

Abstract

Effective conservation and management of wildlife in the current changing world, call for incorporation of infectious zoonotic diseases surveillance systems, among other interventions. One of such diseases is echinococcosis, a zoonotic disease caused by *Echinococcus* species. This disease exists in two distinct life cycle patterns, the domestic and wildlife cycles. To investigate possible inter-links between these cycles in Kenya, 729 fecal samples from wild carnivores and 406 from domestic dogs (*Canis lupus familiaris*) collected from Maasai Mara and Samburu National Reserves were analyzed. Taeniid eggs were isolated by zinc chloride sieving-flotation method and subjected to polymerase chain reaction of nicotinamide adenine dehydrogenase subunit 1 (NAD1). Subsequent amplicons were sequenced, edited and analyzed with GENTle VI.94 program. The samples were further subjected to molecular identification of specific host species origin. All sequences obtained were compared with those in Gene-bank using Basic Local Alignment Search Tool (BLAST). The study found that there were 74 taeniid positive samples, 53 from wild carnivores and 21 from domestic dogs. In wildlife, mixed infections with *Echinococcus* and *Taenia* species were identified and these included *E. granulosus sensu stricto*, *E. felidis*, *T. canadensis* G6/7, *Taenia hydatigena*, *T. multiceps*, and *T. saginata*. Domestic dogs harbored *Echinococcus* and *Taenia* species similar to wild carnivores including *E. granulosus* G1–3, *E. felidis*, *T. multiceps*, *T. hydatigena*, and *T. madoquae*. *Taenia* species of nine taeniid eggs were not identified. Majority of genotypes were found in hyena (*Crocuta crocuta*) fecal samples. Distribution of *Echinococcus* and *Taenia* spp. varied with hosts. Mixed infections of *Echinococcus* spp, *T. multiceps* and *T. hydatigena* in a single animal were common. There seemed to be existence of interactions between the two cycles, although public health consequences are unknown. The presence of *T. saginata* in hyena suggests scavenging of human fecal matter by the animal. In addition, presence of *T. multiceps*, *T. hydatigena*, *T. madoquae* and *T. saginata* in the two cycles suggested possible human exposure to these parasites. The results are important in drawing up of strategies and policies towards prevention and control of Echinococcosis and other *Taenia* related parasitic infections, especially in endemic areas given their potential risk to public and socio- economic livelihood.