EQUINE COCCIDIOSIS BY EIMERIA LEUCKARTI IN ITALIAN DONKEY FARMS

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Work type: **Original Research**
Topic: **Internal Medicine**

Purpose of the work. *Equine coccidiosis is a protozoal disease which is caused by three species of coccidia Eimeria leuckarti, Eimeria solipedum and Eimeria uniungulsti (Bauer, 1988). Among these, E. leuckarti is the most frequently reported species in several studies in Europe, North and South America, some countries in Africa and Asia, Australia and New Zealand (Gulegen et al., 2016). In Italy after the first report in 1972 by Canestri Trotti e Restani (1972) in 9 horses and one donkey in some areas of central Italy, E. leuckarti has been identified only once more than 20 years ago in northern Italy in three foals (Battelli et al., 1995). Hence, there are no data on equine coccidiosis, the aim of the present study was to examine donkey farms in Italy to determinate the prevalence of Eimeria spp.*

Materials and used methods. *Coprological examinations were performed from 2011 to 2016 on 1,775 donkeys aging from 1 month to 33 years (mean 8.5) in 77 farms located in 11 Italian regions. Three hundred ninety six (22.3%) studied donkeys were male, 25 (1.4%) were gelding and 1354 (76.3%) were female. Faecal samples were taken from the rectum, or from freshly voided, from each study animal, were stored in a refrigerator (4?C) and within 48 h individual faecal oocyst counts were performed in the laboratory of equine parasitology using a modified McMaster technique with a detection limit of 10 oocyst per gram (OPG). For each positive sample 20 gr of feces were washed with water and centrifuged. The resulting sediment was placed in 50 ml tubes containing K2Cr2O7 2.5% solution. The samples were incubated at 23-28°C for 60 days. Oocysts were recovered by centrifugal flotation in Sheather's sugar solution (specific gravity of 1.250) and microscopically examined using the technique described by Duszynski & Wilber (1997).*

Outcomes. *This is the first epidemiological survey on equine coccidiosis performed in donkeys in Europe. The unsporulated oocysts were ovoidal, 80 (75-89) x 54 (50-58) µm with wall bilayered and identified as E. leuckarti. Totally 17 donkeys (0.96%) were found to be infected with E. leuckarti, 2 male (11.8%) and 15 female (88.2%). Infected animals were located in 10 farms (13%) and the infected donkeys ranged from one to five. The mean age of parasitized donkeys was 8.1 years (min 3 - max 15 years). Although many studies showed that infection by E. leuckarti occurs in young animals, our results agrees with those obtained in a previous study that reporting that age may not be a determining factor in infection and transmission of E. leuckarti (De Souza et al., 2009). None of the infected animals displayed clinical signs. The studies performed in donkeys on intestinal coccidiosis are very limited. Benbrook and Sloss (1962) reported in North America cases of intestinal coccidiosis in donkeys. After then, in 1979, Chineme et al., (1979) described enteritis associated with E. leuckarti. Other two studies in donkeys were performed in Nigeria and Arabia (Wannas et al., 2012) reporting E. leuckarti prevalence of 5% and 10.7% respectively. In Europe in donkeys the-*

se protozoa was reported in Germany (Beelitz et al., 1996). In Italy intestinal coccidiosis has been sporadically reported in only one donkey by Battelli et al. (1995).

Conclusions. *The results of the present study demonstrate a low prevalence of E. leuckarti in donkeys in Italy. However, the infection is rarely evidenced by clinical signs. Difficulties in the diagnosis of coccidia infection in equine cause that the parasitosis is not diagnosed in a routine coproscopical examination.*

Bibliography

1. Battelli G., Galuppi R., Pietrobelli M., Tampieri M. P. (1995). Eimeria leuckarti (Flesh, 1883) Reichenow, 1940 from Equus caballus in Italy. Parassitologia 37: 215-217.
2. Bauer C. (1988). Prevalence of Eimeria leukarti (Flesch, 1883) and intensity of faecal oocyst output in a herd of horses during a summer grazing season. Vet.Parasitol. 30: 11-15.
3. Beelitz P., Göbel E., Gothe R. (1996). Endoparasites of donkeys and horses kept in communal housing in Upper Bavaria; species spectrum and incidence. Tierarztl Prax.24(5): 471-475.
4. Benbrook E. A. and Sloss M.W. (1962). Coccidial oocysts (Eimeria leuckarti) from North American donkeys (Asinus asinus). J. Am. Vet. Med. Assoc. 140: 817-818.
5. Canestri Trotti G., Restani R. (1972). Eimeria leuckarti (Flesh, 1883) Reichenow, 1940 in equine in Italia. Parassitologia 14: 245-250
   Chineme C.N., Tulpule S.S., and Jamdar M.N. (1979). Enteritis associated with Eimeria leuckarti infection in donkeys. Vet. Rec.105: 126.
6. De Souza P.N.B., Bomfim T.C.B., Huber F., Abboud L.C.S., Gomes, R.S. (2009). Natural infection by Cryptosporidium sp., Giardia sp. and Eimeria leuckarti in three groups of equines with different handlings in Rio de Janeiro, Brazil.Vet.Parasitol.160: 327-333.
7. Duszynski DW, Wilber PG. A guideline for the preparation of species descriptions in the Eimeridae. Journal of Parasitology, 83, 333-336, 1997.
8. Gülegen E, Girisgin O, Girisgin AO, Cirak V.. (2016) Eimeria leuckarti infections in sport horses in Northwest Turkey. Berl Munch Tierarztl Wochenschr 129(1-2):52-55.
9. Wannas, H.Y., Dawood, A., Gassem, A. (2012) Prevalence of Gastro-intestinal Parasites in Horses and Donkeys in Al Diwaniyah Governorate. AL-Qadisiya J. Vet. Med. Sci. 11(1): 148-155.

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