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JOURNAL ARTICLE

Neonataly administered diethylstilbestrol retards the development of the blood-testis barrier in the rat

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Newborn rats were treated with 10 microg of diethylstilbestrol (DES) on alternate days from the 2nd to the 12th postnatal day, and the testes were sequentially examined up to 105 days of age by light, electron, and confocal laser microscopy. In control rats, spermatozoa and step 19 spermatids were observed in stage VIII seminiferous tubules at 56 days of age. Spermatogenic cells in DES-treated rats differentiated normally from birth until 21 days of age, after which differentiation continued only to the pachytene-spermatocyte stage. From this age onward, spermatogenic cells older than pachytene spermatocytes were not found until 56 days of age. After this point, the cells resumed differentiation and finally became spermatozoa by 91 days of age; that is, 35 days later than control rats. Electron and confocal laser microscopy showed that in the normal rat, the formation of the ectoplasmic specialization between adjoining Sertoli cells was observed as early as 20 days of age. In contrast, the specialization was not formed until 56 days of age in DES-treated rats. Furthermore, the delay in functional maturation of this structure as the blood-testis barrier was confirmed by intercellular tracer experiments. It is clear that neonatal administration of DES delayed the establishment of the blood-testis barrier for 4 weeks. Consequently, during this period, pachytene spermatocytes were exfoliated from the seminiferous epithelium without completion of meiosis.

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