Two unusual cases of generalized *Coenurus gaigeri* cyst infection in Beetal goats

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Abstract In the present communication, two unusual cases of generalized *Coenurus gaigeri* cyst infection in goats presented at Veterinary Teaching Hospital, University of Agriculture Faisalabad, Pakistan has been documented. Clinical (Case I) and postmortem (Case II) findings along with micro and macroscopic examination of excised cysts supported the diagnosis.

Keywords *Coenurus gaigeri* · Generalized · Beetal goat · Subcutaneous · Swelling

Introduction

Coenurosis is a life threatening parasitic disease of sheep and goat caused by metacestodic stage of *Taenia multiceps* (*T. multiceps*) belonging to class *Cestoda* and family *Taeniidae* (Soulsby 1982). Dogs and wild carnivores are definitive hosts (Avcioglu et al. 2012). *Coenurus cerebralis* (*C. cerebralis*) and *Coenurus gaigeri* (*C. gaigeri*) are two intermediate stages of *T. multiceps* causing cerebral and non-cerebral infection in small ruminants, respectively (Oryan et al. 2014). This disease poses a continuous threat to livestock population of the world targeting ruminants, horses, pigs and human beings (Oryan et al. 2014). *C. gaigeri* cyst, usually infects the muscles of caprines and, to a lesser extent,

ovines (Soulsby 1982). Locations of the *C. gaigeri* cysts in the body is directly related to clinical signs in the infected host and usually interferes with movement, feeding and function of internal organs (Nooruddin et al. 1996). In the present communication, *C. gaigeri* cysts infection were recorded in two cases.

Case presentation Case I

A 3-months old kid of Beetal breed weighing around 15 kg from a group of 15 goats reared on a farm underwent clinical examination at Veterinary Teaching Hospital (VTH) of Department of Clinical Medicine and Surgery, University of Agriculture Faisalabad, Pakistan for the diagnosis of progressively developing generalized multiple subcutaneous swellings (Fig. 1) particularly at face region. Prior to presentation at VTH, the kid had been treated with antibiotics and corticosteroids by referring veterinarian but the condition exaggerated and no response to therapy was observed.

Clinical examination revealed normal rectal temperature (38 °C) and heart rate (70 breaths per minute) together with discernible apnea, bulging eyes, mild salivation, difficulty in prehension of feed and intermittent head shaking. Additionally, the nature of the subcutaneous swellings was soft with fluctuating consistency without evincing any pain during manual palpation. Ophthalmoscopic examination revealed normal vision and pupillary light reflex was also present. Anamnesis revealed that all the kid had frequent contact with dogs kept at farm. Fine needle aspiration of the swelling resulted in clear watery fluid.

Exploratory surgery under local anesthesia at the site of aseptically prepared flank region resulted in the excision of a thin walled, fluid filled parasitic cyst from subcutaneous

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Fig. 1 Severe swelling on the face of kid affected with *C. gaigeri* cyst infection

tissue and abdominal muscle. The extracted cyst had a diameter of about 5 cm with multiple protoscoleces, attached to inner wall (Fig. 2) that was identified as *C. gaigeri* (Soulsby 1982). Praziquantel (100 mg/kg, b.wt, PO) was recommended, however kid did not respond to treatment and was slaughtered. Based on pathognomonic clinical signs and characteristic microscopic and macroscopic features of the excised cyst, it was diagnosed to be a case of *C. gaigeri* infection.

Fig. 2 *C. gaigeri* cyst removed surgically from the flank region of the kid

Case 2

A 2 years old intact goat of Beetal breed weighing around 30 kg was presented at VTH with severe respiratory distress. Anamnesis revealed no significant information. Before any treatment or diagnosis could be arrived, animal died. Postmortem was planned in order to diagnose the cause of mortality. Irrespective to the specific findings associated with mortality, a large number of fluid filled parasitic cyst (Fig. 3), latter on identified as *C. gaigeri* (Soulsby 1982), were found spreading throughout the body especially inside the muscles surrounding thigh and shoulder region.

Discussion

In the present communication, characteristic clinical, microscopic and macroscopic findings of *C. gaigeri* cyst infection are recorded in two cases. Literature provides a little information regarding *C. gaigeri* infection in goats although it is present worldwide (Soulsby 1982). The present communication substantiate the findings of Saikia et al. (1987) who observed enormously present natural infection of *C. gaigeri* cysts in goats.

In goats, *biceps femoris*, *triceps*, abdominal muscles (Islam et al. 1995), cardiac muscles (Singh et al. 1971), kidney (Paliwal et al. 1971), lymph nodes (Singh and Singh 1972), lower eyelid (Raidurg and Reddy 2009) ovary, rectum, urinary bladder and subcutaneous tissues (Sudhan and Shahardar 1999) are the predilection sites of *C. gaigeri* cyst. Contrarily, *C. cerebralis* cyst typically localizes in the central nervous system (CNS) of both sheep and goats (Vester 1969). Usually the cysts are fluctuating and restricted to hairless areas of the body. Similar findings

Fig. 3 *C. gaigeri* cyst found during postmortem examination of the affected goat

have been documented in sheep; however the etiological agent has been named as *C. skrjabini* (Schuster et al. 2010).

Indian workers (Shastri and Ghaffor 1985), conducted a study on *C. gaigeri* infection in goats and found that cyst of this parasite were the cause of hefty swellings at different sites throughout the body supporting the findings of our study. *C. gaigeri* cyst infection has also been documented in gemsbok (Bohrmann 1990), sambhar and Oriental deer (Varma et al. 1994). Goats usually contracts infection from infected canids. Most of the time in lightly infected animals, clinical signs are inapparent and pathognomonic necropsy findings confirm diagnosis (Oryan et al. 2010). Surgical excision of the cyst, incising and filling the cavity of collapsed cyst with iodine or lugal iodine, administration of praziquantel and routine screening of canids harboring *T. multiceps* are the mainstays of treatment (Nooruddin et al. 1996).

Keeping in view the existence of this tapeworm in Pakistan, reports of novel cases of this endoparasite should be incessantly encouraged to achieve further information regarding prevalence, endemic areas and epidemiology nationwide. This first communication on *C. gaigeri* infection in Pakistan is projected to seek attention of health surveillance authorities regarding the establishment of supplementary rational control measures for endoparasitic diseases of small ruminants not reported hitherto in this region.

Compliance with ethical standards

Conflict of interest Authors state that there is no conflict of interest.

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