Cystic echinococcosis in a stray cat

A. Burgu, S. A. Vural, O. Sarimehmetoğlu

FOUR species have been recognised taxonomically within the genus Echinococcus: Echinococcus granulosus, Echinococcus multilocularis, Echinococcus vogeli and Echinococcus oligarthrus. The four species possess distinct morphological characteristics in the adult and metacestode stages and they are also distinguishable by their degree of host specificity and geographical distribution. In spite of several molecular techniques which allow the identification of Echinococcus species and certain strains, many questions remain regarding their biological diversity. Among the Echinococcus species E granulosus is cosmopolitan, E multilocularis is limited to the northern hemisphere, including parts of central and eastern Europe, Asia and North America, while E vogeli and E oligarthrus are indigenous to Central and South America (Morris and Richards 1992, Eckert 1997, 2000).

E granulosus and E multilocularis are both present in Turkey. The species responsible for echinococcosis (hydatidosis) is E granulosus and, despite a marked reduction in the prevalence of larval and mature echinococcosis in animals, the infection is still important. The prevalence of E granulosus infection in dogs (Tinar and others 2001), sheep and cattle (Çoşkun 2001) varies widely. Human cystic echinococcosis also occurs throughout Turkey; the estimated rate is 0·87 to 6·6 per 100,000 people (Altıntaş 2001).

Dogs and many wild canids are normally regarded as the definitive hosts for E granulosus, but whether cats can act as final hosts is still uncertain. It has sometimes been possible to establish experimental infections with E granulosus strobilae in cats, but the development is generally retarded, especially in terms of sexual maturation (Cook 1989). The cat has historically been viewed as of little significance from a zoonotic point of view, due to the extreme rarity of E granulosus in this species and the cat’s habit of burying its faeces. A wide range of mammals, including primates, marsupials, ruminants, lagomorphs and artiodactylids, are intermediate hosts for E granulosus, although occasional natural infection with the larval stage has been reported in carnivores and avian hosts (Prescott 1984, Cook 1989). The occurrence of the intestinal or larval form of E granulosus in cats had not been reported in Turkey. This short communication describes a rare manifestation of hydatidosis in a cat.

In May 2002, a two-year-old stray cat was presented to the Ankara City Council’s Health Center for Domestic Animals with a history of gradually progressive abdominal enlargement, thought to be due to prolonged gestation or delayed parturition. The cat was emaciated and in poor condition, with anorexia and depression, and an abnormally enlarged, pendulous abdomen was noted. The cat was reluctant to move and mewed with pain on movement or excitement. On palpation, multiple large, round masses were detected occupying the entire abdominal space, and no abdominal organs could be identified.

Taking into consideration the general condition of the cat, an emergency lateral exploratory laparotomy was performed. The abdominal cavity was occupied with free cysts; they varied in size from 0·3 to 5·0 cm, and were transparent to whitish in colour depending on the thickness of the wall structure (Fig 1). The peritoneum and serosal surfaces of nearly all the abdominal organs were covered with innumerable attached cysts between 1·0 mm and 4·5 cm in size. These cysts were vesicular or rarely multivesicular in shape, and were mainly localised on the serosal surface of the stomach and the intestines (Fig 2a). Circumstances did not permit investigation of the immune status of the cat and the possible presence of immunocompromising viruses. Despite supportive treatment, the cat died after the operation.

The free cysts (Fig 2b) were examined 24 hours later. The relationship between the size and fertility of the cysts was determined; the smallest fertile cyst diameter was measured as 1·5 cm. In the fertile cysts, the hydatid fluids were transparent and the hydatid sands were whitish in colour and composed of mainly brood capsules; there were almost no free protoscolices (Fig 2c). No stains were used in the evaluation of the viability of the protoscolices. In the fertile cysts, most of the protoscolices were considered to be viable on the basis of their normal morphology, higher motility (considering the number of hours that had passed since the operation) and flame cell activity. Only a few dead protoscolices were detected. Sections of the cysts stained with haematoxylin and
The natural life cycle of *E. granulosus* typically depends on dogs and wild canids as definitive hosts. Cats are of little significance, and finding the larval stage in a cat is rare. However, this short communication highlights the ability of cats to act as a host for the larval stage, and the importance of this role from an epidemiologic viewpoint. In endemic areas, such as Turkey, cystic echinococcosis is not only a disease of the individual animal, but also represents a significant potential risk for infecting other animals.

ACKNOWLEDGEMENTS

The authors would like to thank their colleagues Ahmed Kiremitci and Aydin Kayali, of Ankara City Council’s Health Center for Domestic Animals, for their cooperation with the department and for providing materials.

References


