mals; however, in 3 cases no cause other than the presence of the obstruction could be demonstrated at autopsy.

In comparing this experiment with the high obstruction previously described,[1] the length of life is considerably shorter in this series, the blood chemistry shows relatively slight changes, and the obstructed bowel is more markedly distended in the terminal portion. The length of life is approximately the same as observed in animals with ordinary obstruction at this level without short-circuiting the 3 secretions.[2] The relatively slight changes in the blood chemistry agree with other observations on animals with ordinary low obstruction.[2]

From these observations we feel that death in low obstruction cannot be explained primarily on the basis of loss of digestive secretion, and if death in this type of obstruction is due to the elaboration and absorption of a toxic substance in the obstructed bowel, the presence of the biliary, pancreatic, and duodenal secretions is not necessary for this process to occur and to cause its usual fatal outcome.

## 5902

## The Absence of Gonad-Stimulating Hormone in the Urine and Blood of Patients with Pituitary Tumors.

JAMES W. WATTS. (Introduced by H. B. van Dyke.)

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The gonad-stimulating effects of anterior pituitary implants were demonstrated independently by Smith[1] and by Zondek and Aschheim.[2] This was soon followed by the discovery of Zondek and Aschheim[3] of a gonad-stimulating hormone in the urine of pregnancy. It was thought that a similar substance might also be present in the urine or blood of acromegalics. Probstner[4] includes 2 acromegalics in a series of obstetrical and gynecological patients on whom he made the Aschheim-Zondek test, and simply remarks that both gave a negative reaction.

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[2] Elman, R., and Hartmann, A. F., *Surg., Gynecol., and Obstetrics,* 1931, **53**, 307.

[1] Smith, P. C., PROC. SOC. EXP. BIOL. AND MED., 1926, **24**, 131.

[2] Zondek, B., and Aschheim, S., *Arch. f. Gynäk.*, 1927, **130**, 1.

[3] Zondek, B., and Aschheim, S., *Klin. Woch.*, 1928, **7**, 831.

[4] Probstner, A. v., *Endokrinologie,* 1930, **7**, 161.

Experiments were made in the attempt to demonstrate the gonad-stimulating hormone in the urine and blood of patients with pituitary tumors. The 14 patients, of whom 7 were men and 7 women, may be divided into 4 groups. The first 2 (Cases I-VI) are characterized by typical acromegalic features, hands and feet, enlargement of the sella turcica, and tufting of the distal phalanges. The first group (Cases I-III) has signs of activity such as profuse perspiration or marked weakness, and normal or elevated basal metabolic rates. The second (Cases IV-VI) has no such evidence of activity and definitely lowered basal metabolism. The third group (Cases VII-XI) is characterized by the absence of acromegaly, and the presence of amenorrhea or impotence, visual disturbances, enlargement of the sella turcica and low basal metabolism. The last group (Cases XII-XIV) consists of "suspects" who have headaches and changes in the sella turcica.

The urine was preserved with 0.2% metacresol and kept at ice-box temperature and the blood was kept at the same temperature but no preservative was used. Rats were given 4 daily injections of ¼ the amount of each total dose beginning on the twenty-first day and sacrificed on the twenty-sixth day, 120 hours after the first injection, following the method of assay of Wallen-Lawrence and van Dyke.[5] Quantitative evaluation of the potency of the material tested was based on the weight of both ovaries free from bursae and fallopian tubes. These workers found that the mean weight of the ovaries in a series of controls was 16.14 mg. and calculated the upper limit of normal to be 26.3 mg. When male rats were used the seminal vesicles were weighed; in their controls the mean weight was 9.24 mg. and the upper limit of normal calculated to be 14.9 mg. In my series of controls the mean weight of the ovaries was 13.7 mg. and of the seminal vesicles 7.5 mg. Therefore, ovarian weights equal to or exceeding 26.3 mg. and seminal-vesicle weights equal to or exceeding 14.9 mg. were considered significantly enlarged. The results of the assays of 100 rats are given in the accompanying tables. As can be seen none of the mean weights of the ovaries or seminal vesicles exceeds the upper limits of normal. Although not shown in the tables, the weight of no single pair of ovaries or seminal vesicles was as great as 26.3 mg. or 14.9 mg., respectively. In no case were ruptured Graffian follicles, corpora lutea, oestrous smears or vaginal canalization present. Uterine hypertrophy was present in one rat killed on the thirty-third day (Table I, Case VI). The urine of cases III and V killed the rats in from 12 to 48 hours. The

[5] Wallen-Lawrence, Z., and van Dyke, H. B., *J. Pharm. Exp. Ther.*, 1931, **43**, 93.

urine of Case III contained many colon bacilli; it was extracted with ether; the alcoholic precipitate (75%) from the ether-extracted urine was then injected in an amount equivalent to 24 cc. In

TABLE I.
*Cases of Acromegaly.*

| Case | Material Injected | Total Dose | No. of Females | Mean Wgt. of Ovaries | No. of Males | Mean Wgt. of S. V. | Remarks |
|---|---|---|---|---|---|---|---|
| | | cc. | | mg. | | mg. | |
| I (F) | Urine | 1.0 | 1 | 10.4 | — | — | Subcut. |
| ,, | ,, | 4.0 | 1 | 10.4 | 4 | 6.4 | ,, |
| ,, | Serum | 3.0 | 1 | 13.7 | — | — | Intraperit. |
| ,, | ,, | 6.0 | 2 | 17.0 | — | — | ,, |
| II (M) | Urine | 4.0 | 2 | 12.1 | 2 | 9.7 | Subcut. |
| ,, | ,, | 14.0 | 1 | 11.6* | 3 | 9.8* | Intraperit. |
| ,, | Defibrinated Blood | 4.0 | 1 | 15.7 | 2 | 11.9 | ,, |
| III (M) | Urine | 24.0 | 2 | 14.4 | 4 | 10.2* | Intraperit. |
| ,, | Defibrinated Blood | 4.0 | 2 | 14.3 | 1 | 12.2 | ,, |
| IV (F) | Urine | 4.0 | 2 | 11.7 | 2 | 6.6 | Subcut. |
| ,, (F) | ,, | 12.0 | 2 | 10.1* | 2 | 6.1* | Intraperit. |
| ,, | Defibrinated Blood | 3.0 | 2 | 18.4 | — | — | ,, |
| VI (M) | Urine | 1.0 | 1 | 13.2 | — | — | Subcut. |
| ,, | ,, | 4.0 | 2 | 14.9 | 2 | 6.6 | ,, |
| ,, | ,, | 14.0 | 1 | 20.8* | 2 | 7.6* | Intraperit. |
| ,, | Defibrinated Blood | 3.0 | 2 | 16.1 | 1 | 8.0 | ,, |

* These rats were given 1 cc. of urine subcutaneously from the twenty-first to the twenty-third day and the remainder intraperitoneally from the twenty-sixth to the thirty-first day and killed on the thirty-third day.

TABLE II.
*Cases of Chromophobe Adenoma.*

| Case | Material Injected | Total Dose | No. of Females | Mean Wgt. of Ovaries | No. of Males | Mean Wgt. of S. V. | Remarks |
|---|---|---|---|---|---|---|---|
| | | cc. | | mg. | | mg. | |
| VII (F) | Urine | 4.0 | 3 | 16.3 | 1 | 8.6 | Subcut. |
| VIII (F) | Urine | 1.0 | 5 | 15.1 | 1 | 8.4 | Subcut. |
| ,, | ,, | 4.0 | 2 | 16.1 | 4 | 7.7 | ,, |
| ,, | Serum | 5.0 | 2 | 18.5 | — | — | Intraperit. |
| ,, | ,, | 7.5 | 2 | 15.4 | — | — | ,, |
| IX (F) | Defibrinated Blood | 4.5 | 2 | 17.8 | 2 | 10.7 | Intraperit. |
| ,, | Serum | 4.0 | 2 | 16.0 | — | — | ,, |
| X (M) | Urine | 8.0 | 1 | 11.6 | 1 | 8.3 | Intraperit. |
| XI (F) | Urine | 4.0 | 3 | 16.1 | 1 | 8.7 | Subcut. |
| | ,, | 10.0 | 1 | 16.0 | 3 | 8.1 | Intraperit. |

TABLE III.
*Cases of Possible Pituitary Adenoma.*

| Case | Material Injected | Total Dose | No. of Females | Mean Wgt. of Ovaries | No. of Males | Mean Wgt. of S. V. | Remarks |
|---|---|---|---|---|---|---|---|
| | | cc. | | mg. | | mg. | |
| XII (M) | Urine | 4.0 | 2 | 9.4 | 2 | 6.6 | Subcut. |
| " | " | 12.0 | — | — | 4 | 9.0* | Intraperit. |
| XIII (M) | Urine | 4.0 | 2 | 16.8 | 2 | 8.2 | Subcut. |
| | " | 12.0 | 1 | 15.2* | 1 | 13.6* | Intraperit. |

* These rats were given 1 cc. of urine subcutaneously from the twenty-first to the twenty-third day and the remainder intraperitoneally from the twenty-sixth to the thirty-first day and killed on the thirty-third day.

all other cases undiluted urine was used. The urine of Case XIV was injected subcutaneously into 7 rats; each of 4 injected with 1 cc. and one injected with ¼ cc. died in 12 hours. Two others given ¼ cc. appeared sick, failed to gain weight, and the site of the infection became indurated and adherent to the underlying muscles. The experiments on urine from Cases V and XIV are, therefore, not included in these tables.

These experiments show that no gonad-stimulating hormone was demonstrated in the urine or blood of patients with pituitary tumors by the injection of as much as 24 cc. of urine or 7.5 cc. of blood serum.

## 5903

## A Bacteriophage Feces Media.

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It became desirable in the course of some investigations to develop a media to determine the relative biological stability of fecal *B. coli* strains to bacteriophage. The relative sensitiveness of the *B. coli* flora can be altered by diet. The isolation of colonies and testing their phage-sensitiveness is too involved for practical purposes. We wished to develop a media on which we could plate our fecal specimens and read directly the percent of *B. coli* flora resistant and susceptible to bacteriophage.

Endo, Eosin Methylene Blue, Conradi-Drigalski and Teagues