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JOURNAL ARTICLE

Diurnal rhythm of testosterone and luteinizing hormone in hypogonadal men

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To determine the relationship between increasing luteinizing hormone (LH) production and the diurnal secretion of LH and testosterone (T) in adult men, studies were performed on five men with gonadotropin insufficiency associated with prolactinoma, five eugonadal men, and five men with primary testicular failure. Blood samples were drawn every 10 to 20 minutes for 24 hours beginning at 8:00 to 8:30 AM to evaluate diurnal periodicity. Mean (\pm SEM) LH levels in the three groups were 7.67 \pm 1.46 mIU/ml, 13.9 \pm 3.2 mIU/ml, and 62.3 \pm 14.4 mIU/ml, respectively, and mean serum T levels were 8.05 \pm 1.49 nmol/L, 13.9 \pm 3.5 nmol/L, and 9.15 \pm 1.3 nmol/L, respectively. Cosinor analysis revealed that each hyperprolactinemic man had a T rhythm with a significant 24-hour periodicity; the mean acrophase was at 5:00 AM. Testosterone levels were 35.0 \pm 10.6% less at 4:00 PM than at 8:00 AM. Eugonadal men also demonstrated a significant diurnal T rhythm with an acrophase at 6:00 AM, and T levels were 15.8 \pm 5.3% less at 4:00 PM than at 8:00 AM. By contrast, there was no significant diurnal rhythm in T secretion among the men with testicular failure, although serum T levels were 11.5 \pm 3.7% less at 4:00 PM than at 8:00 AM. For LH, hyperprolactinemic men demonstrated a significant 24-hour rhythm with an acrophase at 1:30 AM, whereas no significant 24-hour periodicity was identified among either eugonadal men or men with testicular failure. (ABSTRACT TRUNCATED AT 250 WORDS)

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