risen to 300 mg. per 100 ml. and, after a further week, to 305 mg. He was discharged home on February 14, and his good progress continued.

Bilateral corneal changes were first noticed on July 8, when he was 3½ months old. These consisted in both eyes of a horizontal band of opacity present in the superficial corneal layers, and having the appearances described by Albright and Reifstein (1948) as band keratitis. These opacities gradually diminished, and at the time of his discharge both corneae had returned to normal.

Discussion

The most usually adopted form of treatment in infantile hypercalcaemia is the substitution of a low-calcium milk for ordinary milk. Locasol, as reconstituted in the proportions advised by the manufacturers, has a calcium content of not more than 56.8 mg. per pint (100 mg. per litre). The sodium content is also less than that which is found in cow's milk, 1 pint (570 ml.) of reconstituted locasol containing 0.28 g. of sodium chloride, while cow's milk contains 0.78 g. of sodium chloride per pint. According to Butler and Talbot (1944) the average requirements of sodium chloride per day in infancy is about 1 g. Locasol, therefore, while being low in calcium, also provides an intake of sodium which is less than the average normal requirements. Two factors appear to have been responsible for this child's sodium depletion. Firstly, the diet which was offered was of itself deficient in sodium, and, secondly, the intake of milk was severely reduced because of anorexia. That his symptoms of anorexia, vomiting, and failure to thrive, which initially were due to hypercalcaemia, were eventually due to sodium depletion was shown by the immediate improvement in the child's condition when the intake of sodium was increased, and also by the rise in serum sodium level which followed. The insidious way in which the sodium depletion developed is particularly noteworthy and indicates the need for regular determinations of the serum electrolyte levels in similar cases.

According to Albright and Reifstein (1948) two types of lesion occur in cases of hypercalcaemia, whether due to vitamin D poisoning, hyperparathyroidism, or other causes such as sarcoidosis or the syndrome associated with excessive milk and alkali intake: (1) a band keratopathy as was seen in the present case, and (2) conjunctival crystals, which appear medially and laterally to the limbus. Both these lesions are said often to be visible only with the slit-lamp. In this case changes were present at the age of 3½ months; they were clearly visible to the naked eye and, had their significance been appreciated, the diagnosis of hypercalcaemia would have been made a month earlier than it in fact was.

Summary

A case of infantile hypercalcaemia is described in which corneal opacities developed in the early stages of the disease and sodium depletion was a late complication.

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A gramophone record on how to relax has been made by Miss MARGARET SMITH, M.C.S.P. It is intended for the "tense" patient. On the first side Miss Smith discusses the importance of abolishing tension and describes the technique of relaxation in a general way; on the other side the patient is given detailed directions, in slow time, on how to relax the muscles of the various parts of the body. The record (No. RSL/1243) is obtainable from Recorded Sound Ltd., 127, Bryanston Street, London, W.1, price 21s. (postage 2s.). Royalties on the sale of the record are being given to the Iona community.

THE SEQUELAE OF KERNICTERUS

BY

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It is well recognized that neurological symptoms in later life may follow haemolytic disease of the newborn, and a number of such cases have been reported. Lande (1948) described eight cases and Evans and Polani (1950) reviewed the literature, adding 16 cases of their own. The serological diagnosis of the disease at birth has been satisfactory only since Coombs, Mourant, and Race (1946) introduced the anti-human-globulin test, and all the published reports have been of children or young adults. Little is known at present about the subsequent fate of affected children, and the following case showing neurological sequelae in an adult may be of interest, especially since it was possible to obtain confirmation of the aetiology by laboratory tests.

Case Report

A warehouseman aged 44 was admitted to hospital under the care of Sir Charles Symonds following an epileptiform attack during which he had lost consciousness for a few minutes. He stated that he had suffered for many years from episodes occurring two or three times a year, each lasting a few minutes, during which he felt dissociated from his surroundings and objects appeared to recede into the distance. He had lost consciousness on only one previous occasion five months earlier, when he had an attack in bed. That episode had been preceded by an involuntary cry, and terminated with incontinence of urine. The following history was obtained from the patient and his mother.

The patient was the younger of two siblings. His elder sister had died of tuberculosis, and his father was also dead. The patient had become deeply jaundiced soon after birth and had remained so for a few days. When 5 years old he developed chorea. He recovered from this slowly, and at the age of 10 was well enough to attend school, where his record was satisfactory. His subsequent development was uneventful.

The birth and childhood of his elder sister were normal. His mother had never had a blood transfusion nor an intramuscular injection of blood. She had had no miscarriages. No other member of the family had suffered from epilepsy.

On clinical examination the patient appeared to be of normal intelligence, and no abnormal physical signs were found other than a slight dysarthria.

Investigations.—The C.S.F. was normal. The Wassermann and Kahn tests in blood and C.S.F. were negative. An electroencephalogram was normal. An audiogram revealed bilateral perceptive deafness. An x-ray picture of the skull showed extensive calcification in the region of the basal ganglia and dentate nuclei. No similar changes were found in x-ray pictures of his mother and of three maternal relatives.

The combination of calcification of the basal ganglia and perceptive deafness, together with his history, suggested that he might have been affected by haemolytic disease of the newborn. His blood group was A Rh-positive, probable genotype CDe/cde. His mother's group was A Rh-negative, genotype cde/cde, but no antibodies to the Rh antigens C or D were detected in her serum, and an indirect anti-human-globulin test was negative. As she was aged 70, and in good health, it was thought justifiable to investigate the effect upon her of a small injection of Rh-positive blood. With her permission, after the nature of the investigation had been explained to her, she was given an intravenous injection of 5 ml. of fresh heparinized group A Rh-positive

blood, genotype CDe/CDe. She had no clinical reaction to the injection, but one week later she was found to have developed a pure anti-D antibody to a titre of 1 in 64 in both saline and albumin media. Two weeks after the injection the titre increased to 1 in 512 in saline and albumin, and was still at that level when she was last seen, six weeks after the injection.

The patient was discharged from hospital, and his epilepsy was controlled with anticonvulsant drugs.

Comment

The sequence of events during this patient's childhood is strongly suggestive of kernicterus supervening upon haemolytic disease of the newborn. The deep jaundice noticed immediately after birth is characteristic; and although his mother does not remember whether he developed head retraction or other manifestations of kernicterus at that time, he was nursed in the dark, and this suggests that he showed signs of cerebral irritation.

The majority of infants affected by kernicterus who survive the neonatal period develop athetotic or choreiform movements (Evans and Polani, 1950); although the latent period is usually shorter, being measured in weeks or months. In this case, slight dysarthria is the only residual motor symptom of that illness after 40 years. Deafness occurs in at least 30% of survivors, whilst mental deficiency and blindness are less common. This patient was deaf, but apparently of normal intelligence, although formal tests were not performed.

Staining of the basal and medullary nuclei is a characteristic finding at necropsy in children dying from kernicterus, but calcification in this area does not appear to be common. Whilst convulsions are often seen in infants with severe kernicterus, this disease does not usually cause epilepsy in later life, and none of the cases reviewed by Evans and Polani nor the 30 survivors reported by Gerrard (1952) were epileptic. In this case the epilepsy may have been unrelated to the disease, or it may reflect the greater degree of cerebral damage associated with calcification.

From the blood groups of the patient and his mother it can be deduced that his father was Rh-positive, although it is not possible to determine whether he was homozygous or heterozygous for the D gene. Many Rh-negative women married to Rh-positive men escape becoming sensitized to the D antigen even in their second pregnancy. However, the antibody response shown by this patient's mother after a single small injection of Rh-positive blood strongly suggests previous sensitization, the high titre and its appearance only a week after the stimulus being characteristic of a secondary response.

It is interesting that the patient's mother remained sensitized to the D antigen for more than 40 years, and might have had a severe reaction if transfused with Rh-positive blood.

I wish to thank Sir Charles Symonds for access to the patient and his family, and for permission to publish this case, and Dr. A. E. Mourant for carrying out the genotyping and the identification of the antibody.

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A Reuter statement from Wellington, New Zealand, issued on September 12, states: "The Minister of Health, the Hon. J. Ralph Hanan, said to-day that New Zealand would not have to follow Britain's example and import Salk vaccine from the United States. Mr. Hanan added that there were sufficient supplies of polio vaccine in sight to treat the remaining 70,000 children of 5 to 9 years of age who were being vaccinated in this programme. New Zealand has been obtaining vaccine from the United Kingdom and Australia. It is understood that, even if stocks should run short, additional supplies could be obtained from Australia. None is manufactured in New Zealand."

Medical Memoranda

Asian Influenza in Kuwait

The following commentary on influenza is based on the 156 patients who were admitted to the male medical ward of a Kuwait State hospital during July, 1957, with this diagnosis. In view of the large number of cases seen and diagnosed as influenza in the out-patient department, only the more serious could be admitted. The criteria for admission were a high temperature and/or severe malaise. A few cases were admitted on social grounds—patients who had no one to look after them.

A standard form, devised at the outbreak of the epidemic, was completed for all cases diagnosed as influenza and admitted to this ward. An analysis of these forms is presented in the following table:

Max. Temp.	No. of Cases	Days in Hosp.	No. of Cases	Main Symptoms	No.	Age Incidence	No.
°F. (°C.)							
99 (37.2)	3	2	16	Headache	153	Under 20	30
100 (37.8)	10	3	37	Cough	83	20-30	103
101 (38.3)	9	4	44	Chest pain	62	30-40	17
102 (38.9)	26	5	22	Malaise	106	40-50	3
103 (39.4)	56	6	11	Generalized pains	75	50-60	0
104 (40.0)	38	7	12	Sore throat	10	60-70	2
105 (40.6)	14	Over 7	14	Vomiting	11	Over 70	1

It will be seen that the general picture is of the sudden onset of fever with headache, cough, chest pains, generalized muscular pains, and malaise. The temperatures of the patients admitted varied between 99° F. (37.2° C.) and 105° F. (40.6° C.), but were mostly between 102° F. (38.9° C.) and 104° F. (40° C.). This fever lasted about 48 hours and then returned to normal. All patients were put on a four-hourly chart on admission. A typical chart and form are shown. The fall to almost normal within 24 hours of admission, the rise during the following day, and the return to normality on the third day are quite typical, and representative of the majority of cases.

The presenting symptoms were remarkably similar for most of the patients. Only 10 complained of sore throat. Twenty complained specifically of pains in the quadriceps muscles and 29 of backache. However, all of these patients complained of associated generalized muscular pains. Eleven had vomited either just before admission or during their stay in hospital.

All patients had a white blood cell count and differential performed on the day of admission. In all but seven the white cells numbered under 10,000 per c.mm. and the differentials were within normal limits. Of the seven, six developed acute bronchitis and one a left lobar pneumonia.

The duration of stay in hospital varied from 2 days to 20 days in the case of the patient who developed pneumonia. The majority of the patients were kept in hospital for three or four days. The overall average duration of hospitalization was 4.5 days. The patients' ages ranged from 16 to 75 years, but the majority were in the 20-30 age group.

MALE MEDICAL WARD ; INFLUENZA REPORT

Name : Age : 26

Date of admission : 14/7/57

Date of discharge : 17/7/57 Days in hospital : 4.

Main complaints : 1, Fever. 2, Headache. 3, Cough. 4, Generalized pains. 5, Chest pain. 6, Backache.

Duration before admission : About 6 hours.

Maximum temperature : 104.5° F. (40.2° C.).

White blood count : 8,000/c.mm.

Differential white count : Neutrophils, 72% ; lymphocytes, 23% ; monocytes, 1% ; basophils, 1% ; eosinophils, 3%.

Urine examination : No abnormality.

Treatment : A.P.C., 2 tabs. t.i.d. Codeine linctus B.P.C., 1 dr. t.i.d.

Complications : None.