

Effect of somatostatin infusion on peptide YY secretion: studies in the acute and recovery phase of anorexia nervosa and in obesity

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Objective: Changes in many gastrointestinal peptides, including the anorexigenic peptide YY (PYY), which is produced by L cells, occur in both anorexia nervosa (AN) and obesity (OB). High PYY levels are present in AN, whereas in morbid OB fasting and postprandial PYY secretion is blunted. Somatostatin (somatotropin release-inhibiting factor (SRIF) reportedly inhibits plasma PYY concentrations in animals and healthy humans, but the effect of a SRIF infusion on spontaneous PYY secretion in AN and OB is unknown.

Methods: A total of 18 young women, seven with acute AN (A-AN), four with AN in the recovery phase (R-AN), and seven with morbid OB, were studied. All subjects underwent an infusion of SRIF (9 mg/kg i.v./h, over 60 min), with blood samples drawn before and at different time intervals after SRIF administration. Plasma PYY levels were measured at each time point.

Results: SRIF significantly inhibited plasma PYY concentrations in R-AN and OB, without affecting PYY titers in A-AN. In OB, the inhibitory effect of SRIF also persisted at 90 min. Withdrawal of SRIF infusion in R-AN resulted in a prompt restoration of basal plasma PYY levels, whereas termination of SRIF infusion in OB was followed by a slower increase of PYY titers toward baseline levels. After infusion, PYY D area under the curve (Δ AUC) in R-AN was significantly higher than those in A-AN and OB patients. A significant difference in PYY Δ AUC between A-AN and OB was present.

Conclusions: These results suggest the existence of a hypo- and hyper-sensitivity of L cells to the inhibitory effect of SRIF in A-AN and OB respectively.

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