

Proteomic analysis of serum from patients with acromegaly.

Shigeru Okada^{1,2}, Sudha Sankaran¹, Stephanie Keeton¹, Pamela U Freda³, Jens.O.L Jørgensen⁴, Peter J Trainer⁵, John J Kopchick^{1,2} Edison Biotechnology Institute¹, Dept of Biomed Sci, Coll of Osteopathic Med, Ohio Univ, Athens, OH², Columbia Univ, Coll of P & S, New York, NY³, Aarhus Univ. Hosp, Aarhus, Denmark⁴, Dept of Endocrinology, Christie Hosp, Manchester, UK⁵

Acromegaly is a hormonal disorder resulting in excessive levels of growth hormone (GH) usually due to a pituitary adenoma. It commonly affects middle-aged adults and is associated with increased morbidity and mortality. Once recognized, acromegaly is treatable with surgery and/or medical therapy. Currently, the effect and success of treatment are assessed by a reduction in serum GH and/or insulin-like growth factor I (IGF-I). However, the relationship between the concentration of serum GH, IGF-I and clinical disease activity is not linear. Therefore, other serum markers that directly correlate GH levels and the disease phenotype are needed.

We hypothesized that there are serum proteins indicative of the activity of GH-axis in addition to IGF-I. We set out to determine the serum proteome of 34 patients with acromegaly before and after surgery or medical treatment. When serum proteins smaller than 60kD were quantified using 2D-gel electrophoresis and photometry, 30 to 50 proteins were found to be up regulated and 30 to 40 proteins down regulated by more than 2- fold before and after surgical treatment. Among these, 13 of the increased and 22 of the decreased proteins were common in all patients. When patients were treated with the GH-antagonist, Pegvisomant, 20 proteins increased and 29 proteins decreased by at least 2-fold. 9 of the proteins that increased and 13 that decreased were found to be common between surgical and pharmacological interventions. The identification of these proteins is in progress. Together, these results indicate that serum proteins other than IGF-I may be utilized to assess disease activity in acromegaly.

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