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JOURNAL ARTICLE

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# Elevated levels of inhibin-A and immunoreactive inhibin in aged male Wistar rats with testicular Leydig cell tumor

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This study was undertaken to investigate the endocrine changes that occur in male Tig:Wistar rats with Leydig cell tumors, with special reference to immunoreactive inhibin (ir-inhibin) and its dimeric forms. Adult male rats from 2 to 28 months of age were used. Blood

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samples were taken to measure plasma concentrations of ir-inhibin, inhibin-A, inhibin-B, 17betaestradiol (E2), testosterone, luteinizing hormone (LH), and follicle-stimulating hormone (FSH). Inhibin bioactivity in both peripheral plasma and testicular extracts was also measured. Rats aged 18 months and older had testicular Leydig cell tumor. Testicular tissue sections from 27-month-old rats examined immunohistochemically showed strong positive staining for all 3 inhibin subunits, in particular inhibin alpha and betaA subunits, in the tumor cells. Plasma concentrations of ir-inhibin began to rise significantly (P < .05) at 18 months of age. High bioactivity of inhibin was detected not only in testicular extracts but also in peripheral plasma of aged rats. Thus, plasma concentrations of bioactive inhibin-A, but not inhibin-B, were significantly elevated with increasing age. The concentrations were significantly higher than those in normal male (P < .01) or normal female (P < .05) rats. Plasma concentrations of E2 were significantly (P < .05) elevated only at 23-24 months of age. A marked reduction (P < .05 to .001) in plasma LH and FSH concentrations was observed at 18 months of age and older. Plasma concentrations of testosterone were highest at 2 months of age and then decreased gradually and significantly (P < .05 to .001) afterward. Significant (P < .05 to .001) positive (testosterone vs LH) and negative (ir-inhibin vs FSH, irinhibin vs LH, and E2 vs FSH) correlations were observed. It is suggested that plasma inhibin-A levels are elevated in male Tig: Wistar rats with Leydig cell tumor, and thus inhibin-A may be used as a specific marker of testicular Leydig cell tumors. The present results also suggest that the age-related decline in plasma gonadotropins and thus testosterone levels in Tig: Wistar rats may be due to the development of tumors of the Leydig cells rather than to aging per se.

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