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50 Years Ago in *THE JOURNAL OF PEDIATRICS*

Change in Growth Hormone with Obesity: More Consequence Than Cause, Although Questions Remain

Carnelutti M, del Guercio MJ, Chiumello G. Influence of growth hormone on the pathogenesis of obesity in children. *J Pediatr* 1970;77:285-93.

Following a report in 1884 of an adult with features of acromegaly and an enlarged pituitary postmortem, efforts to characterize pituitary function intensified. Understanding the effects of growth hormone secretion and its regulation have proven to be a challenging example. By the mid-20th century, investigators began to detail effects of growth hormone on the metabolism of glucose, protein, and lipids as well as on linear growth.¹

Interested in the pathogenesis of obesity and the frequency of concurrent diabetes between adults and children, Carnelutti et al conducted a series of investigations into glucose tolerance and pancreatic beta-cell function among children with healthy weight and obesity. After consistently identifying increased serum insulin levels within a cohort of children with obesity, they investigated the potential causal role of growth hormone. They measured stimulated growth hormone levels in response to insulin-induced hypoglycemia and to arginine infusion among 27 children with normal glucose tolerance testing. Relative to children of healthy weight, each child with obesity exhibited reduced growth hormone secretion on one or both of the stimulated tests. Uncertain whether this impaired growth hormone secretion reflected a cause or consequence for obesity, they recognized the importance of reassessing growth hormone secretion following normalization of body weight.

Fifty years later, observations of impaired stimulated growth hormone release among individuals with obesity remain, as do questions about this finding's significance. Due to frequent reversal of low stimulated growth hormone levels with weight loss, many consider low growth hormone status in obesity a functional condition resultant from the obesity and distinct from growth hormone deficiency.² Accordingly, treatment with recombinant human growth hormone does not fall within standard-of-care treatment for obesity. With improvements in body composition and adiposity seen among individuals with obesity in the context of Prader-Willi syndrome, however, interest in the potential role for recombinant human growth hormone in treating obesity and mitigating cardiovascular risk continues with ongoing clinical trials.

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