Journal of Andrology, Vol 8, Issue 5 319-329, Copyright © 1987 by The American Society of Andrology

JOURNAL ARTICLE

Reversibility of long-term effects of GnRH agonist administration on testicular histology and sperm production in the nonhuman primate

G. F. Weinbauer, M. Respondek, H. Themann and E. Nieschlag
Max Planck Clinical Research Unit for Reproductive Medicine, University of Munster, Federal Republic of Germany.

The present investigation evaluates the long-term effects of GnRH agonist treatment on testicular histology, sperm production and the subsequent recovery of these parameters. Four adult rhesus monkeys (M. mulatta) were treated with the GnRH agonist nafarelin (D-Nal(2)6-GnRH), released from i.m.--injected poly-D,L-lactic-co-glycolide microspheres for 20 months. Monthly injection of the GnRH agonist preparation uniformly suppressed serum levels of bioactive LH and testosterone. The size of the testis was reduced to about 30% of pretreatment. Sperm counts were suppressed to azoospermia for a total period of 53 and 77 weeks, respectively, in two monkeys and the other two animals were extremely oligozoospermic. Evaluation of testicular biopsy material after 6, 12 and 20 months of treatment revealed decreased seminiferous tubule diameter, spermatogenic disruption at the level of spermatogonia or spermatocytes, accumulation of lipid droplets and secondary lysosomes in the Sertoli cell cytoplasm, and increased thickness of the tubular wall compared with pretreatment histology. Electron microscopic examination revealed that the increased wall thickness was due to an enlargement of the inner collagen layer. No evidence of fibrosis or calcification could be obtained. Leydig cells were atrophic. Serum hormones, testis size and sperm counts returned to pretreatment values within 5 to 8, 13 to 16, and 18 weeks, respectively, after termination of treatment. Testicular histology, assessed 8 months after cessation of treatment, was indistinguishable from pretreatment. It is concluded that GnRH agonist-containing microspheres are a feasible modality for sustained administration of GnRH agonists and GnRH agonist-induced suppression of pituitary and testicular function is reversible following withdrawal of treatment. Thus, GnRH agonists may have a potential for regulation of male fertility and, presumably, also for treatment of precocious puberty.

THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM HOME

P. P. Feuillan, J. V. Jones, K. M. Barnes, K. Oerter-Klein, and G. B. Cutler Jr.
Boys with Precocious Puberty Due to Hypothalamic Hamartoma: Reproductive Axis after Discontinuation of Gonadotropin-Releasing Hormone Analog Therapy
J. Clin. Endocrinol. Metab., November 1, 2000; 85(11): 4036 - 4038.
[Abstract] [Full Text]

HUMAN REPRODUCTION HOME

S. Schlatt, G. Rosiepen, G.F. Weinbauer, C. Rolf, P.F. Brook, and E. Nieschlag
Germ cell transfer into rat, bovine, monkey and human testes
Hum. Reprod., January 1, 1999; 14(1): 144 - 150.
[Abstract] [Full Text] [PDF]