

Short Communication

Surgical management of Coenurosis in a goat: case report

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ABSTRACT

The larval stage of the *Taenia multiceps*; *Coenurus cerebralis*- causes 'Coenurosis' or 'Gid', a parasitic disease of the central nervous system. Surgical intervention may cure the disease, otherwise it becomes fatal. The objective of this present study is to illustrate a surgical method for the successful removal of cysts from the brain of a Jamunapari goat came to the Upazila Veterinary Hospital, Ghatail, Tangail, Bangladesh. The most important clinical signs include circling movement, pressing the head against obstacles, keeping the head down to the affected side. The disease was diagnosed as 'Coenurosis' and decided to perform a surgery. The incision was made at the operative site and cysts were removed. The surgery of 'Coenurosis' is one of the common surgeries especially at field condition. The surgical method described here for a goat may be useful for the veterinarian for the appropriate management of such disease in the field condition.

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1. INTRODUCTION

'Coenurosis', also known as 'Gid' or 'Staggers', is a localized, space-occupying fatal disease that affects the central nervous system after the invasion of *Coenurus cerebralis*, the larval stage of the canine tapeworm *Taenia multiceps* or *Multiceps multiceps*. The tapeworm resides in the small intestine of dogs, and other canids (Soulsby, 1986). Although sheep and goats represent the common intermediate hosts for the tapeworm, it can also be seen in camels, deer, pigs, horses, and rarely in cattle and humans (Yoshino and Momotani, 1988). Infection occurs as a result of grazing in pastures contaminated with dog feces having the eggs of the parasite. Later on, - the larval form of the tapeworm invades the central nervous system

and characteristic clinical signs appear after a certain time (Sharma and Chauhan, 2006). In fatal cases, death may occur starvation after some weeks.

'Gid' was first described in sheep by Hippocrates (Himonas, 1979). It is a significant problem in sheep and goats throughout the world while its frequency in Turkey was reported to be 1.3 - 36.8% (Uslu and Güçlü, 2007). In Bangladesh, the disease is mainly found in goats and is considered one of the fatal diseases. A prior study reported that the frequency was 5.2% among the surgical diseases in goats of Bangladesh (Hossain, 1991). Nooruddin and colleagues reported the prevalence of the disease was 2.4% (Nooruddin,

et al., 2000). In the United Kingdom, ‘Coenurosis’ is one of the common diseases affecting the central nervous system of sheep (Brewer, 1983). This disease has been eliminated from the USA (Skerritt, 1991). The diagnosis, treatment and management of the disease in goats were described elsewhere (Razig and Magzoub, 1973; Ahmed et al., 1974). Both acute and chronic forms of ‘Coenurosis’ have been described (Scott, 2012). The development of the cysts in the brain initiates various nervous signs in animals leading to production losses and even death (Oryan et al., 2012). Nervous signs comprise varying degrees of blindness, occasional muscle tremors, ataxia, stumbling, paralysis, anorexia, dullness, grinding of the teeth, and circling movement (Yoshino and Momotani, 1988). However, symptoms can vary based on the location and size of the cyst.

No promising medical treatment but surgery is an effective measure for the cure of the disease. There is no other outcome but death unless the surgical removal of the cyst. Surgical approaches for removing cysts in sheep were illustrated in detail by Komnenou et al. (2000) while the pathological, molecular, and biochemical characterizations were described by Oryan et al. (2010). The objectives of this study were to surgical removal of cysts of ‘Gid’ disease and its management at the field level.

2. CASE PRESENTATION

In March 2016, a 6-year-old, female Jamunapari goat weighing approximately 30 kg was brought to the Upazila Veterinary Hospital, Ghatal, Tangail with a history of head pressing against the wall, anorexia and bleating. On clinical examination, the animal demonstrated circling with uncoordinated movements, keeping the head down to the affected side and skull softening at the horn base of the same side. Based on all these clinical signs, it was diagnosed as a case of ‘Coenurosis’ and decided to perform surgery.

Restraining and anesthesia

Both physical and chemical methods were used to control the goat. The animal was placed in lateral recumbency while the surgical area was kept up-right. After restraint, aminocaproic acid

(Injection Hemosin[®], Chemist laboratories Ltd., Bangladesh) was injected intravenously to control bleeding. The operative site was clipped, shaved (Figure 1), and scrubbed with soap and water. After the thorough cleaning and shaving, the operative site was soaked with 10% tincture iodine. Anesthesia was obtained by local infiltration of 2% Lignocaine Hydrochloride solution (Injection Jasocaine[®], Jayson Pharmaceuticals Ltd., Bangladesh) around the area (Figure 2).



Figure 1. Cleaning and shaving of the operative area.



Figure 2. Administration of 2% Lignocaine Hydrochloride in the operative area.

Surgical technique

One elliptical incision was given at the right lateral side of the left horn with a scalpel (Figure 3). Bleeding was checked by applying pressure with the gauge. The subcutaneous tissue and thin bone of the surgical area were clipped off. Then, an opening was made with the help of tissue forceps for the removal of the cyst. Immediately a probe was gently introduced, and a circling motion was made. When the cyst was spotted which appeared as a water balloon

(Figure 4), the goat was allowed to jerk its head resulting in the protrusion of the cyst. Then the cyst was slowly pulled out by gently holding it. Absolute care was ensured not to allow the cyst with protoscolices to rupture in the brain. Simple interrupted suture was applied to close the flaps using a non-absorbable suture material (nylon).



Figure 3. Incision with a scalpel.



Figure 4. A cyst of *Coenurus cerebralis* after incision of the skull.

Post-operative care

After surgery, sufficient fluid replacements, anti-inflammatory, antihistaminic, and antibiotics were administered. Ceftriaxone at a dose of 30 mg/kg body weight (Inj. Vertex[®], Orion Pharma Ltd., Bangladesh) was administered intramuscularly once daily for 5 days and 500 mL of 5% dextrose saline was given intravenously to maintain the fluid level. Ketoprofen at a dose of 3 mg/kg body weight (Inj. Ketochem[®], Chemist Laboratories Ltd., Bangladesh) was administered intramuscularly for 3 days to minimize inflammation and

antihistaminic Pheniramine maleate at a dose of 1.5 mg/kg body weight (Inj. Asta vet[®], Acme Laboratories Ltd., Bangladesh) was injected intramuscularly for 5 days. No complication was noted. The suture was removed on 9th day and the surgical site was observed almost healed.

3. DISCUSSION

In the present case, a goat with suspected 'Coenurosis' was undergone surgery to remove a cyst from the brain. In this study, the infected goat was a female of the age of 6-years. Compare to male animals, female are more prone to such infection (Amin et al., 2013). Age variation in the case of sheep was reported by Scott (2012). The disease is commonly reported in animals aged between 6 to 18 months but rarely reported in animals older than 3 years. Some of the environmental variables that are considered to be the influencing factors for 'Coenurosis' in animals include rainfall, relative humidity, and air temperature (Rashid, et al., 2000).

The typical clinical signs of cerebral 'Coenurosis' were observed, similar to those reported by Ramoler et al. (1973). Clinical sign in 'Coenurosis' varies depending on the location of the cyst in the brain (Sharma and Chauhan, 2006). The clinical symptoms reported in the goat of the current case were incoordination, ataxia, uncontrolled movements, and circling. The animal was observed to tilt its head towards the side of the cyst and/or keep circling in the direction of the cyst. Studies showed that, - in 96% of the cases, cysts were spotted in the left or right hemisphere and in the rest 4% of the cysts were spotted in the cerebellum of the brain (Nourani and Kheirabadi, 2009). Usually based on obvious clinical signs and softening of the skull, 'Coenurosis' in the goat was diagnosed. The previous diagnosis has been made using 'ultrasonography'- as well (Biswas, 2003). As 'ultrasonography' allows very limited information about the location of the cyst, therefore, a detailed neurological examination along with ultrasound provides better competency to locate the cysts in goats (Biswas, 2003).

In the present surgery, the anesthesia was performed by local infiltration of 2% lignocaine hydrochloride whereas general anesthesia was

also used in the studies described by Misra and Behl (1993). In this case, the success rate was 100% and the goat showed significant clinical improvement followed by surgical removal of the cyst and no complications were observed after surgery.

4. CONCLUSION

The technique of surgical extraction of 'coenurus' cyst from the brain under local anesthesia was described with no post-operative complications and uneventful recovery. History and clinical findings were found to be useful in diagnosing such clinical cases at the field level.

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