

Abstract

Introduction: Brugian filariasis has re-emerged in Sri Lanka, after a quiescent period of four decades. Little information is available regarding the re-emerged *Brugia* parasite. Cats and dogs are known reservoirs of the sub-periodic strain of *B. malayi* in the Southeast Asia.

Objectives: To study the epidemiology of brugian filariasis in the district of Gampaha, identify age-specific vulnerability to infection, characterize the periodicity of the microfilariae and identify potential zoonotic reservoir/s for on-going infection.

Methodology: A community-based cross-sectional survey was done in selected areas of the Gampaha district for microfilaria of *Brugia* spp. and anti-*Brugia* antibodies using night blood smears (NBS) and *Brugia* rapid test (BRT) respectively. *Brugia* spp. cases detected by Anti Filariasis Campaign by NBS were screened for antibodies by BRT. Microfilaria counts were periodically assessed over 24 hours by nuclepore membrane filtration. Cats and dogs within the residential areas of human *Brugia* cases were surveyed for microfilariae. *Brugia* positive samples (human and animal) were analysed by PCR and DNA sequencing.

Results: The microfilaria and *Brugia* antibody rates were 0.25% (2/994) and 0.9% (9/991) respectively. The sensitivity of the BRT for detecting microfilaraemics was 25%. The *Brugia* spp. microfilariae exhibited nocturnal subperiodicity. There was no age specific vulnerability to infection. Overall canine and feline prevalence of *Brugia* spp. infections were 51.6% (129/250) and 30.6% (41/134) respectively. Of the selected *Brugia* positive samples (114; 8 human, 74 canine and 32 feline) 75.44% produced a band at approximately 650bp by PCR. Nucleotide sequence analysis of human, canine and feline parasite, internal transcribed spacer-2 (ITS-2) revealed higher DNA sequence, homology with *B. pahangi* than *B. malayi*. But phylogenetically the sequences were more closer to *B. malayi* than *B. pahangi*.

Conclusion: The emergent *Brugia* spp. was genetically closer to *B. pahangi* with a phylogenetic origin closer to *B. malayi* indicating the possibility of a *B. phangi/B. malayi* hybrid strain. The high prevalence of zoonotic *Brugia* infections among cats and dogs implicates common pets as reservoir hosts for the hybrid strain of *Brugia* spp.