

TITLE - Effect of X-Irradiation of Testis on Plasma Testosterone
in Normal Male Volunteers

AUTHORS - C. Alvin Paulsen, M.D., Donald L. Gordon, M.D.,
George R. Halling, M.D., Arnold Barr, M.D. and **703958**
Hortense M. Gandy, M.D.

University of Washington School of Medicine, Seattle,
Washington; Cornell University College of Medicine,
New York, New York.

Ten normal, healthy mature young male volunteers were acutely exposed to X-irradiation doses of 15 to 400r. Prior to and following exposure to irradiation, gonadal function was evaluated. Parameters used for assessing possible changes in gonadal function were urinary gonadotropin excretion, peripheral plasma concentration of testosterone, testicular histology, and examination of seminal fluid specimens.

At each irradiation dose level, spermatogenesis was damaged with temporary decrease in sperm count. General gonadotropins as well as urinary FSH excretion increased in nearly all patients studied. Serial testicular biopsy specimens revealed progressive depletion of germinal epithelium in observations made 9 to 92 days following irradiation. In contrast to germinal epithelium damage, Leydig cell function remained intact. Peripheral plasma concentration of testosterone was measured 4, 24, and 72 hours and 2, 4, 8, 16 and 24 weeks after irradiation exposure. Testosterone concentration ranged from 0.30 to 1.26 $\mu\text{g/ml}$ of plasma. Variation in plasma concentration of testosterone was not significantly different from the day to day fluctuation observed in normal untreated males. Consonant with this was the observation that urinary LH remained normal.

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C ALVIN PAULSEN

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