

chromocystoscopy showed no excretion of indigo on the right side, and slight bulging of the right ureteral orifice was found to be caused by a small intramural stone. The stone was eliminated by provoked water diuresis and high doses of spasmolytic drugs.

The pain and microscopic hæmaturia disappeared, and another chromocystoscopy showed the indigo appearing at six minutes on both sides. The creatinine clearance was 34 ml. per min., and the blood-non-protein-nitrogen 42 mg. per 100 ml. To discover any remaining stone in the urinary tract, intravenous pyelography was performed. After conjunctival, intradermal, and intravenous tests, 20 ml. of 'Triopac' (200 mg. iodine per ml., in a 32.3% solution) was injected in five minutes. Pale excretion appeared in both kidneys, but no calculus was visible. After the pyelography anuria developed, and the bladder was empty for twenty-four hours. Ample volumes of fluid were given, intravenous procaine infusion was started, and paravertebral procaine block was performed twice a day. On consecutive days urine output was 120, 200, 200, 350, 600, 660, 800, and 600 ml. The blood-non-protein-nitrogen increased gradually to 105 mg. per 100 ml. Five days after pyelography the creatinine clearance was 2 ml. per min. and the specific gravity of the urine did not exceed 1010. Five weeks after pyelography, the blood-non-protein-nitrogen was 34 mg. per 100 ml. and creatinine clearance 35 ml. per min. The specific gravity of the urine varied from 1007 to 1012, and albuminuria was slight. The patient was discharged symptom-free.

We report this case to call attention to the fact that intravenous pyelography may be dangerous in cases of renal disease, even when renal function is relatively good.

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SUBSTANCE MASQUERADING AS ALDOSTERONE

SIR,—In the course of an investigation into the determination of aldosterone we tested the urine of two patients whose adrenal glands and ovaries had been removed on account of mammary cancer and who were maintained on cortisone.

We used the method of Neher and Wettstein¹ (extraction with chloroform at pH 1, paper chromatography in the system of Zaffaroni and in the systems B5 or C of Bush). With the soda-fluorescent reaction we found, much to our surprise, a spot where in normal persons we expected aldosterone. It could be shown that this spot was caused by an unknown

System	Cortisone	Hydrocortisone	Aldosterone	Compound X
Zaffaroni ..	2.44	1	2.44	2.47
Bush-C ..	1.40 ± 0.05	1	1	0.95
Bush-B5 ..	1.52 ± 0.07	1	1.29 ± 0.02	1.18 ± 0.04
E2B ..	1	0.86 ± 0.06	0.71 ± 0.05	1.18 ± 0.08

material (compound X) which behaved in several chromatographic systems like aldosterone, but could be separated from it by chromatography in the system E2B². In the accompanying table some Rf values are summarised (for technical reasons these values are expressed in relation to the Rf of cortisone—or hydrocortisone).

Compound X slightly reduced blue tetrazolium. The ultraviolet absorption spectrum has a maximum at 240m μ ; in concentrated sulphuric acid ultraviolet light was absorbed with a maximum at 280 and 440m μ and a minimum at 230m μ . The biological properties of compound X have not yet been investigated.

Small amounts of compound X were later found in the urine of patients with nephrotic syndrome, parkinsonism, and Sheehan's syndrome. But the largest quantity of this substance was extracted from the urine of a patient erroneously considered to have primary aldosteronism.

The patient was an unmarried woman, aged 25, with lassitude, anorexia, and vomiting. Her blood-pressure was normal. Serum-potassium ranged between 2.5 and 3.8 mEq.

1. Neher, R., Wettstein, A. *J. clin. Invest.* 1956, **35**, 800.
2. Eberlein, W. R., Bongiovanni, A. M., *Arch. Biochem. Biophys.* 1955, **59**, 90.

per litre. In the urine we found on several instances 20–30 μ g. of a substance which we considered identical with aldosterone. It was noted, however, that the soda-fluorescent reaction yielded much higher estimations than staining with blue tetrazolium. At the moment we paid little attention to this detail. On surgical exploration (Prof. J. F. Nuboer), the right adrenal appeared to be larger than the left and was removed. Neither tumour nor cortical hyperplasia was found. Following the operation, there was only slight, if any, clinical improvement.

When some months later the urine of this woman was examined again, we found that it contained normal amounts of aldosterone but a considerable quantity of compound X.

It seems probable that there is a connection between this patient's symptoms and signs and the excretion of compound X. On the other hand, the fact that compound X was found in the urine of adrenalectomised oöphorectomised women maintained on cortisone suggests either an origin outside the adrenal and the ovary or a formation of compound X in the metabolism of cortisone.

The physico-chemical properties of compound X make it possible that it is identical with compound III of Nowaczynski³. But compound III has been reported to promote sodium excretion in adrenalectomised rats and to have no influence on urinary potassium. The patient described above, however, had severe hypokalaemia and no signs of sodium loss.

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INTRARECTAL IMPLANTATION OF THE UTERUS

SIR,—We wonder whether any of your readers have seen or heard of a case like this.

A Bengali Muslim woman, aged 28, was admitted here in severe pain. She said that she had never menstruated normally. She had been married at the age of 9 and had no children. For some years she had had irregular periods of 3–4 days when she had severe lower abdominal pain followed by a menstrual flow per rectum. For 2 months before admission the pain had been worse, and she had noticed a swelling of the lower abdomen.

She had a swelling, about the size of a 16-weeks pregnancy arising from the pelvis. The vagina ended blindly and no cervix could be felt; the vagina was separate from the swelling, which seemed, on rectal examination, to be attached to the anterior wall of the rectum above the examining finger. Next day she menstruated per rectum; the flow seemed normal but lasted only 2 days.

She had a normochromic anaemia, malaria parasites in a blood-smear, albumin and casts in the urine, and a blood-pressure of 190/100 mm. Hg.

At laparotomy six days after admission, the uterus was enlarged. The ovaries lay behind it, adherent to it and to the peritoneum over the sacrum. The lower pole of the uterus was 3 in. distant from the vault of the vagina; it was implanted in the rectum just below the recto-sigmoid junction. The relationship was confirmed by one of us inserting two fingers vaginally while another defined the lower pole of the uterus. The peritoneum was reflected off the upper surface of the bladder in the usual way, over the vault of the vagina instead of the uterus, then over the rest of the pelvis and uterus.

The uterus was separated from the rectum by a circular incision, a gush of gas confirming that the uterus was indeed attached to bowel. The wound was sutured with catgut, the pelvis covered with peritoneum, and the abdomen closed. Postoperative progress was uneventful save for a temperature of 100°F which responded to antimalarials, and a small pelvic hæmatoma which caused no discomfort and soon resolved. The specimen was 9 cm. long and 8 cm. between cornua; there was no cervix, endometrium was scanty, and the surface which had been next to the rectum was covered with bowel mucosa.

3. Nowaczynski, W., Sandor, T., Koiw, E., Genest, J. Meeting of the Endocrine Society. New York, 1957.