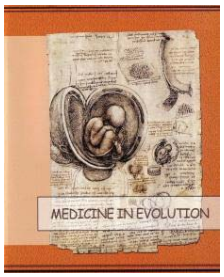
Clinical Forms of Manifestation of Human Trichinellosis in Brasov County, for a Period of 30 Years



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Abstract

Our professional interest in human trichinellosis evolution lies for a period of 30 years (1983-2013). In this study we have included 1112 cases of human trichinellosis recorded in that period of time. The aim of the study was: the symptoms and clinical signs correlated with the results of laboratory tests and epidemiological investigations could lead the physician to suspect the trichinellosis. Thus would shorten the patient route by various medical specialties until diagnosing the trichinellosis and would hasten the establishment of antiparasitic treatment. Severe symptoms did not hasten accurate diagnosis of trichinellosis owing to frequent misdiagnosis. High numbers of eosinophil cells was found consistently in all forms of the disease, which confirms the value of this investigation in the diagnosis of trichinellosis. We emphasize the importance of performing dynamic eosinophilia and dysproteinemia tests for the diagnosis of the disease and its follow-up evolution.

Keywords: human trichinellosis, incubation period, disease form, eosinophilia values

INTRODUCTION

Trichinella infection in humans is strongly associated with the consumption of raw or undercooked meat; thus, cultural factors such as traditional dishes based on raw or undercooked meat or meat-derived products play an important role in the epidemiology of the disease. Overall, domestic pork and related products remain the most important source of Trichinella infection in humans, especially when pigs are raised under free-ranging or backyard production conditions [1,2,3]. In Romania, the highest prevalence of trichinellosis in humans occurred in the Transylvanian region, where the local ethnic group maintains the food habit of raw meat consumption [4,5].

Brasov County, located in Transylvania - mountain district in which one of the main occupations of rural inhabitants is farming, offers animal and human trichinellosis a wide field of development. Unlike counties in the south and east of the country, where people eat more vegetables, the population of Brasov county is consuming meat, mainly pork, but also beef, poultry, game, processed in different ways: roasted, boiled, fried smoked, brine, in some cases insufficient or incorrectly cooked [4].

Aim and objectives

The symptoms and clinical signs correlated with the results of laboratory tests and epidemiological investigations could lead the physician to suspect the trichinellosis and thus would shorten the patient route by various medical specialties until diagnosing the trichinellosis and would hasten the establishment of antiparasitic treatment.

MATERIAL AND METHODS

Our professional interest in human trichinellosis evolution lies for a period of 30 years (1983-2013). In this study we have included 1112 cases of human trichinellosis recorded in that period of time in Brasov County, Romania. We mention that currently in our country, the diagnosis of human trichinellosis is based on clinical diagnostic elements (fever, edema, myalgia), case medical history, epidemiological, epizootological investigations, and laboratory guidance tests. Specific anti-parasite IgM and IgG immunoglobulins are currently limited in practice, because they are chargeable, and are not reimbursed by health insurance.

Patient definition. The patient calls many doctors of various specialties until the suspicion of trichinellosis, thus increasing the time from the disease onset (end of incubation) to the diagnosis of trichinellosis.

Laboratory procedures. To guide the trichinellosis diagnosis, the eosinophilia value in dynamic, hypoproteinemia values and low A/G ratio are used.

Outbreak definition. A disease outbreak is the occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area or season. An outbreak may occur in a restricted geographical area, or may extend over several countries. It may last for a few days or weeks, or for several years.

Epidemiological investigation definition. Epidemiological investigations are usually conducted in outbreak situations. The main reasons for conducting an epidemiologic investigation are: to determine the cause of an outbreak, and to implement control measures to prevent additional illness.

Focus of the study. Laboratory and paraclinical examinations, more or less specific can support the clinical suspicion of trichinellosis. We wondered if a minimum of laboratory tests in which prevails eosinophilia along with hypoproteinemia, low A/G ratio, and hyperleukocytosis are helpful in guiding clinical diagnosis to a parasitosis, along with epidemiological anamnesis can suspect the trichinellosis and hasten the antiparasitic therapy.

RESULTS AND DISCUSSIONS

The incubation period is the date between the consumption time of pork infected with Trichinella spiralis and the time when the first signs of disease appear, that actually disturbs the patient. The incubation period for trichinellosis lasts from 2 to 50 days, depending on the number of infective larvae ingested, with a greater number of larvae corresponding to a shorter incubation period. The length of the incubation period is also generally believed to be predictive of the clinical severity of the disease [6].

On the studied cases the average incubation is 17.25 days, the data were obtained from epidemiological investigations carried out for each case of trichinellosis. Allowing an infection to go undetected for that long, because of an incorrect diagnosis, led to late start of treatment for trichinellosis with the possibility of the disease to become chronic. We mention that in the asymptomatic forms (35 cases) we could not calculate the incubation period because the patients could not specify the date of onset due to the lack of the subjective symptoms.

Correlating the incubation with the form of the disease in the mild one (451 cases), the average incubation is 17 days; the early signs are hardly appreciated by patient as signs of the disease. In moderate forms (713 cases) it is 15 days, but unlike the mild one the clinical signs are more obvious alerting the patient and sending him towards the doctor. In moderate-severe forms of the disease (32 cases), average incubation is 21 days, higher value because although there were clinical signs in the context of disease the clinical diagnosis was not directed toward the parasitosis, but towards other diseases. In the severe forms (47 cases) the average incubation was 16 days; this may have been due the patient's preexisting diseases overlapping trichinellosis. In a retrospectiv analysis of Romanian patients, severe symptoms did not hasten accurate diagnosis of trichinellosis owing to frequent misdiagnosis.

Mild and severe forms of the disease prevail in urban areas, and the asymptomatic, moderate and moderate-severe in rural areas. In adults were recorded more fervently moderate, moderate-severe and severe forms of the disease, while in children were prevailing asymptomatic and mild forms, because they consume much smaller quantities from the infected meat. In the case of women there are frequently moderate and severe forms of disease, and in men the asymptomatic and mild forms, which could prove damaging effects of alcohol on the number of Trichinella larvae in the intestinal phase of the infection.

We investigated the result of another parameter: the interval between falling ill to the accurate diagnosis of the disease; the average time interval between the date of illness and the detection of trichinellosis in days. It changed for the better over the years, from 16.42 days in 1985 to 5.41 in 1990, rising to 8.63 days in 1992. Decreasing the time from the first signs of illness until the correct diagnosis of trichinellosis in humans results in the immediate establishment of an etiological treatment, symptomatic pathogenic and promptly, with beneficial repercussions on future evolution of the disease [7].

The symptoms of patients with trichinelosis: 80% of patients had fever (39 to 40 degrees Celsius), 96% had fatigue that lasts at least 10 days after disease onset. Muscle pains were present in 90% of patients, with various manifestations. In mild cases the muscle pain had low intensity, patients not giving them too much attention, while in the moderate, moderate-severe and severe form of the disease were a cardinal symptom; muscle were swollen, painful, with difficulty in walking, swallowing (5%) or while breathing (5%). Muscle weakness has been noted by all patients who accused myalgia during the disease (90%). Facial (88%) and palpebral edema (83%) were commonly reported, including in mild forms of the disease with fever and myalgia being symptom that can facilitate clinical diagnosis of trichinellosis. Lower limb edema was reported only in the moderate forms of the disease (42%). Rash was seen in 37% of the studied patients. Allergic skin manifestations always came with changes to the mucous membranes: oral-pharyngeal enanthema, conjunctivitis, conjunctival chemozis.

Laboratory diagnosis. High numbers of eosinophil cells was found consistently in all forms of the disease (89.35%) which confirms the value of this investigation in the diagnosis of trichinellosis, especially in asymptomatic and mild forms of the disease. We can notice the pathognomonic value of eosinophils cells, joined by low levels of total protein, low A/G ratio, and low levels of transaminases which warns of a possible liver damage in trichinellosis – a manifest disease (figure 1). Hyperleukocytosis is found in a much lower number of patients (270), recording elevated values in all severe forms of the disease, inconsistent to those with mild, moderate, and asymptomatic forms. Hypoproteinemia appears in all forms of the disease, totalizing a large number of patients in medium, moderate-severe and severe forms of the disease. Low A/G ratio is found in 212 investigated patients, being more frequent in the medium forms of the disease and signaled in nearly all moderate-severe forms. Hypoproteinemia and low A/G ratio have a great practical importance, drawing the attention to a possible depletion of liver function in human trichinellosis, especially in those with moderate-severe and severe form of the disease, often associated with marked edema as objective sign. Lower ALT values are found in all forms of the disease including the asymptomatic and mild forms.

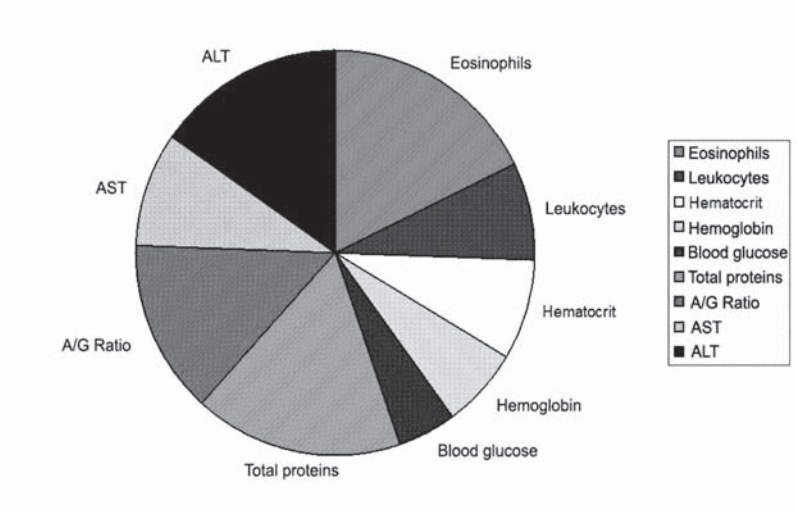

Figure 1. The share of pathognomonic values of laboratory tests

CONCLUSIONS

The incubation period for human trichinellosis does not register significant variations in the number of days depending on the form of the disease also due to the active detection in the disease outbreaks.

Severe symptoms did not hasten accurate diagnosis.

Considering that in Romania the serological diagnosis of trichinellosis is not a common practice, we emphasize the importance of performing dynamic eosinophilia and dysproteinemia tests for the diagnosis of the disease and its follow-up evolution.

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