uraemia, tuberculous meningitis, and pyelitis. The outstanding symptom in all cases was oedema of the eyelids, and this, in conjunction with the presence of eosinophilia, may be regarded as diagnostic. The abnormal mental state appears to have been inadequately described in the past, and is worthy of special note. Haemorrhages into the conjunctivae and nail-beds constitute strong supporting evidence, and these signs appear to be attributable to larval embolism. Definite indications of involvement of the central nervous system were observed, and in one case the clinical signs suggested a cerebellar lesion, possibly also of embolic origin. Muscle tenderness was present in most cases, and a surprising feature was the existence of constipation, which was exceedingly troublesome and resulted in faecal impaction on one occasion.

I desire to express my thanks to Dr. J. H. Sheldon, consulting physician, New Cross Hospital, Wolverhampton, for his co-operation and help; to the resident medical officers for their clinical assistance; and to Mr. K. R. Vasey.

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TRICHINIASIS IN HERTFORDSHIRE

BY

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The following brief account of some cases of trichiniasis recently diagnosed in Harpenden, Herts, may be of service to others called upon to recognize this disease.

Information that trichiniasis had appeared in this country reached one of us on February 1; in the practice of the other there had been several cases presenting unusual features, of which the most arresting was oedema about the eyes. A connexion between these facts was suspected, and blood films from two of the cases were examined forthwith. Each showed an extreme eosinophilia. Five typical cases were then investigated further. Their clinical histories are as follows:

Case Histories

Case 1.—Female aged 44. Had been feeling ill for three days before January 23, when she first noticed puffiness of the eyes and had general muscular pains; she also complained of severe temporal headache. On January 24 her temperature was 101° and her pulse 100; she had a harsh barking cough and marked oedema of the eyelids. Physical examination revealed nothing else abnormal, and there was no albuminuria. Fever of 99° to 101.6° has now persisted for sixteen days; muscular pain, chiefly affecting the calves of the legs, neck, and shoulder girdle, is now diminishing. She also complains of vague abdominal discomfort, sometimes amounting to pain.

Case 2.—Male aged 36. Onset on January 21 with swelling of the eyelids and face, temporal headache, and pain, particularly in forearms and legs. No abnormal physical signs except muscular tenderness; no albuminuria. Fever persisted for three or four days, muscular pain for about ten days, accompanied later in the forearms by oedema. Recovery complete in a fortnight.

Case 3.—Female aged 34, the wife of the foregoing patient. Had an illness with identical features at the same time, but was less ill; continued her ordinary life, and was neither examined nor treated.

Case 4.—Male aged 53. Onset on January 31, with oedema of the eyelids; no headache and no muscular pain. On February 1, temperature 100°, well-marked oedema of the

eyelids; physical examination otherwise negative; no albuminuria. Temperature since has varied between 99.6° and 101.6°, and some muscular stiffness and a feeling of ill-being have developed: this attack has now lasted eight days and continues.

Case 5.—Female aged 44. Had a headache for two days before January 21, when her eyes became puffy and she had pain in the muscles of the neck, arms, and legs, and some vague abdominal discomfort. First seen on January 23, when she had a temperature of 100° and marked oedema of the eyelids. Physical examination negative; no albuminuria. Pain and a feeling of ill-being lasted for ten days, by which time the oedema had also nearly subsided. She was quite well within a fortnight.

Pathological Investigations.—Differential leucocyte counts gave the following results:

	No. of Days since Onset	W.B.C. per c.mm.	Percentage of Eosinophils	Eosinophils per c.mm.
Case 1	12	13,400	28	3,752
Case 2	14	8,000	27	2,160
Case 3	14	11,600	27.5	3,190
Case 4	5	12,000	31	3,720
Case 5	14	17,800	47	8,366

There was thus a pronounced eosinophilia in all cases, although in one the duration of the disease had been only five days, and in three the attack had been brief and was clinically over when the counts were made.

Muscle biopsy was performed in three cases, small pieces of the deltoid being removed for us under local anaesthesia by Mr. Michael Harmer, whose help we gratefully acknowledge. In Cases 2 and 5 no embryos were present, but a single coiled embryo lying among the fibres was discovered in the specimen from Case 1. These examinations were made on the same day of the disease as the blood counts.

In Case 4, the most recent, two stools passed after 4 grains of calomel were examined for adult worms with no result, and in 10 c.cm. of blood lysed in an excess of distilled water and centrifuged no embryos were found.

Dietetic History.—All these patients could recollect having eaten sausages during the fortnight preceding the onset of their illness. Two of them had been in Birmingham and one in London during this period, and might have acquired the disease there; but its local origin is certain in Case 5—this patient having had no meals away from home—and particularly in Case 3, which patient had not only been continuously at home but had admitted having eaten two locally bought sausages raw on or about January 14. Her husband, Case 2, ate four of the same sausages cooked.

Other Cases.—One of us (D. M.) has seen several similar cases, all during the last three weeks of January, in which no laboratory investigations were made. We mention in passing that one of these patients gave blood for transfusion on the day before his illness became noticeable: the number of embryos so transmitted would be small, but it should presumably be recognized as inadvisable that anyone suspected of having trichiniasis should act as a blood donor. It is not assumed that these were necessarily cases of the disease, and, indeed, we have reason for believing that the features of mild trichiniasis may be imitated by some other condition. A man complaining of fever and headache, who three days later developed conjunctival oedema but no muscular pain or other complaint, had an eosinophil count of only 132 per c.mm. on the sixth day after the onset. He had eaten sausages on several occasions, and his may be a case of trichiniasis in which eosinophilia has failed to develop. This explanation is almost impossible in another case under the care of Dr. K. H. C. Hester, to whom we are indebted for permission to mention it. She is a woman aged 48 who has developed marked oedema of the eyelids in association with a febrile illness having no other localizing features except upper respiratory tract catarrh. Not only is her eosinophil count merely 56 per c.mm., but she is a strict vegetarian, and close questioning has brought to light not even the possibility that she might have consumed meat in a sandwich without knowing what it was.

Commentary

The finding of a trichinella embryo establishes the diagnosis in Case 1 and thus proves the existence of the disease in this locality. The other four cases are clinically similar, and all exhibit an eosinophilia of the same order. There is no other febrile disease of such duration in which an eosinophilia of this degree occurs: during a known epidemic an eosinophil count of over 2,000 per c.mm. in any case with the clinical features of trichiniasis is almost certainly diagnostic.

A detailed analysis of the clinical features of so few cases is not called for, but the following points may be noted. The only constant feature is oedema of the eyelids, and maximum stress should be laid upon this in encouraging the search for further cases, although, as we have suggested, this sign should not be taken as pathognomonic. Severe headache localized just above the eyes and quite unrelieved by ordinary sedatives is common, as is a feeling of general ill-being. Muscular pain and tenderness are variable, and were accompanied in only two of these patients by recognizable oedema. Linear subungual haemorrhages were not observed. In no case was there any clear history of gastro-intestinal disturbance preceding the stage of invasion. Three of these cases were very mild, with a duration of little more than a week, and the remaining two, although of longer duration, are of only moderate severity. In such comparatively light infestation the examination of blood and stools for parasites is very likely to be fruitless. The same may be said of muscle biopsy unless the specimen is of adequate size and taken from a carefully chosen site. Out of consideration for patients who submitted to this operation rather in the public interest than for any benefit to themselves, the incisions made were small and the fragment obtained amounted to not more than about 0.1 gramme of muscle. Were we faced again with the need for proving the existence of this disease, we should advocate identifying a point of maximum tenderness, which is usually found near a tendinous insertion, and the excision therefrom of a strip of muscle at least 1 cm. long.

The source of the infested meat which must have been consumed by these patients is not yet known, nor is the distribution of other cases, if any, in the neighbourhood. It is certainly not confined, as we understand it has been elsewhere, mainly to people of the artisan class; on the contrary, none of these five is an insured patient and some of them are well-to-do. The mere fact that trichiniasis exists in a locality so remote from Wolverhampton—the principal area known at the moment to be affected—appears worthy of immediate record, since it strongly suggests that further cases may be recognized elsewhere as soon as their possibility becomes known.

We are indebted for confirmation of the diagnosis by muscle examination to the Institute of Agricultural Parasitology, St. Albans, which is the consulting laboratory for parasitology to the E.M.S.

J. L. Thorner (*Arch. Pediat.*, 1940, **57**, 437) records an abortive attack of measles in a female infant whose mother did not develop measles until nineteen days after delivery. As the mother had been nursing the child not only during the acute stage of the attack but also during convalescence, it was hoped that antibodies had been transferred through the milk, but to insure attenuation 15 c.cm. of whole blood was injected intramuscularly and only an abortive attack of measles ensued. Measles during the first six weeks of life is uncommon, but previous examples have been recorded by Musser (1927), Kohn (1933), Cogne (1924), and Ronaldson (1926).

Clinical Memoranda

Neurological Complications of Serum Therapy

The publication of the article on neurological complications of serum therapy by Drs. Thompson and Tomblinson in the *Journal* of June 22, 1940 (p. 1015), prompts me to record my own personal case.

CASE REPORT

On June 3 or 4, 1939, I had a severe attack of dysentery. On the first day microscopical examination of my stools revealed plenty of Charcot-Leyden crystals, but no amoebae or cysts: characteristics of bacillary dysentery stools were not found in it. Moreover, I had had definite amoebic attacks once or twice before. Amoebic infection was diagnosed and injections of emetine hydrochloride were given, but there was no improvement after three 1-grain injections. Further examination of the stools revealed a bacillary infection; cultural examination was not done. Anti-dysenteric serum was then suggested. I generally test a patient's sensitivity to serum by giving him a very small preliminary dose intradermally, and I asked my attending physicians to test me in that way beforehand. The test was done; a little while after the test a big local wheal and very scratchy urticarial rashes broke out all over my body. Seeing that I was hypersensitive I refused to have the serum. During the next two or three days my symptoms did not abate with medicinal treatment and I lost a good deal of blood with stools; consequently it was decided that I must have serum. On June 12 the first dose (20 c.cm.) was injected subcutaneously in my right thigh, the only untoward effects being extensive and itchy rashes all over the body. On the 13th I had another dose of 20 c.cm. No rashes appeared, and I began to show signs of improvement. On the 14th I was practically cured, and felt very well. I went out on the 16th to see an urgent case.

On the 17th extensive rashes again appeared. I took a calcium injection and remained indoors for two days. On the 19th I had to go out to see some cases. Throughout the whole day I felt well, but in the afternoon had some malaise, with stiffness all over the body, just as before an attack of influenza or malaria, and I thought that a little exercise might help to pass it off. During a game of badminton I felt great pain in my back between the shoulder-blades; it radiated over both the shoulders and down the arms and forearms. I had to stop, and went to bed after taking a couple of aspirin tablets. The night passed without much trouble. The next morning I felt better except for some pain in the shoulders and arms. I visited my hospital patients as usual, but suddenly felt an excruciating pain between the shoulder-blades, radiating over both shoulders and down the arms. This completely incapacitated me. I was driven home very slowly and gently, as the slightest jerk aggravated the already excruciating pain to such an extent that I thought I would die before reaching home. A doctor was immediately sent for, and on arrival he gave me 1/4 grain of morphine, which alleviated the pain slightly. I was confined to bed for three weeks, suffering extreme agony, unrelieved by anything but morphine, which had only a slight and temporary effect. For a few days my temperature rose a little, and I was delirious for many days, mostly at night (a confused state of mind lasted for about six weeks). Within a week of the first appearance of symptoms the muscles around my shoulders, especially of the right—the deltoid, supraspinatus, upper parts of biceps, and triceps—had shrivelled up to such an extent that the right shoulder and the upper part of the right humerus were left covered by mere skin and a few fibres of muscles, which could be felt like strands of thread on the bone. The supinator muscles of the forearm and the first dorsal interosseous of the palm were also more or less shrivelled up. All these muscles of the left arm were affected, but to a much less degree than those of the right. My right arm became completely paralysed, but the left could be moved with difficulty. There were patches of anaesthesia, hyperaesthesia, and paraesthesia on the skin of both the upper limbs. The left vocal cord was also affected. All these paralyses, and the atrophy of the muscles, occurred within a week or ten days. The pain was