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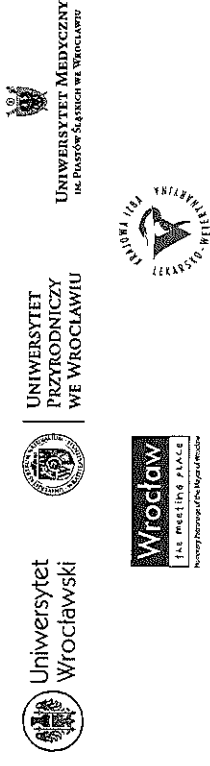
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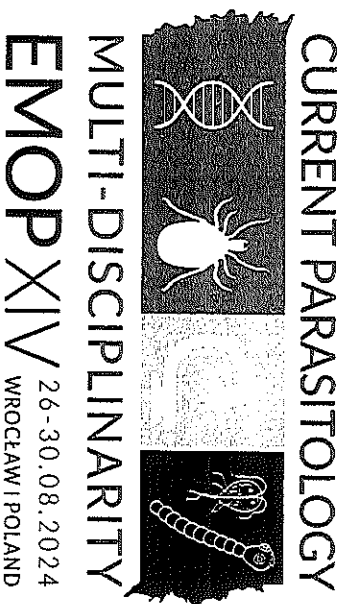


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# The XIV European Multicollloquium of Parasitology

Wroclaw, Poland

August 26–30, 2024

## Abstracts

while only 1 was positive for *Cryptosporidium*. All *Giardia* positive samples were identified as sub-assembly AI, which is characteristic of a human-adapted assemblage that caused many outbreaks in the past, however genotyping of this *Cryptosporidium* positive sample was not possible. To conclude it is shown that those two protozoa are circulating among individuals in RICs and may trigger an outbreak if sanitary systems are under pressure, which under the circumstances is not unlikely. Monitoring is essential to prevent disease.

**Keywords:** *Giardia*, *Cryptosporidium*, molecular identification, epidemiology

OS – oral session

### Session: [SE3] Emerging parasitoses and zoonoses in Europe – questions about the future

#### Cystic echinococcosis in children and adults from Western Romania, 2007-2022

Ana Alexandra **Podaruzul**<sup>1</sup>, Maria Alina Lupu<sup>1</sup>, Cristian Dusa<sup>1</sup>, Gabriel Venimian **Cozma**<sup>1</sup>, Bogdan Dan **Tovocli**<sup>1</sup>, Eugen Sorin **Poni**<sup>1</sup>, Marius Octavian **Crete**<sup>1</sup>, Tudor Rares **Olariu**<sup>1</sup>

- 1 *Discipline of Parasitology, Department of Infectious Diseases, Victor Babes University of Medicine and Pharmacy, 300041 Timisoara, Romania*
- 2 *Discipline of Surgery II, Department of Surgery II, Victor Babes University of Medicine and Pharmacy, 300041 Timisoara, Romania*
- 3 *Discipline of Surgical Semiology I and Thoracic Surgery, Department of Surgery I, Victor Babes University of Medicine and Pharmacy, 300041 Timisoara, Romania*
- 4 *Department of General Surgery, Vasile Goldis Western University of Medicine and Pharmacy, 30005 Arad, Romania*
- 5 *Discipline of Pediatric Surgery and Orthopedics, Department of Pediatrics, Victor Babes University of Medicine and Pharmacy, 300041 Timisoara, Romania*

#### Abstract

Cystic echinococcosis (CE) represents a concerning health problem in many parts of the world including Romania, due to the high rates of infection in humans and animals. The aim of this study was to retrospectively assess the epidemiological characteristics of the disease in patients hospitalized in Western Romania. The study included individuals admitted to four major teaching hospitals from Arad and Timis counties, between 1 January 2007-1 September 2022. Epidemiological, clinical and paraclinical data were collected from the patients' medical records.

A total of 426 patients with CE were included in this study (3-90 years, mean=41.9): 60 (14.1%) children and 366 (85.9%) adults. Of the 60 children, 36 (60%) were boys and 41 (68.3%) were from rural area while of the 366 adults, 194 (53%) were females and 225 (61.5%) rural inhabitants. During the studied period, a descending trend in the number of cases was observed, from 47 cases in 2007 to 11 in 2022 ( $p=0.004$ ). The majority of cases (393/426, 92.3%) had one organ involvement. The prevalence of multiple organ involvement was higher in children (10/60, 16.7%) compared to adults (23/366, 6.3%) ( $p=0.005$ ). The liver was the most affected organ (345/426, 81%). In lung involvement, the rate was higher in children (15/60, 25%) compared to adults (48/366, 13.1%) ( $p=0.02$ ). Most of the patients had one hospital presentation (319/426, 74.9%). The rate of multiple hospitalizations was higher in children (24/60, 40%) compared to adults (83/366, 22.7%,  $p=0.004$ ).

CE is a serious zoonotic disease affecting all ages. Although the number of cases has decreased, patients diagnosed with CE need hospitalization and special medical care, indicating that this parasitosis is still a public health problem in Western Romania. Public health interventions that tackle risk factors and control programs should be optimized to limit the transmission of the parasite and maintain the decreasing trend of CE.

**Keywords:** *Echinococcus granulosus*, parasitic disease, epidemiology, zoonosis, hydatid disease

OS – oral session

### Session: [SE3] Emerging parasitoses and zoonoses in Europe – questions about the future

#### *Echinococcus multilocularis* in Europe – still emerging?

Adriano Casulli<sup>1</sup>, Thomas **Reinzig**<sup>2</sup>

- 1 *Littorio Signorelli di Senita, Rome, Italy*
- 2 *University of Hohenheim, Stuttgart, Germany*

#### Abstract

Alveolar echinococcosis (AE), caused by the fox tapeworm *Echinococcus multilocularis*, is considered as an emerging zoonosis in Europe. This is mainly based on the drastic and well documented increase of its abundance in animal hosts which was observed in the 1990s and early 2000s, when a large number of surveys in various countries demonstrated both an increase of prevalence in red foxes and an increase of fox densities. For human AE, the increase was always less clear, due to the lack of standardized and reliable case reporting, but existing data suggest a corresponding emergence of case numbers with an approximate 10-year lag after the increase of *E. multilocularis* in foxes. Following the early 2000s, there is an unfortunate paucity of European prevalence data in animals, but the few surveys that were done suggest a consolidation of parasite abundance in foxes and intermediate hosts at a high level. Concerning human AE, a recent study identified around 4,000 human AE cases during the period 1997-2023 from 40 selected European countries. Here we briefly review available information guided by the question whether the parasite's 'emergence' is still observable, or whether the epidemiological status has entered a phase of stable and high endemicity in wild mammals, with stable sporadic spill-over rates to humans. If so, this apparent stability may be deceptive in view of climatic and ecological changes that are already obvious. Modeling of habitat suitability in Europe under different change scenarios until 2050 indicates a future shift to more northern latitudes and higher altitudes in the alpine region, and a marked decrease of suitable habitats in today's high endemicity areas of central Europe north of the Alps. In addition to the evaluation of frequency and endemicity data, an update is provided on potentially new host animals and animal behaviour that facilitates transmission of the parasite.

**Keywords:** *Echinococcus multilocularis*, alveolar echinococcosis, Europe

OS – oral session

### Session: [SE3] Emerging parasitoses and zoonoses in Europe – questions about the future

#### Spatial distribution and genetic diversity of *Echinococcus multilocularis* in foxes in central France, a focus of human cases in the 1980's

Gérald **Umlang**<sup>1</sup>, Vanessa **Basidi**<sup>1</sup>, Christophe **Caillor**<sup>1</sup>, Jean-marc **Boucher**<sup>1</sup>, Franck **Bout**<sup>1</sup>  
r ANSES, Nancy laboratory for rabies and wildlife, Metzville, France

#### Abstract

*E. multilocularis* is the etiological agent of alveolar echinococcosis, a chronic disease which is often life-threatening due to tumour-like progression. The lifecycle in Western Europe is based on production of viable red foxes, which are responsible for almost all the environmental contamination by eggs. In France, the parasite is historically present in the eastern areas belonging to the European historical focus in the Alps. Over the past two decades, the distribution of the parasite in foxes has been significantly expanded, reaching the northern half of the country: from Brittany to the border of Italy via central France. This region of central France was not investigated since the 1980s following the identification of a focus of human cases in 3 departments. From June 2019 to July 2023, 591 foxes from 8 departments were

collected. The presence of *E. multilocularis* was identified in 7 departments by copro-real-time PCR, with no detection in the south-western department of Lot. The prevalence in the known endemic departments is 10.4% in Puy-de-Dôme, 14.7% in Cantal, and 46.4% in Creuse. In the 4 other departments where its presence was not previously investigated, the prevalence ranged from 4.8% to 8.7%. Microsatellites EmsB analysis of 215 worms from 50 foxes in six departments yielded 11 different EmsB profiles, including one dominant grouping: 84% of the worms and present in all 6 departments. Additionally, this profile was identified in all the 3 human cases from the same areas. The low genetic diversity observed argued as the presence of the parasite in the region is much more recent compared to the eastern historical foci. The high prevalence in Creuse was unexpected, given that it is surrounded by departments with very low prevalences. The unknown endemic status of most neighboring departments from the investigated areas requires further investigations to ascertain the current distribution of *E. multilocularis* in France and communicate prevention measures.

**Keywords:** *Echinococcus multilocularis*, France, red foxes, endemic areas, genetic diversity

OS – oral session

### Session: [SE3] Emerging parasitoses and zoonoses in Europe – questions about the future

#### Trichinella infection in Serbia: advancements, risks, and the path to safe consumption

Sasa **Vasiljević**<sup>1</sup>, Milosad **Miriljević**<sup>1</sup>, Tamara **Bošković**<sup>1</sup>, Jasminka **Kuzelj**<sup>1</sup>, Ana **Vasić**<sup>1</sup>, Dragana **Vasiljević**<sup>1</sup>, Budimir **Pavšić**<sup>1</sup>, Ljiljana **Sabljic**<sup>1</sup>, Ivana **Mitić**<sup>1</sup>

- 1 *University of Belgrade, Institute for the Application of Nuclear Energy – INEP, Belgrade, Serbia*
- 2 *Institute of Public Health of Serbia – Dr Milan Jovanovic Bani, Belgrade, Serbia*
- 3 *University of Belgrade, Faculty of Veterinary Medicine, Belgrade, Serbia*
- 4 *Ministry of Agriculture, Forestry and Water Management, Veterinary Directorate, Belgrade, Serbia*
- 5 *Scientific Veterinary Institute of Serbia, Belgrade, Serbia*
- 6 *Scientific Veterinary Institute of Serbia, Belgrade, Serbia*
- 7 *World Organization for Animal Health (OIE)*

#### Abstract

In Serbia, Trichinellosis remains one of the most important food-borne zoonotic diseases. Advances in pork production systems, control measures, the artificial digestion method and *Trichinella* Proficiency tests have effectively eliminated farm pork as a source of trichinellosis. Epidemiological data from the last decades show a notable decrease in both human cases and infected animals. Over the years, pork has been the primary source of trichinellosis in Serbia, often associated with family outbreaks. The main risk of infection now arises from consumption of untested backyard pork. When pigs are raised without compliance with hygienic standards and veterinary testing are lacking it increases the likelihood that meat and meat products are potential sources of *Trichinella* infection. In most numbers of outbreaks in Serbia, *T. spiralis* were the etiological agent of infection. According to epidemiological data it is important that consumers of backyard pigs and wild game meat should be educated about the risk associated with consumption of untested meat. Control of *Trichinella* testing QA system in veterinary subjects and regular participation in proficiency tests are essential for ensuring safe food for consumers. Furthermore, full integration of veterinary and public health efforts, following the One Health concept, is imperative for effective control measures.

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**Keywords:** *Trichinella*, risk, safe food, Serbia

OS – oral session

### Session: [SE3] Emerging parasitoses and zoonoses in Europe – questions about the future

#### Molecular detection of cercariae of *Parabothriocephalus* sp., etiological agent of black spot disease in fish, released from *Physella acuta* collected in the Alqueva Dam lake, Alentejo region, Portugal

Maria Teresa Bispo, Isabel L. Maurício, Pedro M. Ferreira, Silvana Belo, Mátueela Cabado

*Global Health and Tropical Medicine, GHM, Associate Laboratory in Translation and Innovation Towards Global Health, LA-REAL, Instituto de Higiene e Medicina Tropical, IHMT, Universidade Nova de Lisboa, UNL, Rua de Jacquotina s/n, 1549-008 Lisbon, Portugal*

#### Abstract

In the Alentejo region, Portugal, the Alqueva Dam vast artificial lake, is a hub for recreational water activities and fishing. It has altered migratory bird routes, as well as local flora and fauna. Coupled with climate change, these factors increase the risk of zoonotic diseases, including those caused by trematodes, in the region, given that freshwater snails are obligatory intermediate hosts for many trematodes. The aim of the study was to detect and identify trematodes in freshwater snails in the Alqueva Dam Lake. The malacological survey was conducted in 25 shore locations around the Alqueva basin between May 2023 and April 2024. Snails were exposed to artificial light to induce cercariae elimination and were morphometrically identified as *Physella acuta*. The ITS2 region amplified from cercariae from one location had 90% sequence homology upon a BLAST search, with sequences of the genus *Parabothriocephalus* sp. and phylogenetic analyses suggest a closer relationship to lineage II, but may belong to a previously unclassified lineage. Cercariae of this genus encyst in plants or fish muscles, indicating visible changes such as black spots on the body or eyes, and leading to weight loss and delayed development, although the impact on human health remains unknown. Species such as *Parabothriocephalus ontarioi*, *Parabothriocephalus centrarchi*, and *Parabothriocephalus braconiformis* have been detected in some European countries, with homology to North American strains, suggesting the invasive potential of these parasites via bird dispersal. The widespread *Physella acuta* has, thus, been confirmed as intermediate host of *Parabothriocephalus* sp. in the Alqueva Dam lake, likely posing a risk at other locations. While preliminary, our findings offer insights into water-borne parasites within the Alqueva ecosystem.

*We acknowledge the Portuguese Foundation for Science and Technology for funds to GHM – UIDB/04543/2020 and LA-REAL – LA/P/01/2020 and Project PTDC-2022.01349.*

**Keywords:** *Physella acuta*, snail-borne diseases, avian parasites, Alqueva, Portugal

PS – poster session

### Session: [SE3] Emerging parasitoses and zoonoses in Europe – questions about the future

#### *Echinococcus multilocularis* genetic diversity based on samples from pigs – confirmation of the characteristic haplotypes distribution and the presence of Asian-like haplotype in Poland

Jacek **Karamon**<sup>1</sup>, Magdalena **Samsok-Piękos**<sup>1</sup>, Ewa **Wilka-Zajac**<sup>1</sup>, Zdzisława **Korpińska-Darba**<sup>1</sup>, Jacek **Stoka**<sup>1</sup>, Aneta **Belcik**<sup>1</sup>, Joanna **Wronka**<sup>1</sup>

*National Veterinary Research Institute, Pulawy, Poland*

#### Abstract

Alveolar echinococcosis is a zoonosis dangerous to human health and life, caused by larval forms of *Echinococcus multilocularis*. A typical definitive host is the red fox and typical intermediate hosts