

## **Canine echinococcosis in Turkana (north–western Kenya): a coproantigen survey in the previous hydatid-control area and an analysis of risk factors**

A study of *Echinococcus granulosus* infection in dogs, with risk-factor analysis, was carried out in the endemic area of northern Turkana district, Kenya, using necropsy on 42 strays and a coproantigen-ELISA survey of 161 owned animals. During the post-mortem examinations, 14 (33%) of the necropsied dogs were found infected with *E. granulosus*, with a mean burden of 540 worms (range=two to 4080 worms). The 26 necropsied dogs that came from the north–western Lokichoggio division — an area where, from 1983 to 1997, there had been a continuous programme of hydatid control — showed a similar prevalence of infection to the other dogs (34.6%) but a significantly lower mean burden, of 53 worms (range=two to 300).

Forty-two (26%) of the animals tested for *Echinococcus* coproantigen were found positive. Although the dogs from the Lokichoggio division were more likely to be coproantigen-positive (29%) than those from the central Kakuma division (20%) or the north–eastern division (18%), the differences were not statistically significant. In questionnaire-based interviews, the owners of the dogs tested for coproantigens were asked about possible risk factors for canine infection with *E. granulosus*. Women were found to have twice the level of contact with dogs as men. The results of a univariate analysis of the dog-owners' responses revealed six factors that appeared to be significantly associated with a coproantigen-positive dog: non-restraint of the dog ( $P<0.001$ ); dog fed on raw offal ( $P<0.001$ ); the improper disposal of slaughter offal ( $P<0.001$ ); the dog-owner's lack of knowledge about the transmission of echinococcosis ( $P=0.001$ ); the dog not receiving anthelmintic treatment ( $P=0.003$ ); and dog age  $\leq 5$  years ( $P=0.01$ ). The results of a multivariate analysis confirmed that lack of dog restraint, access to raw offal, and young age of the dog ( $\leq 5$  years) each significantly increased the risk of coproantigen positivity ( $P, 0.005$ ). Dogs that scavenged from cooking pots, were used to clean babies, had access to the inside of houses, and/or slept indoors appeared, however, to be at no increased risk of coproantigen positivity.

The present results are discussed in relation both to older information on the epidemiology and role of human behaviour in the transmission of *E. granulosus* in Turkana, and the effects of the hydatid-control programme that ran continuously in the north–western division of Turkana between 1983 and 1997.