other adult members of the family, while Cases 10 and 11 were probably reinfected from next-door neighbours, whose infestation had not then come to notice. It will be noted that in two other cases (Nos. 9 and 14) in which there was concealment recurrences occurred at a much later date.

From Aug., 1942, onwards a second series of scabietic cases were treated with a 5% aqueous preparation of the 25% emulsion. On the addition of water an interesting bright-yellow suspension was formed, and it was found that not only was it essential to prepare the medicament immediately before use but that warm water as a diluent was superior to cold water, since the sediment which invariably formed upon the bottom of the vessel was less bulky. Such a 5% preparation, allowed to stand overnight, produced a substantial gritty deposit and rendered the solution unsuitable for application to the skin. In the series of 93 cases treatment was in some instances performed daily and in others every other day, whilst a similar method of routine was practised as before.

So far as could be ascertained, none of the cases treated had received prior medication; neither were directions given by me regarding the desirability of sterilizing or fumigating clothing and bedding during or after treatment. Table II shows the relevant details.

Analysis of Table II

Of 93 cases treated and subsequently visited on the first of two "follow-ups" (74 not less than one month and 19 in from two to four weeks after the last application of T.E.T.M.S.) none showed any sign of recurrent scabies. A second "follow-up" not less than one month after the last application showed 6 cases suffering from early scabies (Nos. 17, 18, 42, 44, 75, and 78), and of these only one case (No. 78, who showed a few minute papules and vesicles on one hand) had received her first "follow-up" under one month—i.e., 22 days. Since Munro (1919) has indicated that the life-cycle of the parasite, egg-to-egg stage, varies between 9 and 15 days (and there is much extraneous support for his findings), it is reasonable to conclude that none of the 6 recalcitrant cases could have been recurrences in the true sense, but rather reinfections. It can therefore be stated with some degree of certainty that the entire series of 93 cases were cured, but that 6 were reinfected from a concealed familial source. Further points which appear from the analysis are:

(a) An approximate average of 3 applications were needed, although in some cases 6, 7, and 8 applications were deemed necessary. From 6 of the later cases, acting as a small test group, active female itch-mites were extracted before treatment with 5% T.E.T.M.S. Twenty-four hours later further samples were extracted, and in 4 cases the parasites were found to be dead, while a further application had killed additional specimens taken from the remaining 2 cases twenty-four hours later still.

(b) From 227 occupants in the houses concerned 154 (67.8%) cases of scabies were discovered.

(c) Of 93 patients treated 88 slept with infested bed-partners, while the remaining 5 were of school age and associates of scabietics or living in the same house with them.

(d) Out of the 93 patients 55 lived in houses having a slipper bath with an adequate hot and cold water supply.

(e) Of the 93 cases 7 produced a mild erythematous dermatitis, which was found to be of little moment and quickly subsided on discontinuing the treatment. The rash was usually most obvious on the upper chest and shoulders. It is of interest to note that in the first series treated with the 25% emulsion no sign of dermatitis was apparent, and this would seem to be due to the oily and more penetrating character of the soluble T.E.T.M.S., as opposed to the watery 5% suspension.

From these results, and in my experience generally, routine fumigation and sterilization of clothing and bedding have limited value, besides being expensive. Reasonable cleanliness of person, clothing, and household is calculated to give equally good results.

Comment

It is stressed that the original cases were on the whole, and of their type, severe and responded extremely well to treatment. It is suggested that the application of the 25% emulsion, though seemingly wasteful, may be found both useful and time-saving, especially in severe and complicated cases for which hospitalization is considered necessary and when available beds are at a premium. Furthermore, it is admitted that in the

first series of cases treatment erred on the generous side, and experience may show that the number of applications of the 25% emulsion may be reduced without detrimental effects. Alternatively, it is suggested that a similar emulsion with a smaller percentage of combined T.E.T.M.S. may perhaps give comparatively good results.

In 5% aqueous solution the preparation was less spectacular, though of considerable potency, and the dermatitis recorded in 7 cases was of a mild order. My observations, bearing in mind the limitations of the series, stimulate a cautious yet hopeful opinion that T.E.T.M.S., used under adequate supervisory control, may prove a potent and convenient acaricide and be preferred to other sulphur compounds. In conclusion, I would stress that it has not been my intention to detract from the merits of benzyl benzoate, for which I have high regard.

Summary

T.E.T.M.S. in 25% emulsion has been found to be curative in 11 out of 14 cases of severe and complicated scabies, the remaining 3 cases being probable reinfections.

In 15 volunteers and 18 patients the emulsion failed to produce dermatitis or irritation beyond a preliminary smarting in some severe cases.

It would appear to have extremely beneficial results upon some of the secondary concomitants of scabies.

In 5% aqueous solution it has proved curative in 93 consecutive cases and produced only mild dermatitis in 7 patients.

It has proved to be a sarcopticide of potency against the human itch-mite and is worthy of extended trial.

Thanks are extended to Messrs. Imperial Chemical Industries Ltd. for generous supplies of tetraethylthiuram monosulphide and, in particular, to Dr. C. M. Scott, whose kind co-operation was much appreciated.

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ON THE VALUE OF VITAMIN B₁ IN PREVENTION OF TOXAEMIA OF PREGNANCY

BY

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This experiment was suggested by perusal of the last (1940) Annual Clinical Report of the Department of Obstetrics and Gynaecology of the University of Hong Kong, in which Gordon King reported 155 cases of avitaminosis B₁ (beriberi) complicating pregnancy and labour, 117 (75%) of which had a blood pressure of 140/90 or over, including 16 cases of eclampsia. Assuming that the usual incidence of eclampsia is 1 in 500, it is apparent that its incidence in beriberi is increased about 50 times. Other observations pointed in the same direction, though less definitely. Siddall (1938), impressed by the high incidence of pre-eclampsic toxæmia and eclampsia in Canton, where beriberi is endemic, believes that B₁ deficiency in pregnancy leads to a malignant hyperfunction of the pituitary, with disturbed carbohydrate metabolism, oedema, and raised blood pressure. Nixon, Wright, and Fieller (1942) investigated the vitamin B₁ content of the urine, and in certain cases also of the placenta, in 46 clinically normal and 60 abnormal pregnant women whose disabilities were as

follows: hypertension 28, hyperemesis 6, pre-eclampsia 3, eclampsia 9, oedema 14. They concluded that in eclampsia the amount of vitamin B₁ excreted in the urine and concentrated in the placenta was significantly lower than in the normal cases. In none of the other clinical groups, however, did the amount of vitamin B₁ differ significantly from the normal. Ross *et al.* (1938) added dried milk, vitamins (including vitamin B in the form of yeast tablets), calcium, and iron to a diet which, for pregnant women, might be regarded as marginal in regard to protein, vitamins, and minerals, but did not find any significant effect on the incidence of toxæmia. Twenty-seven patients were given the enhanced diet, and 9 (33.3%) became toxæmic, while among 26 controls 11 became toxæmic (42.3%). The women were all resident in a charitable institution, and their diet could therefore be carefully supervised.

The Present Investigation

In the autumn of 1941 an investigation was started in which vitamin B₁ was given to 100 women who were not more than 20 weeks pregnant, and continued till term. Alternate cases were taken as controls. To the treated women 1 tablet containing 3 mg. of vitamin B₁ (aneurin hydrochloride) was given daily. As each milligramme represented 320 I.U. of B₁, the total daily dose given to each patient was 960 I.U. In course of the investigation a certain number of patients dropped out through various causes—miscarriages, removals, etc.—so that in the end there were left 169 women, consisting of 88 treated cases and 81 controls.

Results.—In assessing the incidence of toxæmia in the two groups two different standards of toxæmia are taken: (1) a blood pressure of 130/70 (standard I); (2) a blood pressure of 140/90 or over, or any blood pressure of over 130/70 if accompanied by albuminuria (standard II). Of treated cases there were 32 (36.3%) who had a blood pressure exceeding 130/70, excluding patients with chronic hypertension. Of the control cases 20 (24.6%) had a blood pressure of 130/70. Of treated cases there were 7 (7.9%) who had a blood pressure of 140/90 or over, or a blood pressure of over 130/70 with albuminuria. Of the controls there were 4 (4.9%) who were toxæmic according to this standard. The results may be made clearer by the following table:

Table showing Incidence of Pre-eclamptic Toxaemia in Treated Cases and in Controls

	No. of Cases	Incidence of Toxaemia	
		Standard I	Standard II
Treated	88	36.3%	7.9%
Controls	81	24.6%	4.9%

These negative results might be explained in one of two ways: first, that B₁ deficiency does not play any part in the causation of pre-eclamptic toxæmia; secondly, that the diet of the women included in this experiment was not deficient in vitamin B₁. In this connexion it may be noted that McCance and co-workers (1938) in an investigation of the diets of 120 women from 3 to 9 months pregnant, at varying income levels, found that all, even including those in the higher-income groups, received suboptimal amounts of B₁, the estimated daily intake varying from 209 to 454 I.U., as compared with an optimal intake of 600 to 900 I.U.

The conclusion to be drawn from this experiment is that, so far as the prevention of toxæmia of pregnancy is concerned, no beneficial effect is obtained by supplementing the diet with vitamin B₁.

I am much indebted to Glaxo Laboratories, Greenford, Middlesex, for their interest in the experiment, and for a free supply of vitamin B₁ tablets.

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Medical Memoranda

Intra-uterine Rupture of the Umbilical Cord

The following case occurred recently in my practice, but I can find no record of a similar happening in England, although a few instances of spontaneous rupture have been recorded from other countries. Most of those already reported involved interference in an abnormal confinement or abnormalities of the cord.

CASE HISTORY

The patient, aged 28, had had one previous normal confinement. The present pregnancy was normal except for some anaemia, and later there had been suprapubic pain for which no cause was found. She went into labour at term at 8 a.m. and had mild pains for ten hours. I saw her early in labour; the head was engaged, the foetal heart normal, and pains infrequent and slight. The nurse visited during the day and there was no advance. At 7.20 p.m. the nurse saw her again; pains were more frequent, but she left the house. At 8.20 p.m. the patient suddenly had one severe long pain. At this time she felt the foetus give a violent kick; she lost a small amount of blood per vaginam and felt faint. After this time a little blood was lost with each contraction, but on no occasion was the loss profuse. The nurse arrived at 8.40 p.m. and sent for me immediately. There had been slight loss of liquor amnii, but at 8.50 p.m. the membranes ruptured; there was a large amount of liquor, and the foetus followed at once. The cord was seen to be ruptured. The maternal end of the cord presented immediately afterwards; there was no bleeding from either foetal or placental end. The foetus was asphyxiated; it made no attempt to breathe, and there was no apex beat palpable. It was an apparently healthy full-term male, but remained blue in colour and flaccid. The placenta and membranes were delivered intact five minutes afterwards. The puerperium was uneventful.

The placenta was rather pale in appearance. The cord was 24 in. long and was torn about 1/4 in. from the umbilicus. There was just enough stump to hold a clamp. It appeared normal except at the umbilical end, where it was swollen and looked rather sloughy. The vessels themselves were not swollen. The tear was transverse and irregular. The amniotic sac contained some meconium and a blood clot which did not look very recent.

DISCUSSION

A case of this sort in an otherwise normal confinement must be exceedingly rare. It is difficult to see why a cord of normal length should rupture. In this case there was no relative shortness, as the cord was not round the neck nor was there any sign that it had been so. In other reported cases there have generally been intra-uterine manipulations or relative or absolute shortness of the cord, which generally ruptures near the placenta although the cord is often thinner just at the umbilicus. The cord is said to be able to withstand a stress of 9 lb. It has been suggested that a loop of cord may get fixed at the place of looping. During the advance of the foetus there may be enough stress produced on the fixed cord to cause rupture. In this case there was some abnormal stimulus to the foetus, causing abnormal activity half an hour before delivery. This was at the time of the severe pain and the violent kick of the foetus, which was the last movement felt by the mother. Unfortunately there was no one present to record the foetal heart rate. The loss of blood was never excessive. The foetus undoubtedly died from asphyxia and not from haemorrhage. Bleeding from the foetal end would soon cease as the heart's action would be speedily inhibited by on-coming asphyxia. Bleeding from the maternal end would soon cease from retraction of the torn ends of the vessels. There was no evidence of retroplacental clot or earlier separation of the placenta to cause the external haemorrhage. This was therefore presumably due to uterine contraction expelling a small amount of blood from the torn ends of the cord into the amniotic sac. Some of this blood then escaped with the leaking liquor; the rest remained as a clot in the sac.

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B. Rose and J. S. L. Browne (*Ann. Surg.*, 1942, **115**, 390) found that in some patients after severe burns there was a large increase in blood histamine. In all cases there was a decrease in the blood histamine with the appearance of toxæmia and oedema. As the oedema and signs of toxæmia disappeared and the patient improved, the blood histamine rose to normal or higher levels.