similar to those obtained in the first series. Five blank operation controls gave a CHI of +88% after cold; 4 complete stalk section animals gave a CHI of −17%, whereas 2 rats with incomplete stalk section, subjected to the same period of cold, exhibited a CHI of +133%.

The weights of adrenals and testicles were about normal, showing that the lack of thyrotropic and thyroid response is not due to a general pituitary insufficiency.

Summary. In rats with intact pituitary stalks, exposure to cold stimulates the thyrotropic function of the anterior pituitary and the thyroid gland. After pituitary stalk section, rats at room temperature produce enough thyrotropic hormone to keep the thyroid histologically normal. In rats similarly operated on, but exposed to cold, the thyroid reaction is lacking. It is concluded that the pathways in the pituitary stalk transmit impulses regulating the secretion of thyrotropic hormone in the emergency state of exposure to cold.

10586 P

Effect of Testosterone Propionate on Ovulation and Luteinization in the Rabbit.

LAMAN A. GRAY AND HAMPDEN LAWSON.

From the Departments of Gynecology and Physiology, University of Louisville School of Medicine.

A number of observers have reported a luteinizing action of testosterone propionate on the ovaries of rats and mice. A recent report by Freed, Greenhill and Soskin[1] suggests that small doses cause suppression of follicle formation in mice and rats while large doses cause stimulation. Mazer and Mazer[2] consider duration of treatment the determining factor, short treatment producing stimulation and prolonged treatment depression. In monkeys and in women this hormone seems to have a depressing effect on the ovaries. It seemed of interest to determine therefore whether ovulation in the rabbit in response to pregnancy urine would be influenced by testosterone propionate. The controls have indicated something of the effect of this hormone alone on the rabbit's ovary.

[1] Freed, S. G., Greenhill, J. P., and Soskin, S., PROC. SOC. EXP. BIOL. AND MED., 1938, **39**, 440.

[2] Mazer, M., and Mazer, C., *Endocrinol.*, 1939, **24**, 175.

Twelve adult female virgin rabbits were placed in isolated cages and fed well for 6 weeks. Nine were then given testosterone propionate in oil* intramuscularly in 10 mg doses daily. After 22 days urine from a patient with a normal 5 months' pregnancy was given intravenously. Three days later laparotomy was performed in all 12 rabbits with excision of one ovary and cornu, and the treatment with testosterone continued. Autopsies were performed 15 days after the injection of pregnancy urine. The significant procedures and results are summarized in Table I.

TABLE I.

No. of rabbits	Testosterone Propionate mg daily	Pregnancy Urine (22d day) cc	Laparotomy (25th day)	Autopsy (37th day)
6	10	10	Multiple ovulations	Minute, pale corpora lutea
3	10	0	Small, pale ovaries	Small, pale ovaries
3	0	10	Multiple ovulations	Large yellow corpora lutea

In response to pregnancy urine multiple ovulations occurred in every case, both in the testosterone-treated animals and in the controls (2 to 9 blood points in each case). The size and bluish appearance of the uteri showed such variation as is common in the Friedman test. Microscopic examination of ovaries and uteri also failed to show a significant difference in the treated and untreated groups. The control animals which received testosterone propionate alone showed uniformly small, pale ovaries with small, pale uteri.

At autopsy 15 days after the injection of pregnancy urine the testosterone-treated animals showed uniformly very small, pale corpora lutea in contrast to the untreated animals which showed quite large, yellow corpora lutea. Histologically the corpora of the treated animals appeared to be considerably more degenerated than those of the untreated group, with small, atropic, partially vacuolated cells. In this short series no marked effect was seen on the ovaries of the animals receiving testosterone alone.

These data show that testosterone propionate in daily doses of 10 mg for a period of 22 to 37 days is without marked stimulating action on the rabbit's ovary; it does not prevent ovulation from the pregnancy urine anterior pituitary-like hormone or the formation of young corpora lutea. The data suggest, however, that in these dosages testosterone may accelerate degeneration of the corpora.

* For a generous supply of testosterone propionate we are indebted to Dr. R. MacBrayer of the Ciba Pharmaceutical Company.

Makepiece, Weinstein and Friedman[3] report that progestin inhibits ovulation in rabbits after mating, but does not prevent ovulation from the anterior pituitary-like factors of pregnancy-urine. In view of the similarity of action of progesterone and testosterone on the uterus it would be of interest to know if testosterone prevents post-coitus ovulation in the rabbit.

Our data on degeneration of the corpora lutea under testosterone confirm the findings of Courrier and Gros[5] who found that if the rabbit is injected with 10 mg of the propionate for the first 8 days of gestation, nidation does not occur and the corpora lutea rapidly degenerate, becoming small, pale and deep in the ovary. This action may explain the abortifacient effect of the male hormone in rabbits reported by Skowron.[4]

These findings on degeneration of the corpus luteum, if corroborated in the human, might have some clinical application. Many cases of abnormal uterine bleeding are associated with a secretory endometrium; some have been described as "irregular ripening" or "irregular shedding." In addition there are corpus luteum cysts which may be determined by physical examination and biopsy of the endometrium. It seems possible that testosterone propionate, if it does not harmfully depress the human ovary, may be of value in such cases by causing degeneration of the corpus luteum.

Summary. Testosterone propionate in daily doses of 10 mg over a period of 22 days did not prevent ovulation in the rabbit in response to human pregnancy urine. Under continued testosterone treatment degeneration of the newly-formed corpora lutea was accelerated.

---

3 Makepiece, A. W., Weinstein, G. L., and Friedman, M. H., *Am. J. Physiol.*, 1937, **119**, 512.

4 Skowron, S., *Comp. rend. Soc. de biol.*, 1935, **119**, 431.

5 Courrier, R., and Gros, G., *Comp. rend. Soc. de biol.*, 1938, **127**, 921.