

SUMMARY

A study was performed on the epidemiological, clinical, diagnostic and therapeutic features of some of the most socially significant helminthozoonoses - trichinellosis, toxocarosis and echinococcosis among the population in Bulgaria for the period 2000-2017. The characteristic of these parasitoses is the existence of local and generalized disease effects which are usually fixed and can cause irreversible complications remaining in morbidity implications for life.

With regards to trichinellosis were recorded the occurred epidemic outbreaks, the number of consumers and diseased persons, and incidence by year and age-sex groups. During the period were registered 96 *Trichinella* epidemic outbreaks in 92 settlements from 24 regions of the country. The consumers of contaminated meat and meat products are a total of 4 013, of whom the affected individuals are 2 068 (51,53%), as with a clinically apparent form of trichinellosis are 1 146 (55%) and with asymptomatic - 922 (45%). The mean incidence for the period of the study was 1,5/100 000 population, but the general trend is towards a decrease in this indicator and in the next five years it is expected to be around 0,5/100 000, ie between 30-40 cases per year. Besides the actual incidence, the standardized incidence was also determined and was 2 times higher - 3,582‰. Considering the residence trichinellosis has been registered in 50 cities and 42 villages, but diseased inhabitants of the cities - 1,432 (69%) were more than twice of those in the villa

es - 636 (31%). Analyzes of each outbreak indicate that in 43 (45%) of the them the source of infection were wild boars, in 38 (40%) - domestic pigs and in 15 (15%) it was unknown. However, the Attack Rate for people who have consumed contaminated meat from domestic pigs was 39%, while those who have consumed such products from wild boar was 28%. The study of seasonality showed that the highest number of outbreaks was registered in January, February and March, respectively, 34, 23 and 14. In persons with proven trichinellosis men are 1 178 (57%), and 890 women (43%). All ages are affected, but the largest number of diseased is the age group between 35-39 years, with a 259 (13%) patients with trichinellosis. With regards to the level of education are prevalent persons with secondary education - 1

240 (60%), followed by those with primary education - 255 (12,3%), university degree - 237 (11,4%) and 336 are children and students under the age of 19.

The average incubation period for the occurrence of disease in our study was 28 days. From 1 146 persons with clinical form of trichinellosis, 680 persons were hospitalized due to severe course. Clinical symptoms are very diverse and include among typical for this parasitosis fever, myalgia and facial swelling, also non-specific symptoms like headache, fatigue, vomiting, diarrhea, rashes, joint pain, and others. From the laboratory parameters in patients with both clinical and asymptomatic forms, leukocytosis and eosinophilia are most commonly detected. An increased number of leukocytes were observed in 457 (22%) patients, and eosinophilia - in 1 419 (69%).

During the period of the study serological tests were performed for the presence of specific antibodies in 2 045 patients with trichinellosis, of whom 1 633 are positive for this parasitosis. To determine the stage of the disease more accurately, laboratory avidity ELISA IgG test is developed and the results show that it can be used in the diagnosis of trichinellosis.

We calculated that the total cost for hospitalization of patients with trichinellosis since the introduction of clinical pathways is 153 121 Leva. In outpatient care during the period from 2005 to 2017 the costs are 180 820,15 Leva.

For toxocarosis between 2000 and 2017 were examined 2087 persons, of whom 1 071 (51%) were female and 1 016 (49%) male. With a positive result in serological tests were 285 (13.4%), of whom male patients were 152 (53%) and 133 (47%) were female. The highest number of positive for toxocarosis is 39 (13,7%) from the age groups 0-4 years, with 94 tested individuals and respectively 29 (10)% from the age group 45-49 years, where the tested individuals were 179.

With clinical evidence of visceral form of the disease were 1 228 of all (2 087) patients, of whom 136 with a positive result in serological tests. Suspected for other forms of toxocarosis are: 108 with ocular, 110 with neurological symptoms and epilepsy, 71 with skin manifestations (dermatitis, pruritus, alopecia) and 570 asymptomatic, as positive for the disease were 21, 17, 12 and 94 respectively. A sero-epidemiological screening of 555 healthy persons from 5 regions of the country was performed and 6,7% of them were established with specific antibodies. In the

laboratory and diagnostic part of the study were analyzed changes in some important blood parameters, especially eosinophilia, which in tested patients reached 77%. The role of the eosinophil cationic protein (ECP) was established as a possible marker for identification of infection stage

We also updated the previously developed clinical diagnostic algorithm for the guidelines of the diagnostic process in relevant clinical signs and interpretation of results.

Analysis of the data regarding cystic echinococcosis (CE) shows that the incidence of this parasitosis for the period from 2000 to 2017 was 5,4‰, and the prevalence 6,04‰. During the research period were registered 8 157 cases, of which 7 275 were primary and 882 relapsed. Affected by this helminth infection are mainly people of working age, 30,6% of registered patients are in the age group of 20 to 39. The relative part of children and adolescents from 0 to 19 years was 20,2%, and the most high morbidity was established in the age group 10-14 years (7,4‰), and that is an indicator for the active transmission of the parasite. With cyst hydatidosis are more commonly affected women and individuals living in the countryside. The average morbidity in persons, residents of cities is 4,1‰, while those from the villages - 10,7‰, and this difference is statistically significant. In addition to the actual (5,4‰), the standardized incidence of CE (5.43‰) was calculated, which did not differ, and this indicates that the observed age structure coincides with the standard population structure for the study period. By reason of echinococcosis in the period 2000-2017, there were 175 deceased persons, the largest number - 45, is in the age group 70-79 years. The lethality of the disease for the same period is 2,14%.

Liver localization was reported in 70% of all 8 157 cases, in lungs in 18.8% and in 6,5% more than one organ is affected. The main complaint in patients with hepatic location was a pain in the upper right quadrant of the abdomen, while those with pulmonary echinococcosis complained from cough and chest pain.

Laboratory tests data show the presence of eosinophilia up to 20%, and leukocytosis was observed in patients with complications in the course of the disease. Elevated liver enzymes have been identified in a greater degree of ALAT in 6% of patients reported and 5% for ASAT.

SUMMARY

Serological testing for the presence of specific antibodies was performed on 3 469 (43%) out of 8 157 infected with *Echinococcus granulosus*. A positive result in routine ELISA tests and IHA were obtained in 2 927 from them, while the remaining 542 were negative. We studied the possibilities for the application of confirmatory Western blot test and an assessment of its diagnostic indicators.

With respect to therapy, surgery has been applied on 7 326 patients, and PAIR on 193. Chemoprophylaxis with Zentel for the operated from echinococcosis is applied on 2 132 patients.

The study on helminthozoonoses - trichinellosis, toxocarosis and echinococcosis updates and summarizes the data accumulated over the years in terms of some epidemiological, clinical and laboratory diagnostic indicators. Despite the trend to reduce the incidence of trichinellosis and echinococcosis, cases of these parasitoses continue to be reported in the Republic of Bulgaria. Therefore, it is paramount the control measures accounted to the helminth infections to be continued and coordination between the institutions responsible for them strengthened.