

OCCURRENCE OF *THELAZIA LACRYMALIS* (NEMATODA, SPIRURIDA, THELAZIIDAE) IN NATIVE HORSES IN ABRUZZO REGION (CENTRAL EASTERN ITALY)

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Summary :

A survey on the prevalence of *Thelazia* spp. in Abruzzo region (Italy) in slaughtered native horses was conducted from August 29, 1997 to August 28, 1998. Both eyes from 128 eight-month to 11 year-old native animals were examined. 50 horses (39.06 %) were found parasitized by *Thelazia lacrymalis*. 502 specimens (371 females, 88 males and 12 larvae) were collected. In the infected horses the numbers of *T. lacrymalis* ranged from 1 to 48, with a mean count burden of 3.92 per head (SD = 7.79). *T. lacrymalis* specimens were mainly in the excretory ducts of the Harderian gland, and also in the ducts of the lacrimal glands, free in the conjunctiva and behind the nictitance. Gross examination showed a conjunctivitis, more frequently a follicular conjunctivitis, in the 58 % of the infected horses.

KEY WORDS : *Thelazia lacrymalis*, survey, horses, Italy.

Résumé : PRÉVALENCE DE *THELAZIA LACRYMALIS* (NEMATODA, SPIRURIDA, THELAZIIDAE) CHEZ DES CHEVAUX NATIFS DES ABRUZZES (CENTRE-EST DE L'ITALIE)

Pour établir la prévalence de *Thelazia* spp. dans la région des Abruzzes (Italie), les deux yeux de 128 chevaux indigènes, âgés de huit mois à 11 ans, sont examinés post-mortem. 50 chevaux (39,06 %) sont parasités par *T. lacrymalis*. Au total 502 vers sont récoltés (371 femelles, 88 mâles, 12 larves); les chevaux parasités hébergent un à 48 spécimens, soit en moyenne 3,92 vers par animal (écarttype = 7,79). Les parasites sont le plus souvent dans le canal excréteur des glandes de Harder et les canaux des glandes lacrymales, mais ils sont aussi libres dans la conjonctive et sous la membrane nictitante. On note une conjonctivite, fréquemment folliculaire, chez 58 % des chevaux parasités.

MOTS CLÉS : *Thelazia lacrymalis*, étude, chevaux, Italie.

The genus *Thelazia* Bosc 1819, a worldwide nematode spirurid, lives in the lacrymal ducts and in conjunctival sacs of numerous mammals and recognizes some species of Muscidae as intermediate host. *Thelazia lacrymalis* (Gurlt, 1831) is the most common eyeworm in horses; it was reported from the horses for the first time in Ontario, Canada, since 1970 (Barker, 1970) and later in several other states of the US, such as Maryland (Walker & Becklung, 1971), Washington (Grant *et al.*, 1973), Pennsylvania, Kansas, Minnesota (Gelatt, 1972), Kentucky (Lyons & Drudge, 1975), Tennessee (Patton & Marbury, 1978), Indiana (Ladouceur & Kazacos, 1981).

Relative to Europe, the first case in a horse was reported in the UK in the 30's (Craig & Davies, 1937). More recently equine thelaziosis by *T. lacrymalis* was reported in France (Normandy) (Collobert *et al.*, 1995), in the Apulia region (Italy) (Giangaspero *et al.*, 1996),

in Germany (Beelitz *et al.*, 1997) and in Sweden (Hoglung *et al.*, 1997).

Clinical signs of thelaziosis in horses may range from no gross lesions to mild conjunctivitis, photophobia, lacrimation, to less often ulcerative keratitis and blindness.

The first report of thelaziosis in Italy (Giangaspero *et al.*, 1996) led us to study thoroughly the epidemiological situation of this infection in other Italian region, such as Abruzzo, in Central eastern Italy.

MATERIALS AND METHODS

From August 29, 1997 to August 28, 1998, eyes from 128 eight-month to 11 year-old native horses have been submitted for post-mortem examination for the presence of *Thelazia* species at slaughterhouses in the municipalities of Pescara, L'Aquila and Teramo (Abruzzo region, Italy). 69 horses came from the province of Pescara, 33 from the province of L'Aquila and 26 from the province of Teramo. Relative to the age, 39 horses were younger than 18 months and 11 older than 18 months. One to six animals were sampled weekly and the horse eyes were examined within 24 hours after death. Both eyes and associated tissues, including the lacrimal glands, upper and lower

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eyelids and skin surroundings the orbits were removed and examined for *Thelazia* worms. Both eyes belonging to each animal were then placed in a jar containing physiological solution and returned to the University for examination. Each jar was labeled with the geographic origin, age, sex of the donors. In the laboratory the lateral canthus was cut and, after eversion of the eyelids, the exposed surface of the conjunctiva was examined using a dissecting black pan; manual pressure was applied to the base of the ducts of the lacrimal gland and the nictitating membrane to allow the emission of the worms.

Specimens were fixed in hot 4 % formaldehyde + 1 % propionic acid, and processed to glycerine by Seinhorst's rapid methods (Seinhorst, 1966).

To determine the presence of risk factors four relations were studied:

- the parasitological status (infected, not infected) and age of the animals;
- the number of the parasites and age of the animals;
- the parasitological status and origin of the animals;
- the number of parasites and origin of the animals.

RESULTS

On a total of 128 animals, 92 were less than 18 months and 36 more than 18 months. Eye-worms were found in 50 of 128 (39.06 %) examined horses of which nine from the province of Teramo, 24 from the province of Pescara and 17 from the L'Aquila. All worms were identified as *Thelazia lacrymalis* (Gurlt, 1831).

502 specimens (371 females, 88 males and 12 larvae) were collected. In the infected horses the numbers of *T. lacrymalis* ranged from one to 48, with a mean count burden of 3.92 per head (SD = 7.79).

In two animals, *T. lacrymalis* specimens were found free in the conjunctiva and behind the nictitante, in 11 in the excretory ducts of the Harderian gland, in 20 both free and in the ducts, and in 17 in the ducts of the lacrimal glands.

Relative to the risk factors no relations between parasitological status (infected, not infected) and age of the animals ($X^2 = 1.066$; $p = 0.302$), between the number of the parasites and age of the animals (Mann-Whitney U test: $Z = 1.739$; $p = 0.082$), between parasitological status and origin of the animals ($X^2 = 2.897$; $p = 0.235$) and finally between the number of parasites and origin of the animals (Kruskal-Wallis test: $X^2 = 5.194$; $p = 0.075$) were recorded.

Macroscopic ophthalmic examination revealed the complete absence of lesions in 21 horses, a moderate conjunctivitis in ten horses and a follicular conjunctivitis in 19 horses.

DISCUSSION

Although the number of slaughtered horses per year is very low in this region, the infection rate of *T. lacrymalis* in Abruzzo region seems to be very high compared to the percentage rate of other European regions, such as in Normandy (France), in Apulia (Italy), in Sweden, where the prevalence rate ranged from 10 % (Collobert *et al.*, 1995), 14.7 % (Giangaspero *et al.*, 1996) and 3.1 % (Hoglung *et al.*, 1997), respectively. Gross ophthalmic examination in infected animals showed an extreme variability in clinical signs, although, as has been showed in other countries (Beelitz *et al.*, 1997) and in Apulian horses (Giangaspero *et al.*, 1996), the presence of a follicular conjunctivitis seems to be a common finding.

The occurrence of *T. lacrymalis* in the Abruzzo region suggests that equine thelaziosis has been present in Italy for a long time and is probably more frequent than commonly believed.

Giving the increasing interest in riding horses and the diagnostic and clinical problems that this infestation determines, the practitioners should be alerted to the status of thelaziosis and further research into the epidemiology and the pathological effects of this interesting but not very well known ocular infestation is required.

REFERENCES

- BARKER I.K. *Thelazia lacrymalis* from the eyes of an Ontario horse. *Canadian Veterinary Journal*, 1970, 11, 186-189.
- BEELITZ P., DONGUS H., SCHOL H., GERHARDS H. & GOTHE R. *Thelazia lacrymalis* (Nematoda, Spirurida, Thelaziidae): report in a horse in Germany and contribution to the morphology of adult worms. *Parasitology Research*, 1997, 83, 627-631.
- COLLOBERT C., BERNARD N. & LAMIDEY C. Prevalence of *Onchocerca* species and *Thelazia lacrymalis* in horses examined post mortem in Normandy. *Veterinary Record*, 1995, 136, 463-465.
- CRAIG J.F. & DAVIES G.O. *Thelazia lacrymalis* in a horse. *Veterinary Record*, 1937, 49, 1117.
- GELATT I.E. The Eye. In: Equine Medicine and surgery, 2nd ed., American Veterinary Publications, Wheaton, Ill., 1972, 399-432.
- GIANGASPERO A., LIA R., VOVLAS N. & OTRANTO D. *Thelazia lacrymalis* in horses: first report in Italy. VII European Multicolloquium of Parasitology. *Parassitologia*, 1996, 38, 427.
- GRANT B., SLATTER D.H. & DUNLA J.S. *Thelazia* sp. (Nematoda), dermoid cysts in horses with torticollis. *Veterinary Medicine of Small Animal Clinics*, 1973, 621, 62-64.
- HOGLUNG J., LJUNGSTROM B.L., NILSSON O., LUNDQUIST H., OSTERMAN E. & UGGLA A. Occurrence of *Gasterophilus intestinalis* and some parasitic nematodes of horses in Sweden. *Acta Veterinaria Scandinava*, 1997, 38, 157-165.

- LADOUCEUR C.A. & KAZACOS K.R. *Thelazia lacrymalis* in horses in Indiana. *Journal of Animal Veterinary Medical Association*, 1981, 1, 301-302.
- LYONS E.T. & DRUDGE J.H. Occurrence of the eyeworm, *Thelazia lacrymalis*, in horses in Kentucky. *Journal of Parasitology*, 1975, 61, 1122-1124.
- PATTON S. & MARBURY K. Thelaziosis in cattle and horses in the United States. *Journal of Parasitology*, 1978, 64, 1147-1148.
- SEINHORST J.W. Killing nematodes for taxonomic study with hot f.a. 4:1. *Nematologica*, 1966, 12, 78.
- WALKER M.L. & BECKLUNG W.W. Occurrence of a cattle eyeworm, *Thelazia gulosa* (Nematoda: Thelaziidae), in an imported giraffe in California and *T. lacrymalis* in a native horse in Maryland. *Journal of Parasitology*, 1971, 57, 1362-1363.

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