The spinal cord was not examined. On a moderate computation there were upwards of a hundred cysts scattered throughout the brain. In other organs four were found in the left ventricle of the heart, in the myocardium; none in the liver or other glands. A dissection of the muscles was not undertaken except for those of the right thigh, where one cyst was seen embedded in fibres of the quadratus, which was the only muscle examined. No cestode was found in the alimentary canal. Few of the cysts showed any signs of calcification. On examination under low magnification the cysts had a defined fibrous capsule with some infiltration by small round cells and surrounded by a zone of increased neuroglial fibre growth with an increase of young glial cells. The neurones in close proximity were seen in varying stages of degeneration, grading into normal cortex. The vascular elements were dilated, but there was no evidence of cellular infiltration of the perivascular sheaths. On section of some of the cysts the scolex and hooklets of the embryo were easily identified.

As the degree of calcification of the cysts is determined by time and other factors, it would be of interest to know if the radiographic films of the skull taken by Dr. Blyth revealed the presence of cysts in the cerebrum.

The few instances of this condition of cysticercosis I found reported in this country all occurred in ex-soldiers or in persons who had resided abroad. The cases recorded by Dr. Blyth and Sir W. P. MacArthur are opportune in illustrating the importance of considering the possibility of cestode infection as a cause of epileptiform attacks (and I would add all cases presenting anomalous signs of cerebral disturbance, from neoplasm to early atypical G.P.I.), particularly as at present so many of our countrymen are on active service in Africa and the East.

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MASSIVE ADRENAL CARCINOMA WITH PSEUDO-HERMAPHRODITISM

BY

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Sex characters are primarily determined by the sex chromosome, but hormonal imbalance can alter the picture profoundly. A large group of cases is known in which changes in the adrenal glands can be demonstrated, presenting the "adreno-genital syndrome." In these cases the female sex characters regress, being replaced by those of the male. The changes are mainly dependent on the age of onset and the pathological character of the causative lesion.

A tentative classification may be made, following Broster and others (1932).

1. Clinical:

- Adrenal pseudo-hermaphroditism (before onset of female sex characters).
- Adrenal virilism (onset after puberty).
- Multiglandular syndrome (Cushing, Achard-Thiers, associated with anterior pituitary changes).

2. Pathological:

- Tumours: adenoma, adenocarcinoma, undifferentiated carcinoma.
- Simple hyperplasia (Vines's demonstration of the selective staining of the cortical cells by Ponceau's fuchsin (Broster and Vines, 1933).

The following is the record of an interesting example of Type A.

Case History

A female child aged 2 years 2 months was admitted to the Loughborough General Hospital, under the care of Mr. A. F. Goode, on September 12, 1940. The mother complained that the child had been fretful, and that its abdomen had been swelling during the past few weeks.

On examination the patient was seen to be a thin, puny, wasted infant. Cardiovascular and respiratory systems were normal. The breasts were minute; there was a growth of hair in the axillae and in the pubic region, of male distribution; the clitoris was enlarged, with a small glans, and the rudiments of a prepuce were visible. An enormous ovoid smooth hard mass in the right side of the abdomen could be felt and pushed forward from the loin. The swelling bulged out the right flank; it extended vertically from the costal margin above to the false pelvis below, and medially beyond the umbilicus. It did not move on respiration, and was dull to percussion. The diagnosis was massive adrenal cortical tumour with pseudo-hermaphroditism. On account of its size it was decided that exploratory approach could only be made transperitoneally.

A laparotomy was done by Mr. Goode on September 13. Through a right paramedian incision a very large tumour of the right adrenal gland was seen perched on top of the right kidney, which appeared normal in size but was depressed down into the right iliac fossa. The growth was ovoid in shape, measured 9 in. vertically by 6 in. across, and its surface was covered by a very vascular capsule, fixed superiorly and posteriorly in the region of the portal fissure and inferior vena cava. There were several enlarged para-aortic glands, and the liver was also slightly enlarged. Removal of the main tumour was not attempted. An enlarged para-aortic gland was taken for section, and the abdomen was closed. The child's general condition rapidly deteriorated, and in spite of anti-shock measures she died next day.

Post-mortem Findings.—The vascular capsule over the tumour of the right adrenal gland was incomplete above, where the growth was attached to the diaphragm and inferior vena cava. Para-aortic glands and glands of the portal fissure were infiltrated. The growth itself was of a greasy yellow appearance, was friable, and had large areas of haemorrhagic necrosis. The left adrenal and both kidneys appeared normal. There were no obvious secondaries in liver or lungs. The uterus was very small and the ovaries were represented by two tiny fibrotic nodules.

A portion of the growth was sent for examination, and Prof. G. Haswell Wilson reported as follows: "A cellular malignant tumour with the characters of a carcinoma of the suprarenal cortex. Details are more distinct in the gland specimen, as the tumour itself is the site of extensive necrosis."

Discussion

The formulae of testosterone and corticosterone, the type substances of the male and cortical hormones respectively, as given by Gaddum (1940) are:

and their similarity is apparent. Also to be noted is their close chemical relation to those other sterones oestradiol and progesterone. Clark (1940) states that corticosterone can indeed be synthesized from testosterone.

A further point of interest arises from Broster's (1941) report of a case of "feminism" in the male; this showed

hypertrophy of the adrenals, a positive Ponceau-fuchsin reaction, and clinical improvement following unilateral adrenalectomy. Sterone excretion was reduced following operation.

Perhaps these intersexual changes may be diagrammatized like this :

♀ + excessive or altered sterone → virilism
♂ + excessive or altered sterone → feminism

thus providing a further example of the bisexual properties of the sex hormones when acting on the different biological soils determined by the sex chromosomes.

My thanks are due to Mr. A. F. Goode, honorary surgeon, Loughborough General Hospital, for permission to publish this case, and to Prof. G. Haswell Wilson, University of Birmingham, for the pathological report.

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Medical Memoranda

Local Chemotherapy as a Curative Measure

The prophylactic value of the sulphonamide group of drugs when applied locally in potentially infected wounds is amply witnessed by the numerous accounts published. My experience in this direction has been small, but I have used local chemotherapy from a curative point of view in wounds already infected.

I first used sulphanilamide locally in two cases of tuberculous infection. One patient, a girl aged 14, exhibited a tuberculous osteitis of the third left metatarsal and a cold abscess on the ulnar border of the right hand. Both these lesions eventually gave rise to ulcers which defied treatment until a paste similar to bipp, but with sulphanilamide 5% in place of bismuth, was tried. The ulcer on the hand cleared up in about fourteen days, but that on the foot, although it became much smaller and cleaner, refused to heal completely, presumably because of the underlying osteitis. The second case was one of tuberculous adenitis, with cold abscess formation. This was opened, curetted, swabbed with 6% iodine, and sewn up. This procedure had proved successful in previous cases, but this one became secondarily infected and broke down. Fomentations were applied, and a surrounding crop of pustular eruptions developed. The whole area was treated with the sulphanilamide-iodoform paste, and it healed completely in seven days.

Following these two cases local chemotherapy was tried on a radical mastectomy wound that had become infected and had broken down, leaving a large suppurating area. The first application was a suspension of sulphanilamide 5% in 1 in 1,000 flavine, but it made very little impression on the infection. Since the predominating organism was a staphylococcus a paste of uleron 5%, with equal parts of zinc oxide and paraffin, was used. This cleaned up the wound sufficiently for a Thiersch graft to be made to close the defect.

A similar paste, with sulphanilamide in place of uleron, has been used on a large number of cases, of which the following are examples:

Case 1.—Infected burn over right eyebrow caused by molten aluminium. This had been treated by various applications for ten to twelve weeks without improvement. Daily dressings with the paste cleared it up in seven days.

Case 2.—A woman presented herself with a peculiar black eschar just above the right knee. This looked like a burn treated with tannic acid, but no history could be elicited. Fomentations were applied, and the eschar separated in fourteen days, leaving an ulcer resembling a syphilitic lesion. The Wassermann reaction was negative. The paste completely cleared up the area in seven days.

Case 3.—A case of osteomyelitis which had been operated upon had been in the wards for some time. The upper part of the wound had healed, but the lower part remained open and freely discharged. The paste cleaned it up, leaving healthy granulation tissue.

Several common lesions and small infected wounds have been successfully treated with the paste, and my colleagues at the hospital have used it on several occasions with equally satisfying results. Herpes vulgaris and impetigo seem to respond particularly well.

Following these cases an emulsion of sulphanilamide 5% in cod-liver oil was made up. This has been used as a routine dressing in the casualty department for the past three months, and no case of infection of primary suture of a wound has occurred. In addition, it is most useful where the cosmetic result is of importance. All wounds or incisions of the face and hands are sutured with gossamer silk and dressed daily with the emulsion. Sutures are removed in four to five days, and the wounds heal with only very faint scars. As a curative application the emulsion has surpassed the paste. An infected finger with necrosis of the phalanges was amputated at the metacarpophalangeal joint. The wound was dressed with glycerin and flavine, and when seen a week later it had broken down in three places, was discharging pus, and showed the sloughing end of an extensor tendon. The slough was removed and the wound treated with eusol dressings for five days. It was then clean, but the three sinuses were as large as ever. Sulphanilamide emulsion was used for the daily dressing, and the wound healed completely in ten days.

Several similar cases of grossly infected wounds have been treated with success. The following facts have emerged: (1) If there is free discharge of pus from the wound the emulsion or the paste is not very effective. If, however, the wound is treated with eusol dressings for a few days and then with the emulsion healing is rapid and permanent. (2) Resistant cases should be submitted to bacteriological examination, and the sulphonamide chosen to suit the infecting organism. (3) Many patients with infected burns have presented themselves. A large number had been treated elsewhere with tannic acid, and had arrived with the tan bathed in pus. In all such cases the burn was cleaned up, the coagulum removed, by eusol dressings if necessary, the surrounding skin painted with 1% gentian violet, and the emulsion applied daily. Healing takes place usually in ten to fourteen days. In no case have toxic symptoms appeared, although in several cases very large areas have been treated. It seems possible that the nature of the preparations used may be responsible for the absence of such manifestations.

The following preparations are in daily use at the hospital:

R Sulphanilamide powder 5%
Zinci oxid. .. .. } aa partes aeq.
Paraffin. liq. (sterile) .. .. }
Fiat pasta.

R Sulphanilamide powder 5%
Iodoform .. .. } aa partes aeq.
Paraffin. liq. (sterile) .. .. }
Fiat pasta.

(This is used chiefly for tuberculosis lesions, though it has been employed instead of bipp in a few cases of osteomyelitis.)

R Sulphanilamide powder .. .. gr. 175
Ol. morrhuae .. .. fl. oz. 4
Acid. oleic. .. .. m 36
Aq. calcis .. .. ad fl. oz. 8
Fiat emulsione.

I am indebted to the pharmacists of the hospital for their willing co-operation in making up the various preparations. I also wish to express my gratitude to Mr. J. Elgood, honorary surgeon to the hospital, for permission to publish these cases.

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Dr. Norman Manson has been appointed warden in succession to Lieut.-Colonel Sir John Strathearn of the St. John Ophthalmic Hospital, Jerusalem, who has resigned owing to ill-health after holding the office of warden for twenty-two years.