ORIGINAL SCIENTIFIC WORKS | LUCRĂRI ORIGINALE

ZOONOTIC ENDOPARASITES SPECIES IN RED FOXES (*VULPES VULPES*) IN CARAŞ-SEVERIN COUNTY, ROMANIA

ENDOPARAZIŢI CU CARACTER ZOONOTIC LA VULPI *(VULPES VULPES)* ÎN JUDEŢUL CARAŞ-SEVERIN, ROMÂNIA

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ABSTRACT | REZUMAT

The aim of this study was to identify the parasites with zoonotic character spread in red fox.

During the period December 2012 - December 2015, 39 dead red foxes belonging to 11 hunting sites from Caraș-Severin county were necropsied. Out of 39 dead red foxes, 20 were males and 19 females.

To identify the endoparasites, faeces samples and gastrointestinal tract from all the dead red foxes were collected and macro- and microscopically examined. The faeces samples were also examined by flotation method (Willis). The endoparasites presence in 31 of 39 samples was identified and the overall prevalence was 79.48%. The zoonotic endoparasites species found in red foxes from Caraș-Severin county were *Toxocara canis* in 15 samples (38.47%), *Ancylostoma caninum* in 7 samples (17.94%) and *Uncinaria stenocephala* in 4 samples (10.25%). Other identified parasites were: *Eimeria* spp. in 15 samples (38.46%), *Mezocestoides lineatus* in 12 samples (30.76%), *Dipylidium caninum* in 6 samples (15.39%), *Taenia pisiformis* in 10 samples (25.61%), *Pterygodermatites affinis* in 2 samples (5.12%) and *Trichocephalus vulpis* in 8 samples (20.51%).

Keywords: parasites, V*ulpes vulpes*, zoonoses

Scopul acestei lucrări a fost identificarea paraziților cu caracter zoonotic întâlniți la vulpe.

În perioada decembrie 2012 – decembrie 2015 au fost necropsiate 39 cadavre de vulpi, provenite din 11 fonduri de vânătoare ale judeţului Caraş-Severin. Din cele 39 cadavre, 20 au fost masculi şi 19 femele.

Pentru determinarea endoparaziților au fost recoltate probe de fecale și masa gastrointestinală a tuturor cadavrelor. Ulterior s-au examinat fecalele prin metoda flotației (Willis).

Prezența endoparaziților a fost detectată în 31 din 39 de probe, iar prevalența totală a fost de 79.48%. Zoonozele parazitare identificate la vulpi au fost produse de *Toxocara canis* găsit în 15 probe (38.47%), *Ancylostoma caninum* în 7 probe (17.94 %), *Uncinaria stenocephala* în 4 probe (10.25%).

Alţi paraziți identificați au fost: *Eimeria spp.* a fost găsit în 15 probe (38.46%), *Mezocestoides lineatus* în 12 probe (30.76%), *Dipylidium caninum* în 6 probe (15.39%), *Taenia pisiformis* în 10 probe (25.61%), *Pterygodermatites affinis* în 2 probe (5.12%) și *Trichocephalus vulpis* în 8 probe (20.51%).

Cuvinte cheie: paraziţi, V*ulpes vulpes*, zoonoze

The red fox (*Vulpes vulpes*) is one of the most common wild carnivores found in Romania. The red fox's body resembles that of a dog, but the difference is in its long and bushy with white tip tail and reddish coat. She is carnivorous, feeding on a wide range of small animals she can catch: field mice, gophers, squirrels, hares, and partridges, birds from households and insects (7; 18;20) an important role in the transmission of diseases, some important zoonotic (10; 11; 17).

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The aim of the study was to identify the gastrointestinal parasites prevalence with zoonotic character found in red fox and also.

MATERIALS AND METHODS

1.1. Description of the origin area of the samples

Caraş-Severin is a county in the Banat region, in south-western Romania (Fig.1) with a surface of 8514 km². From geographic point of view, in Caraş-Severin are plains, hills and predominantly mountains which occupying 65% of the territory and being represented by Banat Mountains,Tarcu Mountains, Godeanu Mountains and Cernei Mountains (19).

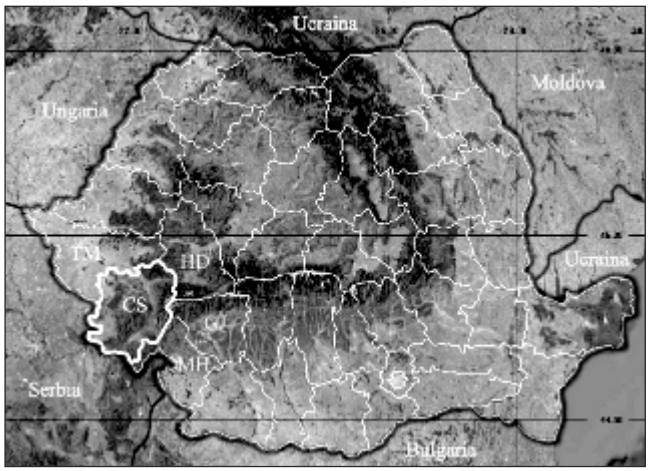

Fig. 1. The area of origin for red foxes samples (19)

1.2. Animals under study, parasitological examination and epidemiological investigation

The study on zoonotic endoparasites from red foxes was performed from December 2012 to December 2015. On 39 dead red foxes belonging to 11 hunting sites from Caraş-Severin county: Belobresca (5 samples), Bocşa (3 samples), Borloveni (3 samples), Bozovici (3 samples), Brebu-Zorlenţ (4 samples), Dumbrava (3 samples), Goleţ-Petrojniţa (4 samples), Pecinisca (3 samples),Poiana (6 samples),Teregova (2 samples), Socol (3 samples) were performed the researches.

The red foxes were killed by shooting and transported to DSVSA Caraş-Severin for establishing the effectiveness of rabies vaccination.

Gastrointestinal tract were collected, transported and examined by necropsy at Parasitology and Parasitic Diseases Clinic of the Faculty of Veterinary Medicine from Timişoara. Each gastrointestinal tract of dead red foxes was subjected to necropsy for identifying the zoonotic endoparasites. Macroscopic examination on digestive tract sections was performed, the stomach and the intestines were opened and carefully the gastric and intestinal content were examined. The stomach and intestines was examined by successive washes method.

Adult parasites found in gastrointestinal tract were collected and washed with 0.9% saline solution and afterwards examined by stereomicroscope for identification. They were preserved in 70% ethanol.

Faecal samples were collected directly from the gastrointestinal tract of dead red foxes and examined by flotation method (Willis) (4). The parasites species identification was performed in accordance with the determination keys for trematodes, cestodes and nematodes from the scientific literature (1, 6, 8, 9, 12, 13, 14, 15).

RESULTS AND DISCUSSIONS

After analyzing macroscopically, the stomach and intestines showed an abundent mucuos and adult parasites were identified: *Taenia pisiformis*, *Mesocestoides lineatus*, *Dipylidium caninum, Toxocara canis*, *Pterygodermatites affinis*, *Uncinaria stenocephala, Ancylostoma caninum* and *Trichocephalus vulpis.*

Eimeria spp. oocysts and eggs of *Toxocara canis*, *Ancylostoma* spp., *Uncinaria stenocephala* and *Trichocephalus vulpis* were identified by Willis method.

In the present study was identified the parasitism with protozoa, cestodes and nematodes in 31 (79.48 %) of 39 dead red foxes from Caraş-Severin county. In 8 (20.51%) of 39 dead red foxes, the parasitological examination was negative.

The parasitism prevalence (Fig. 2) with *Eimeria* spp. was 38.47%, *Dipylidium caninum* 15.39%, *Taenia pisiformis* 25.61%, *Mezocestoides linetatus* 30.76%, *Toxocara canis* 38.47%, *Pterygodermatites affinis* 5.12 %, *Ancylostoma caninum* 17.94%, *Uncinaria stenocephala* 10.25%, and with *Trichocephalus vulpis* 20.51%.

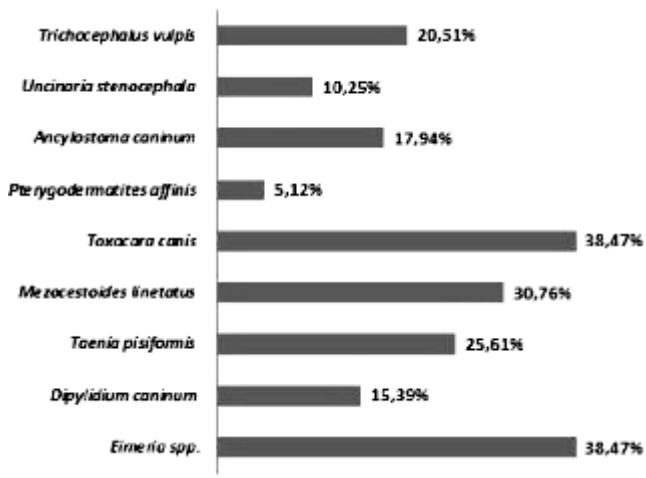

Fig. 2. Prevalence of gastrointestinal parasites in foxes in Caraş-Severin county

Out of 39 dead red foxes, 20 were males and 19 females. 14 of 20 males red foxes and 17 of 19 females red foxes were parasitological positive (70% respectively 89.47%).

Dalimi et al.(3), in a study conducted in western Iran on red foxes showed 95.45% positivity in parasites and a prevalence of 4.54% and in *T. canis*, in *A.caninum*, 13.64 %, *Uncinaria stenocephala* and 81.82% *M. lineatus*.

A study performed in northern Italy by Di Cerbo (5), on 645 foxes showed a prevalence of 54.42% *Toxocara canis*, 27.44% *M.lineatus*, 51.32% *U. stenocephala,* 19.38% *P.affinis* and 0.16 % *T. vulpis*.

Stuart et al. (16), conducted a study in Ireland on foxes and have identified *Toxocara canis and Trichuris vulpis* with a prevalence of 20% respectively 4%.

A study conducted by Barabasi et al. during the period 2007-2010 on 561 foxes in 15 counties in Romania have identified parasites from different genera: nematodes (91.4%), cestodes (90.7%) and trematodes (15%). 17 parasites species were identified *Alaria alata, Dipylidium caninum, Echinococcus multilocularis, Mesocestoides lineatus, Taenia polyacantha, T. hydatigena, T. multiceps, T. pisiformis, T. serialis, T. Taenia, T. crassiceps, T. ovis, Ancylostoma caninum, Uncinaria stenocephala, Toxascaris leonina, Toxocara canis* and *Trichuris vulpis* (2).

CONCLUSIONS

The present study, conducted in 2012-2015 period, have lead to the following conclusions:

- red foxes from Caraş-Severin county are parasitized with protozoa, cestodes and nematodes;

- zoonotic endoparasites species identified were: *Toxocara canis* (38.47%),*Ancylostoma caninum* (17.94 %) and *Uncinaria stenocephala* (10.25%);

- endoparasites prevalence in foxes was 79.48%;

- the most frequent parasitism identified was with *Eimeria* spp. and *Toxocara canis* 38.47% and the least common with *Pterigodermatites affinis* 5.12%.

ACKNOWLEDGEMENTS

This research work was carried out with the support of the project *Research, education and services development in the veterinary medicine and innovative technologies areas for RO 05,code SMIS-CSNR 2669.*

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