

SUMMARY FACTSHEET HUMAN EXPERIMENTATION - SFS2.002

704273

Project Category: Effects of Radiation on the Human Testes

Funding Source(s): AEC/ERDA

Institution(s): University of Washington

Principal Investigator(s): C. Alvin Paulsen

Objective(s) of Project: 1) To relate radiation dosage to changes in gonadal function, 2) to utilize the radiation gonadal changes as means for studying pituitary-testis interrelationships, 3) to explore therapeutic and medical protective measures with respect to gonadal irradiation, 4) to explore our current concepts concerning radiation dosage expressed in physical terms and their relation to biologic effects.

Short Description: During the period June 1, 1963 to February 1, 1973, 64 volunteers at the Washington State Prison were irradiated by 250 kvp X-rays. After appropriate baseline studies were performed, subjects received from 7.5 R to 400 R x-ray irradiation or sham irradiation to the testis only. Testicular biopsies were performed prior to and up to 6 years post-irradiation to assess changes in the germinal epithelium. Seminal fluid specimens were obtained at two-week intervals throughout the study and were analyzed for morphologic changes and changes in total number of sperm. Urine specimens were obtained monthly for evaluation of hormonal changes. Later, when the techniques were available, serum LH was measured by radioimmunoassay. Studies of ultrastructure changes in testis tissue were performed using electron microscopy. Subjects were followed until hormonal values returned to normal levels and until sperm counts returned to normal ranges. Vasectomies were performed prior to discharge from the study to eliminate the possibility of defective offspring. Only individuals desiring vasectomy were accepted for the study; but in several instances the volunteers changed their mind and did not desire a vasectomy at the conclusion of the study. Subjects were informed in detail regarding the study and signed consent forms were obtained from subjects and from spouses if subjects were married. Subjects were prison inmates only, thus eliminating the possibility of conception during the study.

Follow-up Data: Recovery of cell morphology and function were found after a maximum of 501 days. It was concluded that man is very sensitive in regard to temporary sterility, but is very resistant to complete sterility.

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