



NEW INSIGHTS INTO A LITTLE KNOWN CANINE FILARIOID TRANSMITTED BY TICKS

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Ticks are well-known vectors of a broad range of pathogens to dogs, such as species bacteria e protozoa (Dantas-Torres et al. 2013). Additionally, they may also act as vectors of other organisms including nematodes. Examples of that are the tick-transmitted filarioids (superfamily Filarioidea) of the genus *Cercopithifilaria* (Spirurida, Onchocercidae). Adult nematodes of this genus live in the subcutaneous tissues of the definitive vertebrate host and, after mating, females release dermal microfilariae, which may be ingested by a tick vector during the blood feeding. After about 30 days, the microfilariae develop into third-stage (L3), infective larvae (Brianti et al. 2012). To date, three species of *Cercopithifilaria* have been reported in dogs, namely *Cercopithifilaria grassii*, *Cercopithifilaria baina* and a yet undescribed species designated as *Cercopithifilaria* sp. II (*sensu* Otranto et al. 2013a) based on the morphology and the molecular characterization of microfilariae. Information about these nematodes is meagre and fragmentary. The objective of this lecture is to draw the attention of acarologists and parasitologists to this little known, but interesting, group of nematodes, particularly to *C. baina*, a species originally described in Brazil that has been neglected for three decades. *Cercopithifilaria baina* was originally described in Rio de Janeiro, in 1984 (Almeida and Vicente 1984). Recently, the presence of this nematode was confirmed in Europe and studies have shed new light into its taxonomy, biology and ecology. The role of *Rhipicephalus sanguineus* group ticks has been ascertained (Brianti et al. 2012, Ramos et al. 2013) and the species has been re-described based on specimens collected in Sardinia (Otranto et al. 2013b). Epidemiological studies have confirmed the presence of this nematode in several Mediterranean countries (Italy, Spain, Greece, and Portugal) (Otranto et



al. 2012b, Cortes et al. 2014). Moreover, the prevalence of the infection in tick-infested dogs may reach high levels, as assessed in Spain by microscopical examination and polymerase chain reaction (PCR), respectively (Otranto et al. 2012b). While invasive, the skin snip technique remains the gold standard for the diagnosis of these filarioids. In brief, skin samples are collected from the dog and soaked in saline solution for some hours at room temperature. Then, the sediments are examined under a light microscope for the presence of microfilariae. Evidence indicates that microfilariae of *C. bairnei* are unevenly distributed on the body, with higher frequencies on the interscapular region and on the head, which are also among the most common tick attachment sites (Otranto et al. 2012a). Although no serological tools are available for diagnosing *C. bairnei* exposure, PCR tools have been standardized for detecting the parasite DNA in skin samples. While *C. bairnei* is regarded as minimally pathogenic, actually its pathogenic role is still unclear (Otranto et al. 2012a, Gabrielli et al. 2014). Additionally, studies have demonstrated a correlation between *C. bairnei* and other tick-borne pathogens (Ramos et al. 2014a, 2014b), but whether *C. bairnei* infection adversely affects the dog's immune response to other tick-borne pathogens, or *vice versa*, needs further investigation. As such, future research on this interesting, enigmatic filarioid should be encouraged.

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