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JOURNAL ARTICLE

Appraising the instantaneous secretory rates of luteinizing hormone and testosterone in response to selective mu opiate receptor blockade in late pubertal boys

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The pulsatile properties of gonadotropin and testosterone release were examined before and after chronic mu opiate receptor blockade with naltrexone, 50 mg every other day, in four normal boys in late puberty (ages 14 8/12 to 15 1/12 years). The nature of spontaneous secretory events was appraised for immunoactive LH and testosterone in blood withdrawn every 20 minutes for 24 hours, using a novel, discrete deconvolution algorithm to estimate apparent instantaneous secretory rates. The application of this methodology revealed that the frequency of discrete LH instantaneous secretory rates increased after mu opiate receptor blockade (P = 0.011). More strikingly, all parameters of testosterone secretory events responded significantly to mu opiate receptor blockade, including increases in mean estimated secretory rate (+47%, P = 0.02), testosterone pulse frequency (+ 64%, P less than 0.001) and amplitude (+ 20%, P = 0.027). Correspondingly, decreases in testosterone interpulse secretory intervals (-35%, P = 0.001), secretory pulse duration (-19%, P = 0.042) and interpulse valley duration (-35%, P = 0.006) also were noted. There was a prominent diurnal rhythm in testosterone secretion with maximal values in the morning and late evening, and marked reductions in the afternoon, sometimes to prepubertal levels. This variation in the testosterone secretory profile paralleled that of LH. In response to naltrexone, the FSH concentration series showed a significant increase in the mean FSH concentration (+ 18%) P = 0.003) and mean peak amplitude (+ 15%, P = 0.002). These data provide indirect evidence of functional coupling of the opiate system with the hypothalamic GnRH pulse generator.(ABSTRACT TRUNCATED AT 250 WORDS)

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