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Effect of Small Doses of Testosterone Propionate on the Testis.*

H. S. RUBINSTEIN AND A. A. KURLAND.

From the Research Laboratory, Surgical Division, Sinai Hospital, Baltimore, Md.

Practically all reports concerning the effect of testosterone propionate on the testis stress the depressing effect of this hormone.[1, 2, 3] Biddolph,[4] using doses as small as 2 γ daily in animals treated from birth has, however, reported that the testes of his treated animals were practically unaffected. Since this author did not simultaneously publish any data concerning the accessory sex organs of his treated group it is conceivable that the dose which he used was so small that it not only failed to affect the testes but was also devoid of any androgenic effect. For this reason the following study was undertaken.

Thirty-six male albino rats *(Mus norvegicus,* var. *albus)* of Wistar Institute strain were divided into 2 groups consisting of 16 test animals and 20 littermate brother controls respectively. The test animals were given daily subcutaneous injections of 10 γ of testosterone propionate in sesame oil (Perandren) for 10 days beginning on the 22nd day of life. Except for these injections all animals were similarly treated, being fed on a diet of Purina dog chow daily and green vegetables twice weekly. Water was constantly present. The controls received no injections, since the solvent used (sesame oil) has been shown to have no sex-stimulating qualities.[5] The animals were weighed before the first injection and at the time of sacrifice which was carried out by carotid incision under ether anesthesia at 32 days of age. Testes devoid of epididymides and seminal vesicles were excised, weighed, fixed in Bouin's solution and stained by haemotoxylin and eosin for microscopic study. The epididymides were excised and similarly prepared for microscopic study. This was done because it had previously been noted that the epididymis through its tubular contents

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1 Moore, C. L., and Price, D., *Anat. Rec.*, 1938, **71**, 59.

2 Korenchevsky, V., and Hall, K., *Brit. Med. J.*, 1939, **1**, 4.

3 Korenchevsky, V., Dennison, M., and Hall, K., *Biochem. J.*, 1937, **31**, 1434.

4 Biddolph, C., *Anat. Rec.*, 1939, **73**, 447.

5 Stone, C. P., *J. Comp. Psychol.*, 1938, **25**, 445.

may serve as an index of testicular activity.[6] The data for each group were massed and analyzed statistically by Fisher's method.[7] A P less than 0.05 was held as the criterion for probable significance of any difference observed between the test and control groups.

Results. Neither initial nor final body weights of the test group (32.1 g and 73.8 g respectively) showed any significant difference from the corresponding control weights (30.9 g and 70.8 g respectively).

The seminal vesicles of the treated animals averaged 33.5 mg and were significantly heavier than the corresponding mean of 22.5 mg for the controls (P was less than 0.01). The weight of the testes of the treated group averaged 546 mg as compared to a mean of 563 mg for the controls. The difference of 17 mg was only a 3% difference and was statistically insignificant (P was greater than 0.1).

Microscopically, the testes of all animals were normal. Spermatogenesis was incomplete in both treated and control groups. The epididymides of the treated group, however, contained numerous actively mitotic immature spermatocytes within their tubules. In the normals, this was only an occasional finding.

Discussion. From this study it may be seen that an androgenically potent dose of testosterone propionate as judged by its stimulating effect upon the seminal vesicles, has spared the testis the depression heretofore described. Biddolph[4] has also observed a practically negligible depression with 2 γ doses administered daily from birth to 31 days of age. From his report, however, one was at a loss to know whether his dosage was androgenically potent otherwise. The presence of immature spermatozoal forms in the tubules of the epididymis indicates that testosterone propionate stimulates proliferation of the germinal epithelium without hastening maturation. In these respects it acts like the gonadotropic hormones.[6] It differs from the gonadotropins in that it fails to stimulate the interstitial tissue.

Conclusions. Testosterone propionate injected subcutaneously in 10 γ doses daily for 10 days to albino rats from 22 to 32 days proved to be androgenically potent causing a "probably significant" enlargement of the seminal vesicles. The testes, however, were neither depressed in weight nor were their histological pictures altered. Proliferation of the germinal epithelium was hastened.

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[6] Rubinstein, H. S., *Endocrinology*, 1938, **23**, 171.

[7] Fisher, R. A., *Statistical Methods for Research Workers*, Oliver and Boyd, London, 1936.