It was therefore of some importance that a positive reaction was obtained with both folic acid and aminopterin at equal concentrations of 5 µg. per ml. and that at greater dilutions the reactions became doubtful with both substances. The patient reacted to the aminopterin *per se* and not to traces of folic acid which might have been present as a contaminant.

The formation of specific antibodies against folic acid by the subject studied indicates that this substance functioned in him either as an antigen or, more probably, as a haptene or antigenic determinant in a larger complex. An essential criterion of antigenicity is that the compound in question is "foreign" to the subject. These observations therefore suggest that pteroylglutamic acid was not normally present in the tissues of our "patient." As he remained perfectly well, however, and was not anaemic the requirement of his tissue cells for "folic acid" on this hypothesis must have been supplied by substances other than pteroylglutamic acid.

It has been recognized for some time that pteroylglutamic acid is itself unlikely to play a part in tissue metabolism. Recent work suggests that N¹⁰-formyltetrahydropteroylglutamic acid or a closely related compound is the physiologically active member of this group of substances (Greenberg, 1954). N¹⁰-formyltetrahydropteroylglutamic acid is itself highly unstable and probably exists in the liver in a bound stable form (Greenberg, 1954). Under aerobic conditions it is rapidly oxidized to N¹⁰-formylpteroylglutamic acid, and this in turn, under alkaline conditions, is converted to pteroylglutamic acid. Under anaerobic conditions, on the other hand, N¹⁰-formyltetrahydropteroylglutamic acid is converted to N⁵-formyltetrahydropteroylglutamic acid (folinic acid).

The isolation of folic or folinic acid from foodstuffs does not necessarily imply that this was the form in which this substance was originally present. It is possible that the absence of sensitivity reactions in our subject after meals is due to the fact that pteroylglutamic acid is not absorbed from food as such, and not that too little is absorbed to produce these reactions.

Summary

A subject is described who was found to have become sensitive to folic acid six weeks after taking an oral dose.

Intradermal tests showed that he was sensitive to folic acid and aminopterin, but not to folinic acid (leucovorin), anhydroleucovorin, N¹⁰-formyltetrahydropteroylglutamic acid, a folic acid conjugate (teropterin), or to amethopterin.

We thank Professor J. V. Dacie for advice and encouragement; and Dr. William L. Williams, of Lederle Laboratories Inc., for supplying the pure specimen of pteroylglutamic acid used in the study and also for the anhydroleucovorin, folinic acid (leucovorin), and teropterin.

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A Society of Indexers has been formed in London, its principal objects being to improve the standard of indexing and secure some uniformity in its technique, to set up a panel of indexers, and to publish papers and notes on the subject. It is believed to be the first society of its kind in the world. The chairman, Mr. A. R. HEWITT (librarian of the Institute of Commonwealth Studies), is son of a former librarian of the Royal Society of Medicine. Among those elected to the council of the society was Miss D. F. ATKINS, librarian of the Postgraduate Medical School of London. Further information may be obtained from the hon. secretary, Mr. G. NORMAN KNIGHT, 4, Fitzroy Street, London, W.1.

A CASE OF CONJOINED TWINS

BY

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Conjoined twins are rare and may at times offer serious difficulties to delivery. The following case seems of sufficient interest to merit publication, as the monsters were delivered intact vaginally. Frequently some form of mutilating operation is necessary before vaginal delivery can be effected, or a caesarean section may have to be done.

Case Report

A Cantonese woman aged 30 was admitted in labour to the Kangar Kerbau Hospital in the thirty-second week of her eighth pregnancy. All seven previous confinements had been normal and had resulted in live births.

On examination she was anaemic, her face and hands were puffy, and there was clinical oedema of her feet and ankles. The abdomen was the size of a full-term pregnancy and rather tense.

There seemed to be definite hydramnios and the uterus was contracting. The possibility of a multiple pregnancy was considered, though no foetal heart sounds could be heard with certainty. Her blood pressure was 160/100 mm. Hg. The urine contained a trace of albumin. Vaginal examination revealed a bulging bag of membranes, a cervix practically fully dilated, and something other than a head presenting—probably

Photograph of the omphalopagus.

feet. A straight x-ray film of her abdomen showed twin foetuses both presenting by the breech. However, the fact that the two heads were on the same level and facing each other suggested the possibility of some form of foetal union.

By this time the patient was beginning to bear down and the membranes ruptured spontaneously. A large quantity of dark-coloured liquor amnii drained away and two feet presented at the vulva. It was decided to attempt delivery and she was anaesthetized. Vaginal examination now confirmed that the twins were joined together, and there did not seem to be any second sac, as the other pair of lower limbs and feet were felt at the cervix. These were brought down easily, and with traction on the four limbs the bodies descended parallel to each other through the dilated cervix and vagina. The legs and trunks were now lifted well forward over the symphysis pubis, allowing the posterior head to engage in the pelvis and be born with the anterior head following quickly afterwards. Both foetuses were fresh, and the one whose head was delivered last made feeble attempts to breathe. A single placenta, with velamentous insertion of two cords at opposite sides, was expressed a few minutes after delivery of the monster. There was no excessive blood loss, and episiotomy performed during the delivery was repaired with catgut. The puerperium was uneventful.

Examination of the twins showed them to be well formed and symmetrical (see photograph). Both had normal female external genital organs. The combined weight was 4 lb. 10 oz. (2,100 g.). They were joined by a bridge of skin-covered soft tissue at a level just below the xiphoid processes. Both infants showed exomphalos and there appeared to be a large common liver. The monster can be classed as an omphalopagus (Hirst and Piersol, 1892). The specimen is being preserved.

Comment

The incidence of conjoined twins is difficult to ascertain. Aird (1954) suggests that the greater frequency of case reports is "due to the increasing accessibility of very large populations in Asia and Africa, to the greater possibility of the successful birth of conjoined twins in improved modern obstetrical circumstances," and, of course, to the greater possibility of successful surgical separation should they be born alive.

From the clinical aspect it is interesting to note how most standard textbooks agree that double monsters can be delivered spontaneously in many cases. They also agree that when the monsters give rise to dystocia dangerous and complicated operations are often needed to effect delivery. Many cases, of course, come into premature labour when the foetuses are small and vaginal delivery is thus possible. In general, delivery is easier by the breech, and Munro Kerr and Chassar Moir (1949) advise version if the heads are presenting. The advantage of breech extraction is that destructive operations, if they become necessary, can be more easily carried out. An interesting case of a thoracopagus delivered through the vaginal route in a very unusual fashion, the foetuses being extracted one after the other in cephalic presentation, has been described by Morrone (1954).

As regards the diagnosis, the association between hydramnios and foetal abnormality is so frequent that the latter should be suspected whenever hydramnios occurs. Careful abdominal palpation and internal examination, if the dilatation of the cervix is adequate, are important. Radiography is valuable, and in the case described suggested the possibility of conjoined twins, as the two heads were at the same level, faced each other, and the thoracic cages of the foetuses were together. However, if the union be very flexible the two heads may well be at different levels, as in a case described by Rawlings and Warwick (1951).

My thanks are due to Professor B. H. Sheares for permission to publish this case report, and to Mr. Austin Bennett for the photograph of the monster.

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A considerable range of lecture courses are now offered to Cambridge medical students during the Long Vacation. These cover not only the preclinical and transitional periods of medical studies but also provide opportunities for continuing a general education in the arts. For the preclinical student there is a course in pharmacology as well as the usual lectures and demonstrations in anatomy and physiology. Practical experience in the department of pathology may be arranged, and formal instruction in biochemistry is also available. For the student who has passed in anatomy and physiology, the Medical School offers a course of instruction in elementary clinical methods at Addenbrooke's Hospital, and there is also an introductory course in psychology. The Faculty of Modern Languages under the Pressland Bequest provides an elementary course of 24 lectures in German, Russian, and Italian for science and medical students. More advanced courses are also available in some of these languages. A special series of lectures in English literature and poetry for students in scientific faculties is arranged by the Faculty of English.—*Cambridge University Reporter*, March 8.

Medical Memoranda

Lichen Urticatus as an Allergic Manifestation of Pregnancy

It has been noted (Urbach and Gottlieb, 1946) that, in general, pregnancy has an influence which tends to diminish a pre-existing allergy, and this can be frequently observed in cases of asthma and hay-fever. Various theories have been postulated to explain this (Ahlmark, 1944; Zondek and Bromberg, 1945a, 1945b).

There are, however, certain conditions of an allergic nature which can be actually brought about by the pregnant state. During pregnancy the skin can show a definite hypersensitivity to substances originating in the foetus and also to the placental protein (Urbach and Gottlieb, 1946), and in some women various dermatoses of pregnancy can result, due, it is believed, to the production of an abnormal amount of endogenous allergens from the foetus or placenta. It is assumed that, normally, specific antibodies are produced in the pregnant woman as a reaction to this foetal or placental protein (Seegal and Loeb, 1943). The assumed presence of such specific antibodies has been used to explain (Freund, 1909) the good results achieved with systematic injections of the serum of pregnant women in the treatment of the dermatoses of pregnancy, a form of treatment used with success in America. The presence of these antibodies in the injected serum effectively neutralizes the increased supply of antigen which presumably causes the condition.

Lichen urticatus is one of the ways in which an allergic manifestation of pregnancy can show itself; the following three cases illustrate this.

CASE REPORTS

Case 1.—A primigravida aged 22, blood group O, Rh positive, developed, seven days before delivery, a typical papular urticarial rash covering the entire body, which was extremely itchy and caused great discomfort. Both the rash and the irritation were completely unresponsive to phenindamine or diphenhydramine in full dosage. In an attempt to afford her relief a subcutaneous injection of adrenaline was given without any effect. Within 24 hours of the normal delivery of the baby (full term) there was definite relief from the irritation, and the lichen urticatus began to fade, but took nearly two weeks to disappear completely. There was no personal or family history of allergy or allergic response to any drugs excepting that her mother suffered with migraine.

Case 2.—A primigravida aged 23, blood group A, Rh positive, began to develop, when 33 weeks pregnant, a typical lichen urticatus with irritation, covering the body and upper parts of the arms and legs. She was given full doses of mepyramine maleate and mepyramine maleate cream to apply locally. In four to five days the rash disappeared, whereupon she stopped the treatment. The irritation and resulting distress returned within 12 hours, and two days later the papular urticaria had reappeared. Recourse was had once more to mepyramine maleate tablets and cream, but this time with no relief. Within a few hours of the normal delivery of the baby (full term) the pruritus had gone, and the rash began to fade within 24–48 hours, the final traces taking nearly three weeks to completely disappear. There was no personal history of allergy or allergic response to any drugs, but the family history showed that the mother had asthma.

Case 3.—A primigravida aged 23, blood group O, Rh positive, developed, about the fourth month of pregnancy, lichen urticatus with pruritus covering the body, especially the front of the chest. No treatment, except calamine lotion locally, was given, and the rash persisted throughout the remainder of the pregnancy. Within 24 hours of the normal delivery of the baby (full term), the rash and