

To the members of the scientific jury
Appointed by an Order No. 504/16.12.2019
by the Director of NCIPD

OPINION

By Prof. Dr. Iva Stefanova Hristova, MD, DSc
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On dissertation for the award of scientific degree
"DOCTOR OF SCIENCE"
in a scientific specialty "Parasitology and Helminthology"

in higher education 7 "Healthcare and Sports"
professional field 7.1. medicine

**On the dissertation work for the Doctor of Science: Helminthozoonoses
(trichinellosis, toxocariasis and echinococcosis) in humans - epidemiological
indicators, distribution, diagnosis and treatment**

Author of the thesis Assoc. Prof. Iskra Georgieva Raynova, MD, PhD

Relevance and significance of the thesis

The dissertation work of Assoc. Prof. Rainova is dedicated to one of the most significant helminthozoonoses in Bulgaria, by the incidence of which our country has a leading position among European Union countries, namely trichinellosis, toxocariasis and echinococcosis. Characteristic of these parasitoses are the long-term lesions that remain in the spent illness for life.

The dissertation thesis is written in 257 pages concise, informative and impresses with clear expression and depth of knowledge of the problems.

Literary knowledge

Based on 427 literary sources, Assoc. Prof. Rainova provides a very in-depth literature review of 64 pages. In the dissertation are reviewed the main directions, on which are her studies and contributions. The etiology, epidemiology, risk factors for outbreaks, immune response, diagnostic methods and approaches for the treatment of trichinellosis, toxocariasis and echinococcosis in our country have been analyzed. She paid special attention to the diagnosis of these helminthoses by presenting concise but comprehensive clinical and laboratory examinations, apparatus methods, parasitological, serological, bio-molecular and sanitary-parasitological diagnostic methods. The causes of the high morbidity of these helminthoses were analyzed.

The literature review is written with knowledge and shows excellent awareness. By itself, it can serve as a guide for students, graduate students, and specialists in parasitology.

Purpose and Tasks

The objective is well formulated and stems from the state of the surveys in Bulgaria analyzed in the review. The tasks are five and outline the concrete steps for achieving the aim of the dissertation.

Materials and Methods

The "Materials and Methods" section is written on 10 pages, sufficiently informative, with all the necessary details for the individuals studied and the methods used. The excretory-secretory antigens from *T. spiralis*, *T. canis* and *E. granulosus*, as well as the used sera samples from patients suspected for trichinellosis, toxocariasis or echinococcosis, are described.

Results

Substantial results have been achieved, presented in detail and discussed on 126 pages. They are fully illustrated with 34 tables and 59 figures. The results and discussion are presented in 3 sections, per one for trichinellosis, toxocariasis and echinococcosis, following the order of the tasks in terms of their epidemiology, clinical symptoms and clinical forms, laboratory diagnosis and treatment. The incidence of these parasitoses over an 18-year period was analyzed. In trichinellosis, the average standardized morbidity was found to be different from the actual one, while in echinococcosis they were the same. The age and sex structure of the disease, the risk

factors and the sources of infection, as well as the geographic spread of these parasitoses were analyzed. The clinical forms of these helminthoses have been established and compared with literature in other countries. An analysis of the costs for diagnosis, examinations and drug treatment of patients with trichinellosis was performed. Of interest are sero-epidemiological studies for toxocariasis among people, working with dogs and individuals with various allergic complaints. The developed algorithm for the diagnosis of toxocariasis is with great practical importance.

Contributions

The elaborated dissertation work has a significant contributions, the most important of them are:

1. The trend of gradual decrease in the incidence of trichinellosis and echinococcosis in our country is established and the forecast that this trend will continue, based on the detailed epidemiological characteristics of trichinellosis, toxocariasis and cystic echinococcosis among the population of the Republic of Bulgaria for 18 years period from 2000 to 2017.

2. The conducted sero-epidemiological study for toxocariasis in healthy people, indicating significant latent morbidity.

3. The identified risk factors and sources of infection of trichinellosis in the country.

4. The established profile of risk contingents - children with dogs, patients with allergic conditions, women and villagers in echinococcosis, who show that organizational measures for the surveillance and control of these parasitoses should be addressed to them.

5. The elaborated ELISA IgG avidity and Western blot tests and their application in the diagnosis of trichinellosis and toxocariasis.

6. The quantitative dimension of medical costs for outpatient and hospitalized patients with trichinellosis in our country.

7. The possibilities for future application of the data obtained for organizing health network activities with a view to permanently reducing the incidence of helminth infection in the country.

Publication activity

The results of the dissertation are published in 5 chapters of collective monographs, 10 scientific articles in journals with an impact factor with a total IF of 13.369, among which the prestigious Parasitology Research, American Journal of Tropical Medicine and Hygiene, Parasite Immunology, European Journal of Clinical Microbiology and Infectious Diseases and others. The data are also presented in 12 scientific articles in Bulgarian editions, as well as in 23 national and 9 foreign scientific forums, including an international conference on Trichinellosis, a symposium on Echinococcosis and a European Congress on Clinical Microbiology and Infectious Diseases.

Conclusion

The dissertation work of Assoc. Prof. Iskra Raynova, MD, is a comprehensive, in-depth, very carefully executed and written thesis, with significant results and contributions. It is noteworthy that Assoc. Prof. Rainova has the ability to analyze the results obtained and to elaborate and apply diagnostic methods in laboratory practice.

I believe that the reviewed dissertation fully meets the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation and the Rules of the NCIPD for the award of the scientific degree "Doctor of Sciences". While giving my positive assessment, I strongly support the awarding of the degree "Doctor of Science" in a scientific specialty "Parasitology and Helminthology" to Assoc. Prof. Iskra Georgieva Raynova, MD, PhD.

02.01.2020

Drafted the opinion:


Prof. Dr. I. Hristova, MD, DSc