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## JOURNAL ARTICLE

# Suppressive effects of chronic hyperprolactinemia on penile erection and yawning following administration of apomorphine to pituitary-transplanted rats

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Recent studies showed in vivo and in vitro that acutely introduced prolactin (PRL) excess was capable of diminishing penile erectile function independently of the LH-testosterone (T) dynamics. In the present investigation, we examined if such independent suppressive effects can be demonstrated in the pituitary-transplant rat model with chronically elevated serum PRL. We also compared the effects of pituitary transplantation and castration on the level of erectile activity. Rats were made hyperprolactinemic by homologous transplantation of three anterior pituitaries underneath the kidney capsules, with the eutopic pituitaries left in situ. Before and 3, 5, and 8 weeks after transplant or sham surgeries, 80 micrograms/kg s.c. injection of apomorphine was given as an inducer of erection. This was followed by 30-minute observation periods during which the numbers of erections and yawning were recorded. Similar experiments were also performed with castrated rats without transplanted pituitaries. In the transplanted rats plasma PRL was markedly elevated (51.4 +/- 3.7 ng/ml) and was significantly ( $P < 0.001$ ) higher than the values in the sham group (6.0 +/- 2.7 ng/ml). In contrast, plasma T was not different ( $P > 0.05$ ) between the two groups. The castrated rats showed very low plasma T (0.17 +/- 0.01 ng/ml,  $P < 0.05$  compared to the sham group) and normal PRL ( $P > 0.05$ ). The numbers of both erection and yawning were significantly ( $P < 0.05-0.01$ ) less in the transplant than in the sham group 8 weeks after surgeries. Castrated rats showed a significant reduction ( $P < 0.05$ ) only in the numbers of erection. These results indicated that the pituitary transplantation with chronic excess of PRL and castration with T deficiency caused roughly comparable degrees of suppression of penile erectile activity through mechanisms presumably independent from one another in the rat.

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