Preserved inhibitory effect of recurrent hypoglycaemia on the male gonadotrophic axis

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OBJECTIVE: Hypoglycaemia-induced decreases in male LH and testosterone concentrations are possibly mediated by activation of the hypothalamus-pituitary-adrenal (HPA) axis or by an increase in PRL. As counterregulatory stress hormone release is attenuated during recurrent hypoglycaemia, we questioned whether the gonadotrophic axis and PRL adapt similarly. DESIGN: We performed two consecutive hypoglycaemic clamps on day 1 and one clamp on the following day in 15 healthy men. Blood concentrations of gonadotrophins, PRL, testosterone, ACTH and cortisol were measured during the first and the third clamp, taking place at the same time of day. RESULTS: During hypoglycaemia, serum concentrations of LH and testosterone decreased (P < 0.003 for both), PRL, ACTH and cortisol increased (P < 0.001), and FSH remained unchanged (P = 0.90). The hypoglycaemia-induced decreases in LH and testosterone concentrations were similar during the first and the last clamp (P > 0.28 for both) whereas the increase in PRL, ACTH and cortisol was markedly attenuated during the third clamp (P < 0.001). CONCLUSIONS: LH and testosterone responses do not adapt to recurrent hypoglycaemia, whereas the increase in PRL is attenuated, indicating adaptation. Considering the marked decrease in the responses of PRL and the HPA axis after antecedent hypoglycaemia, the data suggest that the hypoglycaemia-induced decreases in LH and testosterone concentrations, not adapting to recurrent hypoglycaemia, are mediated independently, probably by blood glucose itself.

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