

The effects of Human Chorionic Gonadotropin on germ cell maturation and testosterone secretion in neonatal mouse testis

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Abstract

Introduction: Human chorionic gonadotropin (hCG) as an LH agonist affects spermatogenesis and germinal cell numbers, and has extensive usages in infertility treatments. The aim of this study was to determine the effects of varied doses of hCG on germinal cell proliferation and androgenic status in mouse model.

Materials & Methods: In this study, hCG dosages of 5 to 50 IU were injected into 18 mice in three experimental groups and 6 mice served as the control group (Group 1). The mice in groups 2, 3 and 4 received subcutaneous injections of 5, 10 and 50 IU doses of hCG respectively, on days 15 and 25 of their lives. Blood samples were obtained from each mouse on days 28 and 65 for serum measurements of testosterone. One testis of each mouse was harvested for flow cytometric DNA analysis on day 65.

Results: Serum testosterone levels on day 28 were greater in groups 2, 3 and 4 compared to that of the control group. With increasing doses of hCG, the mean testosterone levels increased too and the highest values were observed in group 4. However, serum testosterone levels on day 65 were greatest in group 1 but progressively decreased in groups 2, 3 and 4, lowest in group 4, but there were no significant statistical differences among the groups. Groups 3 and 4 had a significantly reduced mean haploid cell numbers on day 65.

Conclusion: The results of this study showed that testosterone production in neonatal mouse testis increases after hCG injection and there is a linear relationship between serum testosterone and hCG injections. With the passage of time and clearance of hCG, Leydig cell stimulation decreases and subsequently testosterone levels diminish too, especially in mice with highest doses of hCG injections. Therefore, for testosterone production in neonatal mouse testis, continuous stimulation of Leydig cells is essential.

Key Words: HCG, Germinal cells, Apoptosis, Flow cytometry, Testosterone, Testis, Hormone.

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