

Special Issue on
Interactions of Animal-Host-Vector: Zoonotic Implications of Animal Vector-Borne Helminthiasis

CALL FOR PAPERS

Vector-borne helminthes cause a great impact and a major public health concern on human and animal health, especially in tropical and subtropical regions. Many aspects of these diseases in both animals and humans are not fully understood and there is a lack of published research regarding these infections, being most of them considered neglected and emerging diseases.

Heartworm disease (*Dirofilaria immitis*) and subcutaneous dirofilariasis (*D. repens*) primarily affect dogs and cats. Different species of culicid have been implicated in the transmission of this parasite and these parasites can be transmitted to humans residing in endemic areas being considered zoonotic agents. In human, *D. immitis* mainly causes presence of benign pulmonary nodules that are frequently confused with pulmonary carcinomas, and *D. repens* causes subcutaneous nodular granulomas, especially in periorbital locations. Furthermore, other zoonotic filariae as *D. tenuis*, *D. ursi*, or *D. subdermata* have been described in the United States and Canada. These parasites are endemic in tropical and subtropical climates worldwide, with prevalence which can surpass 50% in dogs in some regions in America, Asia, and Europe. Despite the prophylactic measures focused on the control of the infection, animal dirofilariasis is rising in endemic areas as well as spreading toward areas with colder climates previously considered as dirofilariasis-free, mainly attributed to the movement of infected animals, the introduction of new species of mosquitoes able to act as vectors, the climate change caused by the global warming, and development of human activity in new areas. As a consequence, an increasing number of human cases are being reported in both endemic and surrounding areas and it is, therefore, considered as an emerging infectious disease. The reported cases, over 1.800, are considered the “tip of the iceberg” since human dirofilariasis is highly underdiagnosed; however, seroepidemiological studies carried out in exposed population show that humans contact frequently with *Dirofilaria* species. Infection by *D. repens* is more frequently reported; some possible reasons might be the superficial visible location of the nodules or being a notifiable disease in some countries with high human morbidity (Ukraine), although it seems that *D. repens* has more zoonotic impact than *D. immitis*. Zoonotic onchocercosis is also being increasingly reported, especially in tropical and subtropical areas of the southern hemisphere, representing an emerging public health concern, with more than 25 zoonotic cases documented. Zoonotic onchocerciasis has been attributed to *Onchocercagutturosa*, *O. cervicalis*, *O. jakutensis*, *O. dewittei japonica*, and *O. lupi*; this latter, agent of canine and human ocular infection, was only recently reported as zoonotic and is the causal agent of most of the reported zoonotic infections. Furthermore, human intraocular filariasis caused by *Pelecitus* spp., an avian filarid, was also recently reported. Also, the symbiotic role of *Wolbachia*, a Gram-negative intracellular α -proteobacterium (order Rickettsiales), is harboured by many filariae, and its impact on human health has not been studied thoughtfully.

This evidences the need of further research to determine the current and real extent and impact on humans of these zoonotic helminths and to better understand situations in which humans might be at risk of exposure to those parasites. There are still many difficulties on the diagnosis of these parasitic infections; in humans, the lack of standard and valid techniques reflects the need to develop new tools which allow the diagnosis in a simple and economic way, available to physicians around the world. The provision of a deeper knowledge of the transmission mechanisms will be useful in the search for answers. New studies should be developed to determine the current distribution and future trends of animal and human vector-borne zoonotic helminths in order to conclude the consequences of climate change, globalization, or the influence of human activity (i.e., heat islands in the cities). Furthermore, these factors are causing a change in the populations and dynamics of mosquito vectors and this issue should be studied. These are specially needed since the published data are absent or limited in many countries. Furthermore, other specifics, such as the development of resistance by *D. immitis* to preventatives in dogs, bring up the question of the consequences over the human populations.

This special issue focuses on the research on recent advances on pathogenesis of animal and human vector-borne zoonotic helminthiasis. New studies on epidemiology and transmission of the parasites, as well as contemporary research, focused on diagnosis and treatment of human infections, and related studies. Other studies related to the subject of this special number will be welcome. We invite authors to submit original, high-quality research, clinical cases as well as review articles which describe the current state of the art.

Potential topics include but are not limited to the following:

- ▶ Immune implications of the infection in the human host
- ▶ Current distribution and epidemiologic changes of vector-borne zoonotic helminths
- ▶ Diagnostic challenges and perspectives of treatment
- ▶ Current policies for monitoring human infections by vector-borne helminthiasis
- ▶ Xenomonitoring and interactions of vector-human-host
- ▶ The animal host as a risk factor for vector-borne helminthiasis in humans

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/cjidmm/zida/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor

Elena Carretón, University of Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain
elena.carreton@ulpgc.es

Guest Editors

Rodrigo Morchón García, University of Salamanca, Salamanca, Spain
rmorgar@usal.es

Vladimir Kartashev, Rostov State Medical University, Rostov-na-Donu, Russia
vkrt@yandex.ru

Hans-Peter Fuehrer, University of Vienna, Vienna, Austria
hans-peter.fuehrer@vetmeduni.ac.at

Marco Genchi, University of Parma, Parma, Italy
marco.genchi@unipr.it

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