cattle was tartar emetic. The Germans introduced "surfen C," which was effective but toxic, and shortly afterwards Walls synthesized the first of the phenanthridinium compounds (Browning *et al.*, 1938), which have since been widely used for the treatment of *T. congolense* and *T. vivax* infections. The most effective substance of this series was, until recently, dimidium. Unfortunately this drug has a severe locally irritant action, and sometimes produces damage to the liver, which may lead to a condition resembling photosensitization of the skin, appearing five to six weeks after the dose. In 1949 "antricyde" was introduced, and it looked for a time as though at last an effective remedy had been found, both for the treatment of infected cattle and for the prophylaxis of animals grazing in fly areas (Davey, 1950). "Antricyde" is a very good drug, but, like all other chemotherapeutic substances, it has its limitations. It produces toxic side-effects in ill-fed animals, and in areas of heavy fly density an injection of antricyde prophylactic will protect only for a period of two months (Unsworth, 1951). In the wilder parts of Africa it is not possible to give protective inoculations at short intervals, and antricyde prophylactic does not exert its action for long enough to make it very suitable for use in this way. However, for the purpose of grazing animals for limited periods in marginal territory, and for the passage of cattle through the fly belts on their way to market, the drug has very real uses (Unsworth and Birkett, 1952). Antricyde-resistance is easy to produce, and resistant strains of trypanosome are cross-resistant to the phenanthridinium compounds.

A new phenanthridinium compound has recently been prepared and tested by workers in the laboratories of Boots at Nottingham. This is "ethidium," which has an ethyl group instead of a methyl group associated with the quaternary nitrogen atom (Watkins and Woolfe, 1952). Ethidium is claimed to be less toxic and more active than dimidium, and preliminary trials in the field have been encouraging. A number of other phenanthridinium derivatives are still undergoing trial, and a trypanocidal cinnoline compound is soon to be tested in the field (Lourie *et al.*, 1951). The frequency with which new organic compounds are being presented for trial in the field gives promise that it may not be long before cattle trypanosomiasis is brought under control. Investigations are also being made upon the breeding of races of cattle which show increased natural tolerance to the disease, and it may be that this method, and not the injection of chemical poisons, will prove to be the real answer to the establishment of cattle in the tsetse areas.

Summary

Developments in the chemotherapy of malaria are discussed, together with the qualities of the various anti-malarial drugs.

The treatment of human trypanosomiasis and the question of mass prophylaxis are surveyed.

The importance of the treatment of cattle trypanosomiasis is emphasized, and the value of new drugs used for this purpose is assessed.

Mention is made of the employment of antricyde as a short-term prophylactic in cattle.

REFERENCES

- Archibald, H. M. (1951). *British Medical Journal*, 2, 821.
 Browning, C. H., Morgan, G. T., Robb, J. M. V., and Walls, L. P. (1938). *J. Path. Bact.*, 46, 203.
 Carrington, H. C., Crowther, A. F., Davey, D. G., Levi, A. A., and Rose, F. L. (1951). *Nature, Lond.*, 168, 1080.
 Cooper, W. C., Coatney, G. R., Jeffery, G. M., and Imboden, C. A., jun. (1950). *J. nat. Malar. Soc.*, 9, 366.
 Covell, G. (1949). *British Medical Journal*, 2, 773.
 Davey, D. G. (1950). *Trans. roy. Soc. trop. Med. Hyg.*, 43, 583.
 Eagle, H. (1945). *Science*, 101, 69.
 Edgcomb, J. H., Arnold, J., Yount, E. H., jun., Alving, A. S., Eichelberger, L., Jeffery, G. M., Eyles, D. E., and Young, M. D. (1950). *J. nat. Malar. Soc.*, 9, 285.
 Falco, E. A., Goodwin, L. G., Hitchings, G. H., Rollo, I. M., and Russell, P. B. (1951). *Brit. J. Pharmacol.*, 6, 185.
 ———, Hitchings, G. H., Russell, P. B., and Vander Werff, H. (1949). *Nature, Lond.*, 164, 107.
 Field, J. W., and Edeson, J. F. B. (1949). *Trans. roy. Soc. trop. Med. Hyg.*, 43, 233.
 Friedheim, E. A. H. (1939). *Third International Congress for Microbiology. Rept. Proc.*, p. 428. International Association of Microbiologists, New York.
 ——— (1948). *Ann. trop. Med. Parasit.*, 42, 357.
 ——— (1949). *Amer. J. trop. Med.*, 29, 173.
 ——— (1951). *Ibid.*, 31, 218.
 Lourie, E. M. (1951). *Bur. perman. interafric. Tsé-tsé Tryp., Leopoldville*, No. 162/0.
 ———, Morley, J. S., Simpson, J. C. E., and Walker, J. M. (1951). *Brit. J. Pharmacol.*, 6, 643.
 Public Health Reports, 1952, 67, 178.
 Shortt, H. E. (1951). *British Medical Journal*, 2, 1103.
 Unsworth, K. (1951). *Bur. perman. interafric. Tsé-tsé Tryp., Leopoldville*, No. 165/0.
 ——— and Birkett, J. D. (1952). *Vet. Rec.*, 64, 351.
 Vincke, I. H. (1952). *Ann. Soc. belge Méd. trop.*, 32, 91.
 Watkins, T. I., and Woolfe, G. (1952). *Nature, Lond.*, 169, 506.

SUCCESSFUL LACTATION IN ADDISON'S DISEASE

BY

V. URSULA LUTWYCHE, M.D., M.R.C.P.

Late Medical Registrar, Elizabeth Garrett Anderson Hospital

Successful pregnancy in a woman suffering from Addison's disease has often been reported, but successful lactation would seem to be a rare event. It is therefore thought worth while to report a case in which delivery of a healthy infant was followed by the establishment of successful breast-feeding.

Literature

A search of the literature since replacement therapy has been used has shown several reports of successful pregnancy; in some of these no mention is made of lactation, in others slight congestion of the breasts was noted a few days after delivery, and in yet others attempts at breast-feeding were not permitted. Fitzpatrick (1922) reported the successful delivery of a patient in whom Addison's disease had been diagnosed during the pregnancy; he did not, however, mention lactation. At the same time he reported 11 cases from the literature in which Addison's disease had complicated either pregnancy or the puerperium, but in none of which both mother and infant had survived. A further case of successful delivery was reported by Perkins (1932), but breast-feeding was said not to have been permitted. Maranon (1936), in a review of sexual function in 169 cases of Addison's disease, 88 of them women, stated that pregnancy was less likely to occur in those suffering from Addison's disease, but that when it did occur death of the woman during pregnancy or soon after delivery was not uncommon. He agreed with the opinion expressed by Rowntree and Snell (1931) that in most women suffering from Addison's disease mammary atrophy occurred, and that this was the reason why breast-feeding of the infant was not possible.

Galloway *et al.* (1940) reported the successful delivery of a full-term infant in a case in which the pregnancy had been complicated by an acute suprarenal insufficiency. Van Zwanenberg (1945) reported two cases in which symptoms of Addison's disease occurred during pregnancy; one of these patients died during the fourth month following hysterotomy and sterilization, while the second responded to "eucortone" therapy and a live child was obtained. In this case the infant was not put to the breast and no attempt was made to inhibit lactation, but, except for some hardening of the breasts on the third and fourth days of the puerperium, there were no signs of lactation. The case of a woman suffering from Addison's disease who had two successful pregnancies was reported by Leonard Simpson (1946). He suggested that lactation might have occurred if treatment had been different, cortical extract containing the carbohydrate factor being used instead of deoxycortone.

Knowlton *et al.* (1949) described five pregnancies, in only two of which was a live infant obtained. In the first case delivery was by caesarean section and the child lived only 24 hours. In both these cases engorgement of the breasts was observed a few days after delivery, but it is noted that in the case in which the child survived no attempt was made at breast-feeding, and by the seventeenth day after delivery the breasts were soft and had only a slight watery discharge. Brent (1950), in a general review of Addison's disease and pregnancy, collected 39 cases from the literature and described a case of her own in which delivery was by caesarean section, the woman dying four days later. She stated that lactation rarely occurred, but that if it did it should be suppressed, and mentioned the opinion held by one author who thought that lactation might precipitate an adrenal crisis. She concluded by saying that caesarean section was not to be recommended in cases of Addison's disease.

The following case report describes successful delivery by caesarean section one week before term, the establishment without difficulty of lactation, and the continuance of breast-feeding until the child was 4 months old.

Case Report

A woman aged 20, Italian by birth, was admitted to hospital on August 17, 1948, complaining of increasing lassitude and pigmentation of the body. At this time she was thirty-two weeks pregnant, and the symptoms had been gradually increasing since the fourth month of pregnancy. On inquiring into the past history it was found that Addison's disease had been diagnosed two years previously in Italy, and that treatment with cortical extract over a period of some months had led to a marked amelioration of the symptoms. Further inquiry revealed the fact that the patient's grandmother, and both an aunt and an uncle on her mother's side, had died of pulmonary tuberculosis. The patient herself had a pyrexial illness, accompanied by loss of weight, six years previously, which was diagnosed as "pleurisy." The menstrual periods had been normal; the only other pregnancy, in 1945, had ended in a miscarriage at six weeks.

On examination her general condition was good, but there was a pronounced brown pigmentation of the face, involving particularly the forehead, nose, and malar regions, and of the trunks, limbs, and buccal mucosa. The blood pressure was 100/50. The other systems were normal. The blood sodium was 265 mg. per 100 ml.; blood chlorides 604 mg. per 100 ml.; and blood potassium 23.8 mg. per 100 ml. An x-ray film of the chest showed no abnormality. A straight x-ray film of the abdomen showed breech presentation with extended legs; no calcification of suprarenals, and no calcified mesenteric glands. An x-ray film of the skull showed that the pituitary fossa was of normal size.

Treatment was begun on August 24 with sodium chloride, 2 g. thrice daily; five days later the blood pressure had risen to 110/68. At the end of a week deoxycortone, 5 mg. daily, was given in addition to the sodium chloride, and was increased gradually to 5 mg. thrice daily. At the end of four weeks the patient was feeling very much better, the pigmentation was less pronounced, and the blood pressure was 116/84. At this time, as the presentation was an extended breech and attempts at version had failed, it was decided to deliver the patient by caesarean section, and at the same time to sterilize her. One week before term, therefore, classical caesarean section was performed under local analgesia and gas and oxygen. A living male child, weight 6 lb. 8½ oz. (3.1 kg.) was delivered. The post-operative progress was uneventful. The blood pressure fell to 90/70 immediately after delivery, but rose gradually to 142/92 on the seventh day. Drug therapy was continued as before delivery. Lactation was established without difficulty; the infant was put to the breast on the day of delivery and sucked well. With the exception of a small complementary feed on the third and fourth days, the infant was wholly breast-fed until 4 months of age. On

the twelfth day of the puerperium deoxycortone acetate, 300 mg., was implanted into the abdominal wall. The patient was discharged from hospital on the seventeenth day symptom-free, and with a blood pressure of 142/92. When she was seen in the out-patient department four weeks after discharge she was feeling well and doing all her own housework in addition to feeding the infant; pigmentation was less, and the blood pressure was 162/90.

She continued well and symptom-free until the child was 4 months old, when she again complained of lassitude. Since the baby was then a lusty child who would suffer no ill effects from artificial feeding, breast-feeding was discontinued, with rapid relief of symptoms.

The patient remained under observation, having been given a maintenance dose of 5 g. of sodium chloride daily, until the child was 1 year old. At this time she complained again of lassitude and also of increased pigmentation. On inquiry it was discovered that she had recently omitted to take her sodium chloride. A second implant of 300 mg. of D.C.A. was given in September, 1949, and a third implant in October, 1950. She was last seen in November, 1950, when she was again symptom-free and doing all her own housework as well as looking after her 2-year-old child; the blood pressure was 130/80.

I wish to thank Dr. A. Margaret Macpherson and Miss Gladys Hill for their interest and help in the preparation of this paper and for permission to publish.

REFERENCES

- Brent, F. (1950). *Amer. J. Surg.*, 79, 645.
 Fitzpatrick, G. (1922). *Surg. Gynec. Obstet.*, 35, 72.
 Galloway, C. E., Sutton, D. C., and Ashworth, J. (1940). *Amer. J. Obstet. Gynec.*, 40, 148.
 Knowlton, A. I., Mudge, G. H., and Jailer, J. W. (1949). *J. clin. Endocr.*, 9, 514.
 Maranon, G. (1936). *Presse méd.*, 44, 2057.
 Perkins, P. A. (1932). *J. Amer. med. Ass.*, 99, 1500.
 Rowntree, L. G., and Snell, A. M. (1931). *A Clinical Study of Addison's Disease*. Philadelphia.
 Simpson, S. L. (1946). *Proc. roy. Soc. Med.*, 39, 511.
 Van Zwanenberg, D. (1945). *St. Bart's Hosp. J.*, 49, 31.

NEONATAL MYASTHENIA GRAVIS

REPORT OF A CASE

BY

B. GANS, M.D., M.R.C.P.

Consultant Paediatrician, Lewisham Hospital, London

AND

D. H. FORSDICK, M.B., B.S.

Registrar, Lewisham Hospital, London

Twelve cases of myasthenia gravis occurring in newborn infants of myasthenic mothers have been reported (Strickroot *et al.*, 1942; Wilson and Stoner, 1944; La Branche and Jefferson, 1949; Levin, 1949; Nilsby, 1949; Stone and Rider, 1949; Geddes and Kidd, 1951; Holt and Hansen, 1951; McKeever, 1951). In view of the rarity of the condition we think it justifiable to present a further case.

Case History

The mother, a primigravida aged 40, had been diagnosed as suffering from myasthenia gravis at the age of 38, though she had experienced intermittent symptoms since the age of 12. Her myasthenia was well controlled on oral neostigmine, 15 mg. q.d.s., atropine 1/100 gr. (0.65 mg.) b.d., and ephedrine, 1/6 gr. (11 mg.) q.d.s. There were no exacerbations of her symptoms during pregnancy nor did remissions warrant the discontinuation of her treatment. She was delivered by caesarean section (Mr. A. L. Gunn) because of uterine inertia. Her post-operative and puerperal course was uneventful.