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JOURNAL ARTICLE

Impaired germ cell development in the testes of immature rats with neonatal hypothyroidism

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The induction of neonatal hypothyroidism from day 1 to day 25 postpartum using 6-propyl-2-thiouracil (PTU) resulted in a 45% and 77% reduction of testis weight on days 20 and 30, respectively, and an increase in Sertoli cell number. The present study evaluated the effect of neonatal hypothyroidism on the developing germ cell population during the first 30 days postnatally. Qualitative and quantitative studies using the optical disector method were undertaken on the testes of control and hypothyroid rats, on days 10, 20, and 30 after birth. Germ cell development was obviously impaired in the hypothyroid rats, as shown by decreased primary spermatocyte and round spermatid numbers in day 20 and day 30 testes, and the persistence of gonocytes on days 10 and 20. These reductions obviously accounted for the reduced testis weight, absolute volume, and diameter of the seminiferous cords/tubules, especially on days 20 and 30. The failure to establish a seminiferous tubule lumen in hypothyroid rats probably reflects decreased fluid production and a functional immaturity of the Sertoli cells. The delay in germ cell maturation and increased degeneration may be because of the immature state of the Sertoli cell or result from the low follicle-stimulating hormone and thyroxine levels known to occur in the hypothyroid rats.

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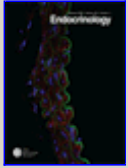
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