

Long-term echocardiographic and cardioscintigraphic effects of growth hormone treatment in adults with Prader-Willi syndrome

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Context: In Prader-Willi syndrome (PWS), an altered GH secretion has been related to reduced cardiac mass and systolic function compared to controls.

Objective: The objective was to evaluate the cardiovascular response to a 4-year GH therapy in adult PWS patients.

Study Participants: Study participants were nine severely obese PWS adults (three females, six males) and 13 age-, gender-, and body mass index-matched obese controls.

Methods: In an open-label prospective study, assessment of endocrine parameters and metabolic outcome, whole-body and abdominal fat scans, echocardiography, and radionuclide angiography in unstimulated and dobutamine-stimulated conditions were conducted at baseline and after 1 and 4 years of GH treatment.

Results: GH treatment increased IGF-1 ($P < .0001$), decreased C-reactive protein levels ($P < .05$), improved visceral fat mass ($P < .05$), and achieved near-significant changes of fat and fat-free body mass in PWS patients. Left ventricle mass indexed by fat mass increased significantly after 1 and 4 years of GH therapy ($P < .05$) without evident abnormalities of diastolic function, while a trend toward a reduction of the ejection fraction was documented by echocardiography ($P = .054$). Radionuclide angiography revealed stable values throughout the study of both the left and right ventricle ejection fractions, although this was accompanied by a statistically nonsignificant reduction of the left ventricle filling rate. A positive association between lean body mass and left ventricle ejection fraction was evident during the study ($P < .05$).

Conclusions: GH therapy increased the cardiac mass of PWS adults without causing overt abnormalities of systolic and diastolic function. Although the association between lean mass and left ventricle ejection fraction during GH therapy corroborates a favorable systemic outcome of long-term GH treatment in adults with PWS, subtle longitudinal modifications of functional parameters advocate appropriate cardiac monitoring in the long-term therapeutic strategy for PWS.

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