

THE CLINICAL PROBLEM OF LATENT TRICHINELLOSIS

BY

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The most important criterion for the diagnosis of infection with trichinellae is its epidemicity. If many individuals, following the consumption of pork from the same source become ill at the same, relatively short period of time, trichinellosis may be suspected from the beginning. Sporadic cases, on the contrary, can only be diagnosed, when the clinical picture is more or less characteristic. But in endemic areas, the great majority of the cases run a symptomfree, unobserved course. Usually neither high fever, nor acute gastro-intestinal symptoms, headache, photophobia and other nervous disorders, followed by palpebral oedemas, painful myositis, or hypereosinophilia are observed. All that is possible to ascertain in such unobserved cases, are irregular fever attacks, vague digestive symptoms, asthenia and sometimes a strange succulence of the subcutaneous tissue of the face in circumscribed areas. Hypereosinophilia often serves as a guide to clarify the diagnosis, but unfortunately the patients do not appear for medical assistance at the early period of the disease and, as well known, the eosinophil count diminishes parallelly to the disappearance of the clinical manifestations of trichinellosis. It should be mentioned that in endemic areas of trichinellosis also various forms of helminthiases, the most frequent cause of hypereosinophilia — are usually very widespread.

Thus when the criterion of epidemicity fails and when the symptomatology of the disease is atypical, the diagnosis may be very difficult.

On the other hand, the recent therapeutical aspects of trichinellosis necessitate the establishment of the diagnosis as early as possible. The treatment of trichinellosis is at present not more illusory as it was in the past, thereby the early ascertaining of the diagnosis is not indifferent. Therefore, we have to study even all the minor symptoms, which could suggest an orientation towards the disease.

Affections with a vague, undefined closely symptomatology are usually detected at the Departments of Internal Medicine. Hence we should be familiar with the clinical development of atypical cases of trichinellosis.

Recently we had the chance to observe in our Department four cases of trichinellosis, which presented examples of atypical symptomatology. The cases were at first diagnosed as chronic gastritis, latent hepatitis, nephritis or disseminated lupus erythematosus. The clinical picture that developed was very expressive and particularly instructive.

Case 1: M. N. a man, age 28, was admitted to the Hospital on 22 of January, 1960, with the diagnosis of acute *glomerulonephritis*. His previous medical history was not important as regards the present state of the patient. Four weeks before the admission of the patient, he suffered from headaches, accompanied by digestive troubles (nausea, vomiting, diarrhoea) and an attack of fever appeared suddenly. These symptoms persisted two weeks with varying intensity. It seemed that the patient at that time also suffered from an infection of the tonsils. Following this period he noticed palpebral oedemas, the temperature reached 39°C and he called the local medical centre, where the laboratory examination revealed proteinuria and very rare red blood cells in the sediment of the urine. On the ground of these findings (anamnestic pains, oedemas and laboratory findings) he was admitted to the hospital.

On admission the patient was pale, with a swollen face and disappearing palpebral oedema. The patient reported that in the past weeks the oedema of the eyelids was much more pronounced.

The first unexpected finding was the very low blood pressure: Mx 80, Mn 20 mm. Hg, in the following days: Mx 90 Mn 30 mm. Hg. Laboratory examinations revealed further results which were not in accordance with the diagnosis *glomerulonephritis*. The pathological findings in the urine were: urea: 0.30 g. %, BSR 2 mm./hr. Striking was the oedema of the eyelids. Excluding the renal, cardiac, hepatic, allergic, endocrine and other oedemas the possibility of suspected trichinellosis in the developmental form was taken into consideration. Our suspicion was strongly supported by the results of the examination of the blood which revealed 11,000 white blood cells with 60% eosinophils. The temperature was irregular, around 38°C., it was rarely rising to 39°C. and was interrupted by short periods of apyrexia, lasting 2-4 days. The general condition of the patient was very good, except a certain degree of drowsiness and anorexia. The results of the subsequent analyses and examinations (Wassermann, Widal, Weil-Felix, coproscopy, x-ray of the chest and abdomen, F. O., etc) showed no pathological deviations. Reckoning that the patient was in the fifth week of his disease we made a biopsy of the deltoid muscle and the muscle samples, not preserved in formol, were directed for trichinoscopic examination. This confirmed the suspicion of trichinellosis by the presence of larvae of *Trichinella spiralis* in the muscles*.

The patient responded favourably to corticotherapy, the temperature returned promptly to normal, the white blood cells count on the 3rd of February was

* The trichinoscopic examinations were conducted by the chief of Caransebes, Doctor Peter Sirbu, to whom we express many thanks.

8,000/mc. with 18% of eosinophils, and on the 13th of February he could be discharged from the hospital in a good general condition. After one month control examination was made. His blood pressure returned to normal (130/60), but he still suffered from moderate epigastric pains, which irradiated in the right hypochondrium. There were irregular episodes of diarrhoea, headaches and capricious appetite. After three months the patient was still anorexic and from time to time complained of abdominal pains, especially in the right upper quadrant. The liver was slightly enlarged, the liver edges were palpable and tender, the liver function tests slightly positive. Following the lapse of one year the mild anorexia and headaches subsided, he was capable to attend his daily work regularly.

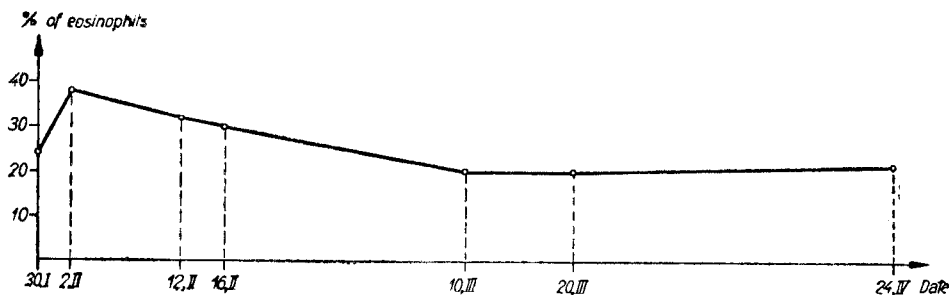
Case 2: M. A., a woman of 21, the wife of the described previously case 1, arrived to the hospital following our insistence to examine her. She made no serious complaints, and suffered only from moderate headaches and vague muscle pains in the forearm. Blood examination on the 3rd of February, 1960, showed 30% eosinophils. She refused to be examined biotically.

Case 3: R. I., a man of 52, admitted to the hospital on January 27th, 1960, with the diagnosis of chronic gastritis and latent hepatitis. He was suffering for about three years from postprandial epigastric pains and abdominal bloating, accompanied by pyrosis, sialorrhoea, anorexia, nausea and sometimes vomiting. One month before the appearance of the mentioned symptoms, after a pig slaughter, he complained of headache and noticed that his face was swollen. He declared that at the same period of time his wife too had a swollen face. During the following weeks the patient became progressively asthenic, the mentioned dyspeptic symptoms were increasing in intensity, consequently he asked to be admitted to the hospital.

During the examination we did not find any pathological symptoms except a very pale colour of the skin and tympanic sound above the abdomen. The laboratory examination showed a BSR of 4 mm/hr., no pathological findings in the urine, faeces, bile A and B, the liver functional tests were partially positive and the x-ray examination of the stomach and intestines revealed pylorospasm and duodenal stasis. The blood count was 10,000 white blood cells with 32% eosinophils. The percentage of the eosinophils diminished slowly (22 per cent on February 2nd, on February 6th 14 per cent). The vague suspicion of trichinellosis was confirmed by the results of trichinoscopic examination, which revealed the presence of larvae of *Trichinella spiralis* in the deltoid muscle obtained by biopsy.

Case 4: B. A., a man of 35, admitted to the hospital on January 29th, 1962, suspected of disseminated lupus erythematosus. We found in his past medical history that he was treated for hyperthyroidism for about three years and that since a long time he suffered from an eczema seborrhoicum on the head, acne rosacea of the nose and face. Three days earlier he became suddenly ill. The manifestations were: shivers, rise of the temperature up to 40°C. asthenia and constipation. He supposed that this was a banal attack of influenza, but since after three days according to the patient's statement, as the temperature continued to persist, he decided to ask to be admitted to the hospital.

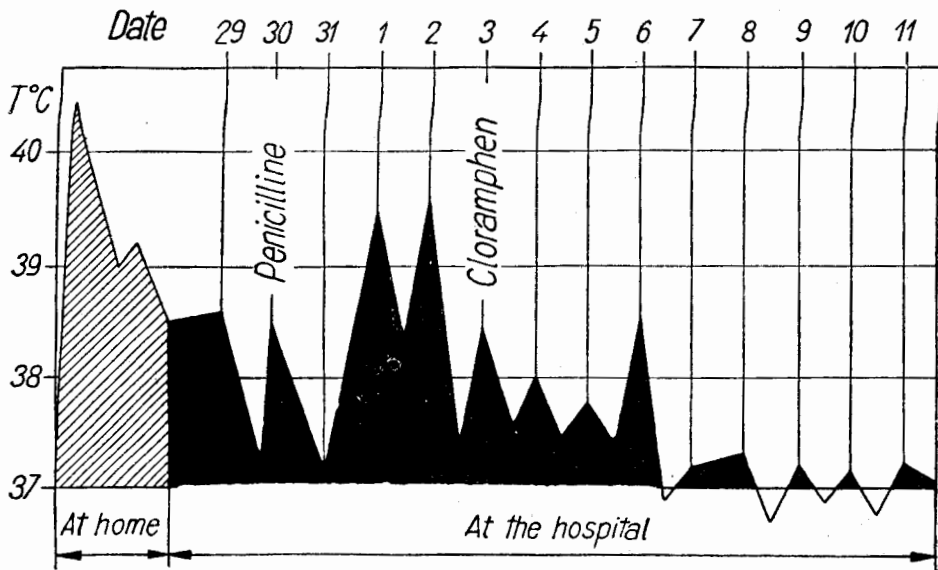
At the examination we found the young man to be of an athletic constitution, without any pathological symptoms, except the eczema serborrhoicum on the head and the rosacea of the nose and face, which, according to the assertion of the patient extended considerably during the fever period. Jointly with the high fever and lack of any symptoms of localization this eczema could offer a basis for suspecting disseminated lupus erythematosus. It should be mentioned that the entire face of the patient seemed to us to be slightly oedematous, or with a certain degree of succulence of the subcutaneous tissue of the face. But the rosacea and the seborrhoea, which became more accentuated since the rise of the temperature resulting here and there even in desquamation of the skin. We were inclined to interpret this succulence of the skin. We were inclined to interpret this succulence of the subcutaneous tissue of the face as an accentuation of the dermatological affections effected by the high temperature. But to our surprise, the blood examination showed 24 per cent of eosinophils. This finding together with the high fever, which could not be explained, compelled us to revise our view on the slight succulence of the subcutaneous tissue of the face and to take into consideration eventually trichinellosis as their cause. Interrogated about his alimentary customs the patient confessed that he has always preferred nearly uncooked pork and sausage. The BSR was 16 mm./hr., relatively low in comparison with the high fever. There was glucose present in the urine and hyperglycaemia (150 mg%). These data offered additional support to our tentative diagnosis of trichinellosis. After three days we have repeated the blood examination and we found 38 per cent of eosinophils. The general condition of the patient was not altered, except the appearance of a moderate drowsiness and reduced appetite, transpirations and left occipital neuralgia. He was treated with antibiotics but without influence on the course of the temperature (s. Graph 1). After ascertaining the rise of the percentage of



the eosinophils in the peripheral blood, we have made also coproscopy preceded by purgation and we have succeeded to prove the presence of the larvae in the fresh faeces, which seemed to the those of trichinellae, but which could not be distinguished from the larvae of *Strongyloides stercoralis*, more common in our region. In addition we found *Ascaris* and *Trichocephalus* eggs. The percentage of eosinophils oscillated between 32-38 per cent and persisted also long time after the discharge from the hospital (s. Graph 2). On February 22nd, the third week of the disease, the positive trichinoscopical result of the examination of

the sample of the deltoid muscle obtained by biopsy, confirmed the diagnosis of trichinellosis.

Despite the good general condition of the patient, we have ordered corticotherapy (prednisone) and in addition piperazine treatment was applied. The acute state of the disease passed. We still have aimed to sterilize the bowels from the remaining larvae and to purify the digestive tract from the rest of the parasites. Two months after the beginning of the disease, the patient was very well and only low fever attacks persisted for some time ($37,1-37,2^{\circ}\text{C}$. in the evening) and the percentage of the eosinophils in the peripheral blood was increased (s. Graph 2).



All four described cases were characterized by a pronounced benign development. But this does not denote that all the sporadic cases of trichinellosis have a benign character. In February 1960, a woman of 30 was admitted to the hospital following a cerebral accident. She was never ill before. We could not include this patient into our casuistry, because she did not remain in the hospital (her family insisted to take her home, after getting the fatal prognosis) and died the next day. The blood examination revealed 70 per cent of eosinophils and since it was the sole finding we were convinced that the death of this young woman was due to the cerebral localization of the larvae of *Trichinella spiralis*.

The nuisances caused in the past by the epidemics of trichinellosis may be prevented in the future through prophylactic measures and even when epidemics will break out, it will be possible in the future to con-

trol the infestation in its digestive phase. Major danger present the sporadic cases which develop without an evident symptomatology. In such cases, after the digestive phase of the disease, there exists the possibility of the localization of the larvae in some vital centres (brain, eye etc.). But the hazard of acute accidents is not the sole danger of a latent trichinellosis. Masked hepatic damage, leading possibly to praecirrhotic conditions, as we have observed in our case 1, gastrointestinal disturbances, caused chiefly by residual perivisceritis, are all possibilities of a latent developing trichinellosis.

This latent form of trichinellosis seems to be much more frequent than it is generally accepted. It can develop without any evident symptoms, as we have observed in our case 2.

The cause of a latent manifestation of the symptoms of trichinellosis may be the ingestion of few larvae in the course of such time duration that a certain kind and grade of immunity develops. When evident symptoms appear, they are usually very atypical and the patients are provided with a diagnosis: glomerulonephritis, latent hepatitis etc.

The chief criterion for the diagnosis is the high percentage of eosinophils in the blood, but as we know already, this percentage is directly proportional to the massiveness of the infestation, therefore in latent cases it can be very moderate. On the other hand, helminthic infestation can often complicate trichinellosis, as was in the case 4, where the developing rosacea masked also the succulence of the subcutaneous tissue of the face. Helminthic infestation takes away a considerable weight of the value of eosinophils as the criterion of orientation in the diagnosis of trichinellosis.

The blood sedimentation rate can be moderately increased in the initial stage of the disease, but it decreases rapidly to rather low values.

The larvae in the faeces cannot be accurately diagnosed and differentiated from the larvae of *Strongyloides*.

The presence of glucose in the urine and of the transitory hyperglycaemia, without any symptoms of diabetes are helpful, if present, for the diagnosis of trichinellosis. But these laboratory findings are present only in the early stage of the disease, as long high fever persists and after that they disappear rapidly.

The only method which can substantiate the diagnosis is trichinoscopy, but even this method fails in a certain percentage of cases. In any way it is indicated to send the muscle samples obtained by biopsy in a fresh state, quickly to trichinoscopic examination, without the use of preserving fluids. In this way we are able to augment the chances of diagnosis by trichinoscopy. But the major disadvantage of

this method is its tardiness, we have to wait till the acute period of the disease passes and the larvae migrate into the muscles. Consequently this method can be used only to confirm the suspicion of trichinellosis, not as one which can offer an early orientation.

On the other hand, the treatment of trichinellosis, not more hopeless as in the past, oblige to abandon the fatalistic attitude and to develop early diagnostic methods. Before the new therapeutical methods, with cortisone, piperazine, Mg. ox. [10], which are really efficacious, trichinellosis was not affiliated from any treatment, except from the symptomatic one. That is why today it is our duty to study the minor symptomatology of sporadic cases of trichinellosis. As evident from our casuistry, one of the most important symptoms for the diagnosis is the succulence of the subcutaneous tissue of the face, which we were able to observe in the case 1 and 4. Vague digestive symptoms can also indicate trichinellosis. It is very important to study the microscopical aspect of the larvae, found in the faeces in the first period of the disease. It would be interesting to introduce in medicine some of the new laboratory methods, as the microprecipitation of the larvae in vitro, as for the diagnosis of trichinellosis of pigs [4] and the dynamics of accumulation of precipitins in the blood serum, which in trichinellosis of pigs is directly proportional to the intensity and duration of the infestation. The serum aldolase and transaminase activity seem to be of the same value, as the previous methods for the diagnosis of trichinellosis.

For the treatment of patients affected with trichinellosis, as already mentioned, prednisone and prednisolone represent an effective therapeutic bridge, which helps to overcome the most dangerous period of the disease. Antibiotics seem to be without effect, but piperazine, Magn. ox. and butazolidine are very promising for the control of the infestation in the intestinal phase.

As regards the preventive measures, it would be necessary to control all the pigs, even those which are slaughtered in the individual households.

Summary

A description of 4 cases of trichinellosis of a very atypical course. The necessity of early diagnosis is emphasized, the importance of some "minor" symptoms is stressed. Intensification of preventive measures is necessary for the effective control of trichinellosis.

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