Research article

Sheep coenurosis in Thi-Qar Province, Iraq

Jalel Abed Gatie

Jaber Saad Sainakh

Amin Hanon Hasaan

Thi-Qar Vet. Hospital, Veterinary Directorate, Ministry of Agriculture, Iraq.

Corresponding Author Email: jalelabeled@yahoo.com

(Received 17/8/2017, Accepted 28/12/2017)

Abstract

Coenurus cerebralis, the metacestode or larval form of the dog tapeworm *Taenia multiceps*, causes coenurosis, otherwise known as gid or stagger. *C. cerebralis* causes a serious problem in sheep production. Prevalence of *Coenurus cerebralis* in sheep herds in different times (2004-2017) and locations and causes in characteristic clinical signs and an important percent of deaths. The diseased sheep were used for clinical examination and anatomy in five herds (1610 heads) of sheep at different times and from different areas in Thi-Qar province south of Iraq. All sheep were examined clinically in the herds during the study. Total infestations by *T. multiceps* percentage where 13.29% in this study. The brain examination showed the presence of cysts of *T. multiceps* larvae in three places on the brain in the right and left hemispheres and at the bottom of the brain. The cysts were identified as being partially outside of the brain tissue and were buried in the brain tissue and were strongly attached and after separation leave a gap of size and a large number of the visible scolices (120-170 Scolices) in the form of white pieces, 1-2 mm long, similar to the lipid tissue. Microscopic examination of the scolices showed the presence of scolex of the *Taenia multiceps* and the movement of the larvae. The number of larval stage bags in the infected animal reached 1-8 cases. The infestations included lambs, which can be infected with the age of 4 months and adult sheep of both sexes. Our study showed prevalence of coenurosis among sheep in Thi-Qar province and confirmed its diagnosis by used clinical signs, case history, brain anatomy and microscopic examination of *C. cerebralis* cysts.

Keywords: Brain cysts, Coenurosis, Sheep.

Introduction

Coenurus cerebralis, the metacestode or larval form of the dog tapeworm *Taenia multiceps*, causes coenurosis, otherwise known as gid or stagger. *C. cerebralis* causes a serious problem in sheep production (1). The larval stage (metacestode or Coenuruses) of this cestodes, known as *C. cerebralis*, affects the central nervous system (CNS), particularly the brain of sheep and gives rise to the neurological signs of coenurosis (gid or stagger) that in the majority of cases result in the death of the animal from starvation after some weeks (2). Various reports of human infestation with this larval stage have been described elsewhere. For example, cysts have been detected in the central nervous system and intramuscular

areas as well as intraocular cavities with endophthalmitis and retinal detachment with subsequent loss of vision. In Egypt, cases confirming the presence of *C. cerebralis* have been described in both humans and animals (3). This study came after the diagnosis of the mass infection of the disease and knowledge of the extent of spread among the herds of sheep in the province of Thi-Qar and determine the best way to diagnose and try to find a preventive and therapeutic solution to the disease.

Materials and Methods

Ethical approval

The Animal Ethical Committee of Veterinary Medicine College, University of

Al-Qadisiyah, Iraq, has approved the present study under permission No: 418

One thousand six hundred and ten sheep in five herds were examined clinically to investigate about coenuruses during 2004-2017 in Thi-Qar governorate, south of Iraq in Al-Batha, Al-Manar, Al-Gharaf and Al-Nassiriyah areas. The case history, pulsation, respiration and temperature could be recorded the animals that observed main coenurosis clinical signs was sacrificed and had separating from the body and then submitted to investigate about coenurosis. An autopsy was performed on the anatomy,

Results

The results of the clinical examination showed seizures of convulsions in the neck and head and the head down between the two front hinds, coordination in the gait, partial blindness, rotation and falling ground and new then entering a new bout of convulsions. Dispersion of the animal's attention and its inability to follow the herd and keep pace with events such as walking, grazing and drinking. These results showed in 212 sheep and the coenurosis rate was 13.29%. Ten sheep out of 212 sheep that demonstrated main clinical signs of coenurosis were sacrificed and examined. The brain examination showed the presence of cysts of *T. multiceps* larvae in two locations on the brain in the right and left hemispheres brain Figure (1). The number of cysts ranged from 3-8 cysts in each animal head. The cysts identified as being partially outside of the brain tissue, buried in the brain tissue, were closely attached, and after separation leave a gap of size. Figure (2) and a large number (80-170 Scolices) of the visible scolices in the form of white pieces, 1-2 mm long, similar to the lipid tissue Figure (3). The results showed the total infestations by *T. multiceps* percentage where 13.29% in this study. Microscopic examination of the scolices showed the presence of scolex of the *Taenia multiceps* and the movement of the larvae. Table (1) shows the number of herds, the date of their

where the skin was removed from the head, the skull was opened by the saw, the brain was separated from its cavity and put in a dish containing the physiological saline solution was examined from all sides. The *C. cerebralis* cysts were separated by a transparent fluid containing larvae, Filled with a physiological saline solution, the scolices were examined with the naked eye and then transferred to a glass slide and placed under the optical microscope for the purpose of examination the information was recorded in a special register.

examination, the names of their areas and the number of sheep in them, and the percentage of infestations and losses.

Figure (1): cyst of *T. multiceps* on the right side of brain in 6 months old lamb

Figure (2): shows the gap left by a large *T. multiceps* worm cyst after removal from the brain tissue in a 2-year-old ewe.

Figure (3) shows the presence of *T. multiceps* larvae after separating the sac from the brain and opening it

Table (1): shows the number of herds, the date of their examination, the names of their areas and the number of sheep in them, and the percentage of infestations and losses.

No.	No. of sheep	No. of infestations	Areas	Date	Infestation percentage	No. of dogs live With herds
1	120	12	Al-Batha	2004	%14.4	8
2	130	30	Al-Manar	2013	%23	6
3	500	90	Al-Manar	2014	%18	10
4	700	45	Al-Garraf	2015	%6.4	12
5	160	35	Al-Nassiryah	2017	%21.8	7
Total	1610	212			%13.29	43

Discussion

The predominant opinion among veterinarians in Thi-Qar province was that the disease occurs sporadically among sheep and diagnosed through clinical symptoms and case history. It is usually recommended to send the infested animals to the abattoir due to treatment failure. In 2004, we noticed the presence of 14 infested sheep in one herd at the same time, two of the diseased animals were found to have similar cerebral cysts in both cases the case was diagnosed as a Coenuruses in which the herd of dogs that live with sheep was also treated with anthelmintic drug. We was decided to follow the herds that show these clinical symptoms and conduct a scientific study aimed at confirming the clinical diagnosis by the anatomy and examination of the cysts and examination of their contents microscopically. The study was long because it relied on waiting for natural infestations in herds of sheep. The clinical, neurological symptoms arising from brain and spinal cord infestations in sheep are mixed, making it very difficult to produce a definitive diagnosis. The best, easiest and fastest method of confirmation of diagnosis is the

anatomy of the head, brain and cerebellum examination. In the case of positive diagnosis, animals that show similar symptoms are sent to the abattoir; the decision to send animals that show similar clinical symptoms to the abattoir is difficult for the sheep breeders and therefore must be confirmed. The current study was also concerned with the disease as being zoonotic (4). Coenuruses is spreading globally and the results of our current study have coincided with a study (2) that recorded infestation in lambs and adult sheep. The prevalence of the disease among sheep in many parts of the world reached 18.65% in one of the regions of Iran (5), in the Kars region in Turkey reached 15.5% (3), and recorded 100% in a herd of sheep and goats suffering from clinical symptoms in Egypt (3). In Jordan, the infection rate was only 3% (6) while the percentage in Ethiopia was 100% in sheep suffering from clinical symptoms and 2.73% in a random survey of healthy sheep(1). A study (7) indicated that cows, buffaloes and goats could be infected by the same method as sheep, and another study (8) confirmed infestation of cows so this means that the

prevalence of the disease among ruminants in the environment and the presence of dogs and wolves in the study area, it supports the results of this study, where the high rates of infestations and losses between sheep and also mean the environment to complete the life cycle of the worm and also predicts the increase in the proportion of infestations when test animals with serological test Such as ELISA, and also our study confirmed the difficulty of differential diagnosis in animals that show clinical neurological symptoms of different originals but have developed the incidence of coenuruses at the top of the list of similar diseases and facilitated the

diagnosis and decision-making by veterinarians.

Conclusions

The study recommends that veterinarians and breeders regularly treat dogs associated with sheep and other ruminants with anthelmintic drugs and recommends a trial study of the use of praziquantel in the treatment of *Taenia multiceps* cyst in sheep to reduce the losses caused by the spread of the disease in herds of sheep. It also recommends increasing the work of guidance and awareness animal's breeders about the worm life cycle.

References

- 1-Achenef M, Markos T, Feseha G. *Coenurus cerebralis* infection in Ethiopian highland sheep. Incidence and observations on pathogenesis and clinical signs. Trop Anim Health Prod; (1999); 31: 15-24.
- 2-Mosa Tavassoli, Farnaz Malekifard, Ali Soleimanzadeh, Hossein Tajik. Prevalence of *Coenurus cerebralis* in sheep in Northwest of Iran. Vete vetrinary Research Forum; (2011); 2 (4) Pp274 - 276
- 3-Enas A Desouky, Ahmed I. Badawy & Refaat A.Refaat. Survey on coenurosis in sheep and goats in Egypt. Veterinaria Italiana; (2011); 47(3), Pp 333-340.
- 4-Ing MB, Schantz PM, Turner JA-Human. Coenurosis in North America case reports and review. Clin Infect Dis; (1998); 27(3): Pp 519-23.
- 5-Yunus Gicik, Murat Kara, & Mukremin O. Arslan. Prevalence of in Kars Province, Turkey. Bull Vet Inst Pulawy 51, (2007); Pp 379-382 coenurus cerebralis in sheep
- 6-Mahmoud N Abo-Shehada, Eyad Jebreen, Baker Arab, Rami Mukbel, Paul R Torgerson. Prevalence of *Taenia multiceps* in sheep in northern Jordan. Preventive Veterinary Medicine (impact factor: (2002); 2.05; 55(3):Pp201-7.
- 7-DK Sharma, PPS Chauhan. Coenurosis status in Afro-Asian region: A review. Small Ruminant Research. Volume 64, Issue 3, August 2006, Pages (2006); 197-202.
- 8-Avcioğlu H1, Yildirim A, Duzlu O, Inci A, Terim KA, Balkaya I. Prevalence and molecular characterization of bovine coenurosis from Eastern Anatolian region of Turkey. Vet Parasitol. (2011); Feb 28; 176(1):59-64.