middle lobe was of uniform diameter throughout its whole length (Fig. 1B). The original radiograph, together with the history of night sweats, cough, and pleuritic pain, made it clear that the patient had a low-grade inflammatory lesion of the lung, the remains of which had fortunately been detected radiologically before resolution was complete. It would seem that the area of inflammation in the lung had originated in the region of the weakened bronchus.

Case 2.—A man aged 26 complained of acute pain on the left side for 4 days that was pleuritic in character, together with cough and sputum for 2 days; during this time his temperature was not recorded. There were no abnormal physical signs in his chest, the sputum contained no tubercle bacilli, and a plain radiograph showed a slight haziness at the left base (Fig. 2A). X-ray screening a week later failed to reveal any abnormality at all. The lipiodol radiograph showed that the left lower lobe bronchus was slightly dilated throughout its length (Figs. 2B and 2C). The history and the original radiograph show that the patient had an inflammation of the left lower lobe of his lung, which resolved within a week, and that this had occurred around a damaged bronchus.

FIG. 2A

FIG. 2B

FIG. 2C

Case 3.—This patient, a man aged 25, complained of intermittent pain in the right side of the chest, worse on coughing, for the past six years, together with slight cough and lassitude. There was no family history of tuberculosis. The physical signs in his chest were normal, and his sputum contained no tubercle bacilli; a plain radiograph was normal, but a bronchogram revealed a considerable degree of tubular bronchiectasis of the right lower lobe (Figs. 3A and 3B).

FIG. 3A

FIG. 3B

Case 4.—A man aged 47 first became ill in 1931, when he had acute pain in the right side of the chest, worse on breathing and coughing, associated with general malaise, pyrexia, and night sweats. This cleared up in about 2 weeks, but subsequently he had had 3 or 4 similar attacks, always on the right side, at intervals of 1 to 2 years. His last attack was in Dec., 1941, and at that time he had a pleural rub at the right base. A plain radiograph showed no abnormality, his sputum contained no tubercle bacilli, but a bronchogram revealed tubular bronchiectasis of the right lower lobe (Fig. 4).

Case 5.—The patient, a youth aged 19, had a history of general malaise and fever for 2 days, followed by cough and slight sputum. Four days after the onset of his illness he had

FIG. 4

FIG. 5

had acute pain on the left side of his chest, worse on breathing and coughing, and because of this symptom he went to his doctor. In this case also there is no record of the temperature. He came to hospital a week after his illness, the pain having disappeared in the meantime. There were no abnormal physical signs in his chest, and a plain radiograph was normal. A lipiodol radiograph revealed bilateral tubular bronchiectasis (Fig. 5).

Discussion

The series is small, and therefore the results might be misleading if represented as a percentage, but they do suggest the advisability of a routine bronchogram in cases of pleurisy of obscure origin. In those cases in which bronchiectasis can be demonstrated there is little doubt that the pleurisy is due to a low-grade infection of the lung around a damaged bronchus, because in Cases 1 and 2 the original radiograph revealed such an area of infection, which subsequently resolved in a few days, and it is reasonable to suppose that this may have been present in the other cases.

This aetiological factor is of importance because of the subsequent treatment. These patients do not need a long convalescence, nor do they need serial radiographs; and they are fit for service in the Forces—if not in Grade I, certainly in a lower grade. It is sometimes stated that the risk of a tuberculous infection in cases of bronchiectasis is greater than in normal people, but there is no doubt that this complication is by no means common.

The treatment of these patients can be divided into two stages—during the acute attack and between the attacks. In the acute stage, warmth, strapping, and relief of the cough usually clear up the pleurisy. Between the attacks the patient's general health is built up by a full diet and vitamins, and efforts are made to prevent reinfection. Thus upper respiratory tract infection is removed when possible, and the patient is advised not to frequent crowded places, because of the increased risk of picking up a respiratory infection. Most of these measures can be carried out in the Services.

As the figures show, inflammation around a damaged bronchus does not account for all the cases of dry pleurisy with negative physical signs and radiographs, but it does determine the aetiology of a proportion of them. The remainder should still be treated as tuberculous in origin; otherwise cases of pulmonary tuberculosis will be missed. Therefore a lipiodol radiograph is an important investigation in cases of dry pleurisy.

Summary

The aetiology of dry pleurisy occurring in young adults, without other physical or radiological signs, is discussed. Lipiodol was introduced in 24 patients, 5 of whom showed bronchiectasis, and in 2 of these evidence of infection was seen around the dilated bronchus.

The treatment of dry pleurisy due to infection of the lung about a bronchiectatic area is described and the importance of separating this group of cases discussed.

VITAMIN B₁ IN THE URINE AND PLACENTA IN TOXAEMIA OF PREGNANCY

BY

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Fulminating beriberi is a rare complication of pregnancy in this country. It is possible that subcritical—a term which we prefer to subclinical—states of avitaminosis B₁ do exist among some pregnant women. In Hong Kong there is a poor Chinese population in which avitaminosis B₁ is endemic. Early in pregnancy such women complained of cramps, pins-and-needles, fatigue, and oedema, just as our women do. Westenbrink and Goudsmit (1938) have shown that women of the poor part of Amsterdam—wives of unemployed—had a higher incidence of these symptoms than their non-pregnant sisters or pregnant women of the better class. Analysis of their diet showed that the food intake was much less, especially as regards brown bread.

Williams and his co-workers (1940) in Philadelphia undertook a nutrition survey, purely from the vitamin B₁ aspect, of 500 pregnant women. Of those investigated, one-third were not receiving an adequate amount of vitamin B₁ (15 I.U. per 100 calories). Among those with an inadequate intake, 30% vomited and had nausea, fatigue, paraesthesiae, cramps, and dyspnoea.

Some workers have suggested that there is an association between the protean manifestations of toxæmia of pregnancy and a deficiency of vitamin B₁. Siddall (1938), working in South China, observed the combination of toxæmia and beriberi in ante-natal cases. He advanced the theory that only when an adequate supply of vitamin B₁ was available was the normal function of the pituitary gland possible. He believes that in pregnancy a deficiency of this vitamin leads to an over-compensation or malignant hyperfunction of the gland. In time this produces all the manifestations of toxæmia, with increase of prolactin and decrease in oestrin. Jasumami (1938) found a higher incidence of toxæmia amongst the poorer classes, and the administration of vitamin B₁ was effective in severe pre-eclamptic cases. Vignes (1935) attempted to correlate the hepatic changes in vitamin B₁ deficiency and toxæmia. In the deficiency cases he noted the diminution in volume of the liver and the decreased amount of glycogen in this organ and in the muscular tissues. In both toxæmia and avitaminosis B₁ there was perverted carbohydrate metabolism.

In the last obstetric report that has reached this country from Prof. Gordon King (1941) in Hong Kong there are some interesting tabled cases of eclampsia and avitaminosis B₁. A study of these reveals the fact that the severer the degree of toxæmia the higher the incidence of avitaminosis B₁, with concomitant increased mortality. There were 42 cases of eclampsia, and 19 (45%) of these were complicated by avitaminosis B₁. Of the 13 deaths 11 also had this complication. Thus in 85% of eclampsia deaths there was the double lesion of eclampsia and avitaminosis B₁.

Present Investigation

The subjects of our study were from the maternity departments of St. Mary Abbots and Paddington Hospitals (L.C.C.), and consisted of a series of women varying in age, parity, and maturity. Forty-six had clinically normal and 60 clinically abnormal pregnancies. The 60 cases classed as abnormal were made up of: hyperemesis, 6; hypertension, 28; pre-eclampsia, 3; eclampsia, 2 (7*); oedema, 14.

It was decided to base the assessment of the patients' state of vitamin B₁ nutrition on the 24-hour urinary excretion of the vitamin, the collection beginning on their admission to hospital. The vitamin B₁ content of the placenta of certain of these patients was also examined.

Method of Assessment.—The samples of urine were poured into large glass bottles, previously prepared by the addition of a few drops of toluene and hydrochloric acid to prevent loss of the vitamin on standing. As soon as possible, usually within a few hours, the specimen was prepared for assay. At this time the routine examination of urinary samples done in the laboratory was by the cure of induced bradycardia in rats, and this method was used for the whole investigation. To prepare the sample for feeding to the B₁-deficient rats the vitamin was adsorbed on to a fine acid clay. A small quantity of clay was added to the urine and agitated in a mechanical shaker for 20 minutes. The adsorption was always done at pH 4.5. Previous experience had shown that one adsorption could be relied upon to remove only part of the vitamin from a sample of urine, so for each patient the adsorption was repeated. Two grammes of acid clay was used for each process, and the adsorbate collected by filtration and dried. After drying, the two lots of acid clay from each urine were intimately mixed and weighed into the doses for feeding purposes. Preliminary trials soon showed that for the particular work in hand 2 g. of acid clay for each adsorption gave satisfactory results. The duration of cure produced by this adsorbate was compared with the cure produced by graded levels of the standard substance which was being fed

regularly each fortnight in the colony. During the first part of the investigation this standard substance was also a sample of acid clay as issued by the department of vitamin standards of the Medical Research Council, but when the new vitamin B₁ hydrochloride standard was introduced the latter came into use. Each fortnight a group of 18 animals was given the standard substance, in 3 groups of 6 animals at each dose level. One sample of urinary adsorbate gave 6 doses at one level.

Examination of the responses obtained from the rats receiving the doses of international standard showed that throughout the experiment the dosage-response curve did not vary significantly in slope or position; it was therefore legitimate to group all these figures together before using them to assess the vitamin B₁ value of the samples of acid clay adsorbate from the individual urines.

The estimated amounts of vitamin B₁ excreted during the 24 hours are shown individually (on a logarithmic scale) in Fig. 1

and summarized in Table I. Even among subjects classified as normal the excretion averaged under 4 units; the only clinical group to show a significant difference from the normal group was that of the eclamptic patients. The significance of this particular difference is at once apparent when we examine Fig. 1, since in each of the 9 eclamptic cases the excretion was less than the normal average; applying Student's t-test to the logarithmic values, we find that the odds are many thousands to one against the observed difference being due to chance.

TABLE I.—Urinary Concentrates

Clinical Group	No. of Cases	Mean Log (B ₁)	Corresponding Level of B ₁ (I.U.)	Value of t
Normal	46	0.531	3.39	—
Hypertension	28	0.553	3.58	0.39
Hyperemesis	6	0.352	2.25	1.52
Oedema	14	0.425	2.66	1.28
Pre-eclampsia	3	0.458	2.86	0.46
Eclampsia	9	-0.026	0.94	5.61

Note.—The values of t given in the last column are those appropriate to testing separately the significance of the differences between the group means and the mean in the normal group. They are based on 100 degrees of freedom.

The influence of various other factors on the urinary excretion of vitamin B₁ was investigated. The following points were considered: age, marital status, number of previous pregnancies, number of weeks before term at which the specimen was collected, and weight of the infant at birth. In none of these cases was there any significant correlation between the circumstance examined and the vitamin B₁ excretion.

Concentration of Vitamin B₁ in the Placenta

The placentae from 56 patients were examined; most of these patients had already supplied specimens of urine for the study summarized above, but as we were unable to find a significant correlation in individual patients between the amount of vitamin

* On a preliminary statistical examination (in the early part of 1941) of the results, there appeared to be strong evidence in favour of the hypothesis that eclampsia was closely correlated with severe vitamin B₁ deficiency. With a view to testing this further, material from other eclamptic cases was sought, and 7 additional patients were studied—4 by the courtesy of Mr. Hector MacLennan, Royal Maternity Hospital, Glasgow, and 3 by the courtesy of Dr. Eric Stacey, Jessop Hospital, Sheffield. The total number of eclamptic cases is therefore 9.

B₁ excreted and the data subsequently recorded for the placenta these data are here summarized independently.

The placentae were collected as soon as possible after labour and weighed without cord and membranes. The fresh tissue was then fed direct to rats, usually 6 for each placenta, at a dose level of 7½ g. a rat. The concentrations of vitamin B₁ in the placenta were then estimated as described above. The resulting figures are plotted, again on a logarithmic scale, in Fig. 2, and summarized together with the weights in Table II. Although there was no significant correlation between the weight of the individual placenta and the concentration of vitamin B₁ in it, in both cases, as with the urinary excretion of the vitamin, the average readings for the group of eclamptic patients are very significantly below those for the normal group. The t-test shows that the odds against the chance occurrence of differences as large as those observed are many thousands to one in the case of the placenta weights, and millions to one in the case of the vitamin B₁ concentrations.

None of the other clinical groups differs very significantly from the normal in its vitamin B₁ concentration; a difference as large as that recorded between the average placenta weights in the pre-eclamptic and normal groups would occur by chance on rather less than 1 in 40 occasions, but since the scatter of the mean weights in the first 4 clinical groups is not nearly so exceptional we prefer not to stress this particular contrast. A similar remark applies to the difference between the average vitamin B₁ concentrations in the oedema and normal groups.

TABLE II.—Placentae

Clinical Group	No. of Cases	B ₁ per 100 g. of Placenta			Mean Placenta Wt.	
		Mean Log.	Corr. B ₁ (I.U.)	t	g.	t
Normal ..	34	1.288	19.4	—	539	—
Hypertension ..	8	1.297	19.8	0.17	542	0.02
Oedema ..	2	1.508	32.2	2.19	367*	1.34
Pre-eclampsia ..	7	1.329	21.3	0.72	429	2.32
Eclampsia ..	5	0.772	5.9	7.81	274	5.54

* 1 case only.

Note.—The values of t given above are those appropriate to testing separately the significance of the differences between the group means and the mean in the normal group. They are based on 50 degrees of freedom.

Summary

A series of 106 cases of pregnancy among hospital populations has been examined.

It was found (1) that in eclampsia the amount of vitamin B₁ excreted in the urine on admission to hospital is significantly lower than in normal pregnancy; and (2) that the concentration of vitamin B₁ in the placenta is also significantly below that of the placenta from normal cases.

In view of these findings and the occurrence of oedema and suppression of urine in eclampsia, offering a striking similarity to the clinical picture of beriberi, it is suggested that vitamin B₁ therapy might be beneficial to such patients.

We wish to thank Dr. Allen Daley, Chief Medical Officer of the L.C.C., for granting us the facilities for this investigation and for permission to publish its results.

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J. G. Strohm (*Urol. cutan. Rev.*, 1941, **45**, 770), who records his observations on 429 cases of carcinoma of the prostate in various hospitals in Portland (Oregon), states that one-fifth of the male patients who seek relief for obstruction of the vesical neck have this disease. In the majority of cases growth begins in the posterior lobe. Skeletal metastases are found in the pelvis, sacrum, lumbar vertebrae, femur, and dorsal spine, in the order named. Bilateral sciatica is almost indicative of cancer of the prostate, and even unilateral sciatica should be regarded with suspicion. The two most typical symptoms are frequency and difficulty of micturition. The age of Strohm's cases ranged from 17 to 92. Treatment by female hormones relieved the pain of bone metastases to some extent.

SUBARACHNOID HAEMORRHAGE IN IDENTICAL TWINS

BY

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The well-known similarity of physical characteristics in identical twins and the nature of their origin suggest that they should be liable to the same diseases. In particular, those pathological processes which depend on congenital anomalies of structure, such as bicuspid aortic valve or lack of tunica media at arterial junctions, might be expected to affect both rather than one of a pair of uniovular twins. Examples of this must of course be rare, and no instance of subarachnoid haemorrhage has been reported, so far as I have been able to ascertain. The case of an identical twin treated for this condition in the East Suffolk Hospital, Ipswich, aroused particular interest because of this possibility, and I consider it worth putting on record, despite the interval that has elapsed. On inquiry it was found that his twin brother had died some years earlier in very suggestive circumstances. As there are rather unusual features about the case it is perhaps advisable to give the history in full.

Clinical and Pathological Record

The patient was employed by a Suffolk farmer pulling sugar beet. He is said to have been an excellent worker, cheerful and intelligent, and never to have complained in any way. On November 26, 1938, he was found lying in an empty house, and, according to the relieving officer who saw him, there was a history of inebriation the previous day. His condition was ascribed to this, coupled with cold and exposure. On admission to the local infirmary he was found to be in an exhausted condition but conscious. He was extremely quiet, but complained of severe headache. The temperature was 99.4°, the pulse 68, and the respirations 26. There was no apparent paralysis—a negative observation which is important in view of subsequent findings.

Next day limpness of the left arm was noticed and headache still continued to be severe. Heavy albuminuria occurred on the third day, and transfer to the East Suffolk Hospital was arranged. He was admitted under Dr. Ronald Jones on November 29. When seen the patient was very drowsy and speech was slurring. The nurse who had accompanied him stated that the drowsiness had been increasing gradually. The following were the findings on examination: head retracted and rotated to the left, immobility of left arm and leg, twitching of left leg, rigidity of neck, pupils equal and reactive, disks flat, left facial weakness of upper neurone type, tongue deviated to left on protrusion, abdominal reflexes absent, limb reflexes absent, positive Babinski on left. There were hypotonia of the limbs, more marked on the left, and relative anaesthesia of the left side as a whole. Lumbar puncture revealed a uniformly blood-stained fluid at a pressure of over 400 mm. and, on centrifuging, the specimen yielded a yellow supernatant fluid. The blood pressure was 165/90.

Subarachnoid haemorrhage was diagnosed and daily lumbar punctures were started. The cerebrospinal fluid became free of visible blood in a fortnight, its pressure fell to 220 mm. and the colour became deep yellow. The patient began to take an interest in his surroundings, though slight headache and head retraction still remained. The paralysis was unchanged. Improvement continued for a further fortnight, when the fluid was a translucent yellow and the manometric reading 200 mm.

Apart from the left hemiplegia, the case up to this point had followed a comparatively normal course. Hemiplegic symptoms, however, are not uncommon in subarachnoid haemorrhage. There is no reason to suppose that, had no other condition supervened, the patient would not have survived and ultimately recovered some degree of power in his leg and possibly his arm. On the following day, however, he was prostrated with violent headache and pyrexia of 101° F. The C.S.F. pressure rose to over 400 mm. and the fluid itself became turbid. It yielded meningococci in culture, and gave a positive meningococcal pre-