foreign object tends to produce strings of fibrin, which cause confusion in reading the results.) Set aside for five minutes, taking care to avoid drying up of the slide and soiling by dust. Rock the slide occasionally.

Results are read in from 5 to 10 minutes by the naked eye, and if necessary are confirmed by a hand-lens. The use of the low-power objective, as recommended by Steuer, is rarely necessary.

Results

The tests were carried out on Egyptian labourers. Slides were taken in various camps under military control, were brought to the laboratory the same day, and were examined within the next 24 hours. In all, 640 persons were examined; 11 of these gave "slide-positive" results against OX 19, and 2 were positive to OX 2 in addition. These 13 were then followed up by a complete Weil-Felix reaction, using Dreyer's technique. The results are summarized in Table I.

TABLE I

Positive to OX 19	..	..	..	..	..	..	7*
Negative "	..	..	..	..	..	..	6

* Of these 7 positives, 2 also showed agglutination in 1/50 against OX 2; and these two were the same persons who were slide-positive for OX 19 and OX 2.

The seven "slide- and Dreyer-positive" cases were further studied by carrying out a series of Weil-Felix tests at 4-day to 7-day intervals. The results obtained are shown in Table II.

TABLE II

Serial No.		1st Test	2nd Test	3rd Test	4th Test	Remarks
3	OX 2 OX 19	0 250	50 250	— —	— —	Had typhus a month before first test
4	OX 2 CX 19	50 50	50 125	50 500	— —	Not traceable afterwards
12	OX 2 OX 19	50 500	— —	— —	— —	Had typhus 3 weeks previously in hospital
19	OX 2 OX 19	0 500	— —	— —	— —	Not traceable: history not available
20	OX 2 OX 19	0 1,280	0 2,560	— —	— —	Hospital case: diagnosed typhus
21	OX 2 OX 19	0 250	0 1,800	— —	— —	Typhus with rash
22	OX 2 OX 19	0 250	0 250	0 1,250	0 1,250	Typhus with rash

Nos. 4 and 19, despite the history being unobtainable, should be considered typhus cases in view of the high titre. The others were definite typhus cases. It will thus be seen that all the clinical and Weil-Felix-positive typhus cases showed "slide agglutination" as well.

The results of the six slide-positive and Dreyer-negative cases (see Table I) are detailed in Table III.

TABLE III

Serial No.:	1	2	7	13*	15	17
OX 2 ..	0	0	0	0 0	0	25
OX 19 ..	0	0	0	0 0	50	50

* Done twice, at five days' interval.

Except in two cases, there was no agglutination by Dreyer's method, and in neither of these was the titre high enough for diagnosis. These observations suggest that negative cases may occasionally give positive results, but this is not of much import. The fact that every clinical typhus case which was proved positive by the Weil-Felix reaction was spotted by the slide method is justification enough for urging the use of this simple technique as a preliminary to putting up a long series of tests by Dreyer's or Felix's method.

It was decided to try out a number of slide-negative cases by Dreyer's method, to see whether the zone phenomenon or some other factor would produce positive results in slide-negative cases. Thirty-three such sera were tested; the highest dilution put up was 1 in 250 and the lowest 1 in 25. Of these, 25 were completely negative; the remaining 8 gave agglutinations as shown in Table IV.

TABLE IV

Serial No.:	25	27	29	33	35	45	50	52
OX 2 ..	0	25	0	50	25	25	0	25
OX 19 ..	25	0	25	0	25	0	25	0

None of these titres has any diagnostic value.

It is reasonable to conclude from these results that a slide-negative blood will not give a positive Dreyer reaction—certainly not of any diagnostic value. The low titres given in Table IV have no significance beyond perhaps the possibility that the individuals had developed some immunity as a result of subclinical infection, or had suffered from the disease some time previously.

Comment

Having established that all positive cases can be detected by the slide method (of course to be confirmed by a complete agglutination test), and that the slide-negative cases will not give a positive result by Dreyer's method, it is a reasonable assumption that a complete Weil-Felix test need not be done unless the slide test is positive. If this procedure is followed the obvious advantages will be: (a) economy in material and time; (b) avoidance of unnecessary bleeding of the patient; and (c) easier dispatch of slides, as compared with that of blood or serum, to a laboratory situated at a distance from the hospital. Probably the test could be done on thick smears of blood, similar to those used for the detection of malaria parasites, and taken at the same time.

Summary

A dry blood test for typhus has been tried out among Egyptian civilians.

It has been shown that all typhus cases give a slide-positive result, though a slide-positive result does not necessarily mean a positive case.

Control tests show that a negative slide will not give a positive Weil-Felix reaction.

The need for trying out this method on a more extensive scale is urged, and the advantages to be derived therefrom are discussed.

We thank Mr. A. C. Lahiri for his help in recording our results and with the typescript.

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Medical Memoranda

Vaginal Ulceration and Vitamin C Deficiency

During the past six months several patients attending the gynaecological clinic at the Radcliffe Infirmary with acute ulceration of the vagina were given doses of 300 to 500 mg. of ascorbic acid daily while investigations were proceeding to determine the aetiology of the ulceration. Healing occurred rapidly without further treatment. With this in mind it was decided in future to investigate the level of the blood ascorbic acid before starting treatment. The following cases are therefore of interest.

CASE I.

A single woman aged 34, in apparently good health, complained of pain and discomfort on micturition and a continuous blood-stained vaginal discharge for one month. There were two small areas of ulceration on the inner surfaces of the labia minora and an additional area on the vault of the vagina. They had the punched-out appearance of syphilitic ulcers and the acute tenderness of tuberculous ones. There was no surrounding induration, smears and cultures failed to reveal either treponema or gonococci, and the Wassermann reaction was negative. Biopsies showed no evidence of epithelioma and nothing suggestive of gonococcal, tuberculous, or syphilitic infection. The urine was sterile and there was no glycosuria. Haemoglobin amounted to 98%, the red count was 4,900,000, and the leucocyte count 10,000. The blood ascorbic acid level was 0.04 mg./100 ml. The normal wartime level as found in a control series of apparently healthy persons was 0.4 mg./100 ml. (J. R. P. O'Brien—personal communication).

In view of these results the patient was questioned on her diet, and it was found to be unusually lacking in green vegetables and fruit. The main meal of the day was taken in the canteen of a munition factory. Ascorbic acid mg. 150 t.d.s. was prescribed for three days, and mg. 100 t.d.s. for a further month. The ulceration had completely disappeared five days after starting treatment. There

has been no recurrence after six weeks. The blood ascorbic content rose to 0.84 mg./100 ml.

CASE II

A healthy-looking married woman aged 38 complained of "acute pain in the front passage" a few days before menstruation and severe dysuria for four months. Owing to extreme pain and tenderness sexual intercourse for the previous four months had been impossible. On examination there was a condition of granulomatous ulceration, involving the vaginal introitus, the suburethral angle, and the fourchette. There were also minute shallow ulcers within the vagina. Smears and cultures revealed no evidence of gonococcal or treponema infection. The Wassermann reaction was negative. Biopsies showed benign non-specific ulceration. The blood picture was normal; the urine was sterile and sugar-free. The blood ascorbic content was 0.26 mg./100 ml. Ascorbic acid mg. 150 t.d.s. was prescribed for three days and mg. 100 t.d.s. for a further four weeks. All ulceration disappeared in six days and the blood ascorbic content rose to 1.2 mg./100 ml. There has been no recurrence after five weeks.

These cases have reminded one of us (M. K. L.) of similar vaginal conditions seen among West African natives and recognized as due to an avitaminosis. Varying degrees of avitaminosis produced varying degrees of vaginitis, ranging from a mild irritation with no pain to excoriation with painful ulceration. Treatment with marmite, tomato juice, and citrous fruits was always successful.

The above cases were investigated and treated while under the care of Mr. J. A. Stallworthy, by whose kind permission we publish them. The ascorbic acid used was the preparation redoxon, supplied by Roche Products Ltd.

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Anaphylactic Shock after Posterior Pituitary Extract Injection

The following unusual and alarming reaction to pituitary extract seems to justify publication.

CASE HISTORY

An unmarried woman aged 32 was under my care two years ago for menorrhagia lasting from eight to ten days at each period. She improved after treatment with progestoral tablets and calcium injections. In Oct., 1942, she had another menstrual haemorrhage; it was so severe that she was unable to carry out her work, and came to me for immediate help. I injected intravenously 10% calcium "Sandoz" and a mixed injection of 1 c.cm. of posterior lobe pituitary extract (glandutrin Richter) plus 1 c.cm. of neofemargin intramuscularly. Within a few minutes she complained of severe pains in the head, a feeling of apprehension, and blurred vision. She had an attack of coughing, and said that she could not breathe and that the tongue felt swollen. At this stage I could actually see the eyelids, nose, and lips swelling, and the skin of the body was covered by an erythema and was hot to the touch. She also complained of retrosternal pains. The pulse was irregular and accelerated up to 140. There followed pains in the epigastrium and later in the lower abdomen. At this stage the nose became blocked, the eyes were running, and vomiting began. During all this time the patient was unable to speak, although she was not unconscious; I gave her 2 c.cm. of nikethamide (coramine) hypodermically. A few minutes after the injection her condition improved; the pulse became steadier and the rate decreased to 120 and later to 100, but tachycardia persisted until the following day. After the nikethamide injection large quantities of very frothy fluid were vomited and the breathing became easier. All the symptoms began to clear up; the swelling of the face was greatly improved, and the exanthema faded gradually. Itching of the feet, swollen eyelids, and head pains remained throughout the following day. The patient was able to go home five hours after the onset. One week later a slight irritant rash appeared on the side of the injection.

A noteworthy fact in her past history is that she had urticaria after eating fish during childhood. The picture resembled, to a certain extent, anaphylactic shock after serum injection.

COMMENTARY

During 17 years' practice I have given several thousand injections of pituitary extract and ergotin, either alone or mixed, and I have never seen a similar reaction; moreover, on discussing this with colleagues I have found no one else who has seen a case like it. The question arises whether this reaction was provoked by the pituitary extract or by the neofemargin, which contains ergometrine. Chassar Moir (1936) reported a few cases of unusual reaction to ergometrine, and considers the possibility of a rare idiosyncrasy to that drug, but his cases showed a different appearance. Their faces were grey and covered with sweat; there was no sign of glottis or pharynx oedema, no rash or itching. It seems to me that the case I have described was due to the presence in the pituitary extract of some traces of protein or to hypersensitivity to pituitary extract produced by some other unknown substance. The

picture of pituitary shock which sometimes occurs in patients is clinically characterized by pallor, increased pulse rate and fall of blood pressure, headache, and occasionally abdominal pains, nausea, and vomiting. These symptoms are due to capillary vasoconstriction and coronary spasms, and they differ from those I have described here.

I found very little explanation in the literature. Simon and Ryder (1936) reported five cases of hypersensitivity to pituitary extract in patients with a family or personal history of allergy, but all had been sensitized by previous pituitary injections, whereas my patient had never before had an injection of pituitary extract. These authors made skin tests with different extracts, and showed that the sensitivity is not limited to one particular brand of extract and is not due to vasopressor or oxytocic factors but to some constituent of the gland. Sullivan and Hefferman (1942) describe three different varieties of toxic reactions following the use of pituitary extract: (1) pituitary shock; (2) pituitary reaction resembling true anaphylactic shock; (3) more rare tetanic convulsions with either a rise or a fall in blood pressure.

Although conclusions cannot be drawn from one case, it seems advisable to avoid pituitary extract injections in cases with a history of allergy and to give only small doses if a patient has previously had the extract, until it is certain that there is no hypersensitivity.

London, W.1.

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A Case of Cavernous Sinus Thrombosis

The following case is of interest as an addition to the number of recorded recoveries.

CASE HISTORY

A boy aged 14 struck the region of his left eyebrow on a door-handle. On account of soreness of the part he attended hospital two days later, but no abnormal signs were then evident except for a slight skin abrasion. The following day the eye began to become prominent and the temperature mounted to 103°, and on admission that evening there was gross left proptosis with chemosis as of an orbital cellulitis. The next evening the other eye became equally proptosed, and the day after that the whole face was grossly engorged. By that time he was vomiting, was doubly incontinent, and had become semi-comatose. This state lasted a week, during which time the fever remained around 103°; then gradual recovery ensued, with decongestion of the face and a return to continence and consciousness. On the 5th to 8th days after admission there were attacks of tremors affecting all muscles of the face, and to a lesser extent the arm, on one or sometimes both sides; these lasted a few minutes and occurred several times a day. No fundus changes were evident except slight engorgement of the retinal veins and doubtful blurring of the optic disk margins, especially on the left side (the side first affected). On his return to consciousness a residual left facial palsy was observed, clearing in about a fortnight. There were also stiffness of the right leg with extensor plantar reflex, and left external rectus paresis, which disappeared in a few days. His convalescence was delayed by a mild basal pneumonia and a small subcutaneous orbital abscess. Vision was 6/5 right and left.

Treatment included administration of sulphapyridine, which could only be given intramuscularly after the second day, and later sulphadiazine by mouth—32 g. in the first week (1 g. 4-hourly for 2 days, then 6-hourly for 5 days) and 21 g. in the second week (1 g. 3-hourly). Four pints of glucose-saline 5% drip transfusions were necessary while he was incontinent, vomiting, and unable to take fluids by mouth.

COMMENTARY

Cavernous sinus thrombosis has been regarded as a uniformly fatal disease: in 1936 a 100% mortality was recorded in a survey of literature by Grove. With the advent of the sulphonamides, however, some 12 cures have been effected. In at least 3 cases, in conjunction with sulphathiazole, heparin has been used with success for the prevention of any extension of the clotting; in addition staphylococcal antitoxin is recommended even where (as in this case) the blood culture is negative and no adjacent furuncles can be incriminated, since before the sulphathiazole takes effect there is a lag period in which the antitoxic agent is of great value.

In this case the infection presumably reached the orbit from a nasal sinus through a fracture of the intervening bone, although this could not be shown subsequently on an x-ray film. The meningeal irritation producing localized tremors, and the residual palsies, are a frequent accompaniment, and confirm the diagnosis. Retinal changes have rarely been severe in those cases which have recovered.

I am indebted to Mr. P. G. Doyne and Dr. S. P. Meadows for permission to record this case.

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