

PII: S0002-8703(99)70359-5

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