

XXXII

CONGRESSO NAZIONALE
DELLA SOCIETÀ ITALIANA DI PARASSITOLOGIA
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ANALYSIS BY ECOLOGICAL NICHE MODELLING OF THE CURRENT RISK OF DIROFILARIASIS TRANSMISSION IN SPAIN AND PORTUGAL, AND ITS FUTURE PROJECTION UNDER CLIMATE CHANGE SCENARIOS

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Keywords: *Dirofilaria* spp., ecological niche modelling, Spain and Portugal

INTRODUCTION: *Dirofilaria* is a vector-borne zoonotic disease caused by several species of the genus *Dirofilaria* spp., being *D. immitis* and *D. repens* the most important ones. Canids and felids, both domestic and wild, are the main reservoirs. Their presence depends on environmental and bioclimatic factors that condition the presence of these vectors. In Spain there is a previous work where a simple model was developed using Geographic Information Systems, using three variables: temperature, rainfall and distribution of irrigated crops. Our objective is to analyse by means of Ecological Niche Modelling (ENM) the current risk of *Dirofilaria* transmission in Spain and Portugal, taking into account new factors and making a projection into the future.

MATERIALS AND METHODS: ArcGIS was used to process predictor variables (bioclimatic, distribution of surface and groundwater bodies, *Cx. pipiens* habitat, land use, biogeographical regions, vegetation layers, etc.) and presence of infected animals. The MaxEnt algorithm was used to develop NEMs for *Dirofilaria* spp. and *Cx. pipiens*.

RESULTS AND CONCLUSIONS: The highest risk of infection is in the southern and eastern provinces of the peninsular territory, with new areas appearing in southern Portugal and its coastal areas, as well as in the north of the peninsular. Furthermore, the risk of infection also increases in those inland areas with higher rainfall and higher soil humidity. The presence of irrigated land is also positively correlated with the presence of the disease. Finally, the 20- and 40-year projection according to climate change scenarios shows a clear potential increase in the risk of infection in Spain and Portugal. This methodological proposal is interesting from the One Health point of view, as it offers clear guidelines to carry out control measures to avoid the risk of infection in animals and humans.

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FIRST COMPREHENSIVE MAP OF CANINE ANGIOSTRONGYLOSIS IN DOMESTIC DOGS IN SPAIN

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Keywords: *Angiostrongylus vasorum*, Spain, domestic dogs

INTRODUCTION: Canine angiostrongylosis is a disease caused by the parasitic nematode *Angiostrongylus vasorum* that mainly affects canids, both domestic and wild, with foxes, jackals, wolves and domestic dogs being the ones for which most data are known. In Spain, studies and cases of infected domestic dogs have been reported only in the Iberian Peninsula. The aim of this study was to complete and update the map of the presence of *A. vasorum* in domestic dogs in Spain, considering all the regions.

MATERIALS AND METHODS: From January 2020 to March 2022, a total of 5544 blood samples from domestic dogs coming from all autonomous cities and communities of Spain were collected for the study. For this, 62 veterinary clinics voluntarily collaborated by providing the samples; these were randomly collected from the canine patients who attended their clinics, provided they met the inclusion criteria. Age at presentation to the clinics, breed, sex and habitat were recorded for each dog. Serum samples were tested for the presence of circulating antigens of *A. vasorum* using Angio Detect™ (IDEXX Laboratories Inc., USA) following the manufacturer's instructions. Descriptive analysis of the variables considered was carried out considering the proportions of the qualitative variables. Chi-square and Fisher's exact tests to compare the proportions were performed. In all cases, the significance level was established at $p < 0.005$.

RESULTS AND CONCLUSIONS: The overall prevalence on canine angiostrongylosis in Spain was 1.41%. The autonomous community with the highest prevalence was Murcia (4.12%) followed by the Basque Country (3.25%), Asturias (2.50%) and Cantabria (2.40%). The remaining autonomous communities did not exceed 2% being less than 1 % in with no positive dogs in Balearic Islands and in the autonomous cities of Ceuta and Melilla (0%). Taking into account the climatic characteristics of each Spanish region, the highest prevalence were obtained in the Basque Country (3.25%) with CfB climatology and Murcia (4.12%) with BsK and BSh. In Asturias (2.50%) and Cantabria (2.40%), the climatology was of Cfb. In the Balearic Islands and in the autonomous cities of Ceuta and Melilla where the climatology is of Csa, no infected animals were reported. In the rest of the autonomous communities, where prevalence were lower than 2%, the predominant climatologies were Csa, Csb and Cfb. The data shown here demonstrate the lack of control measures in domestic dogs, which is why it is necessary to carry out preventive campaigns by veterinary staff in collaboration with pet owners. At the same time, more studies are needed to address the study of these diseases in both wild and domestic animals and thus study their evolution.

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