



Death Due to Heavy Infection of *Toxocara vitulorum* in a Male Murrah Buffalo Calf: A Case Report

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Abstract

A five-month old Murrah buffalo calf carcass was presented to the Department of Veterinary Pathology, College of Veterinary and Animal Sciences, Parbhani, Maharashtra, for conduct of a post-mortem examination. The postmortem examination revealed, emaciation and dehydration. The conjunctival mucus membrane was pale-white. The liver was congested, and the kidneys were atrophied with pale cortex. In abomasum, a milk clot and a large number of adult worms were observed. From the duodenum to mid-jejunum, a severe infestation of worms were visualized through the intestinal wall, The intestinal lumen was completely obstructed by adult worms. As per parasitological examination of fecal sample and morphological study, the worms were confirmed as *Toxocara vitulorum*.

Keywords: *Toxocara vitulorum*; Buffalo; Breeding

Introduction

Calf ascariasis due to *Toxocara vitulorum* is considered to be a major limiting factor in organized farms, due to high morbidity, mortality, loss of production and ineffective implementation of breeding programmes [1]. Ascarids, especially *Toxocara vitulorum* (*T. vitulorum*) are the most common gastrointestinal nematodes of cattle and buffalo calves worldwide. It generally causes one of the major helminthic diseases among calves and is much more common in buffalo calves than cattle calves. Since calves are borne with *T. vitulorum* infection or may get infection quickly through colostrum after birth and caused a serious disease called ascariasis [3]. The mode of transmission and life cycle in calve is quite different from adult cow. Ingestion of larvated egg by the adults does not directly leads to patent infection. Larva is distributed to various internal organs and remains dormant there until parturition and

prenatal infection established during this time. Adults become infected upon ingestion of larvated egg from the environment and after subsequent hatching the larva penetrate the intestine and remains as a hypobiotic larva in somatic musculature [9]. In young bovines, *T. vitulorum* is one of the important causes of mortality in India and South East Asia [6], particularly in buffalo calves.

Toxocara vitulorum is a large, robust worm, up to 30 cm long, with three large, prominent lips. The eggs, measuring 75 to 95 × 60 to 75 µm, are dark, sub globular and single-celled with a thick-pitted shell and are passed by calves because trans mammary acquisition is the only proven method of transmission [2]. In cattle, the nematode *Toxocara vitulorum* may become more widespread, because by changing farming methods, suckling calves are exposed

to this nematode infection. The infection may pose a new zoonosis problem since there are reasons to believe that *Toxocara vitulorum* can be responsible for the condition of visceral larva migrans in man [8].

History

An 2 month-old Murrah male calf was brought to the Department of Veterinary Pathology at the College of Veterinary and Animal Sciences in Parbhani, Maharashtra, For the conduct of a post-mortem examination. There was a history of anorexia, intermittent diarrhoea, poor growth and weakness. The calf was examined by Agri Farm veterinary officer, Parbhani and it was noted that the calf had normal physiological parameters (body temp, pulse rate and respiration rates).

Material collected and methods employed

Nearly 10 g of faeces were directly collected from the rectum of the calf, and were physically examined for any irregularities. Following that, the faecal material was diluted with the appropriate amount of normal saline to generate a uniform heavy solution, which was then filtered through a tea strainer into a conical test tube (50 ml). According to the standard procedure, the faecal examination is performed using the sedimentation and floatation method. Using a binocular compound microscope, the samples were initially viewed at a 10X and subsequently a 40X magnification.

Results and Discussion

Macroscopic examination of faecal sample

The feces were muddy in color, semi-solid with streaks in consistency, and had a typically foul odor.

Microscopic examination of faecal sample

During post-mortem examination, adult worms were noted and for identification of eggs and worms slides were prepared for microscopic examination by sedimentation and flotation methods [6]. The eggs have a thick, pitted shell and a single cell inside; they are almost spherical and measure about 70x80 micrometers.

Necropsy findings

External inspection revealed that the carcass was dry and dehydrated, with all exposed mucous membranes being pale/white. The tongue was protruded out and became caught between the molars (indicating apoplectic form of death). Faces soiled the anal portion and distal extremities. Rigger mortis had progressed to the point of death (Figure 1).

The post mortem examination showed that the trachea had frothy exudates and that the mucosa was congested. The lungs were completely pale/white in colour and emphysematous. On section, it was observed that, frothy exudates were presents in primary and secondary bronchus. Heart was rounded due to right side dilation, pericardial cavity contained clear fluid in it (2,3 liters). There was adhesion of heart with thoracic wall. Diaphragm was adhered with thoracic cavity. Liver was slightly enlarged (Hepatomegaly), there were focal coagulative necrosis and on section, and it was hard to cut at places, with capsular adhesion was noticed, pipe stem appearances on section. Adhesion of liver to abdominal wall at place. Spleen was pale and wrinkled capsule noticed. Kidneys were atrophied with pale cortex and it was difficult to cut.



Figure 1: Murrah buffalo calf.



Figure 2: Lungs were completely pale.

In abomasum, lactoliths (milk clots) which are milky white in colour and large number of adult worms were observed. From duodenum to ileum, intestines were severely congested and inflamed. On section, mucosa was thickened; there were streaks of haemorrhages on mucosa. Mesenteric lymph nodes were inflamed and enlarged.

In faecal sample examination, we found eggs of *Toxocara vitulorum* by sedimentation & flotation methods (figure).



Figure 3: Adult worms in abomasum with milk clots.



Figure 4: Intestine obstructed with adult worms

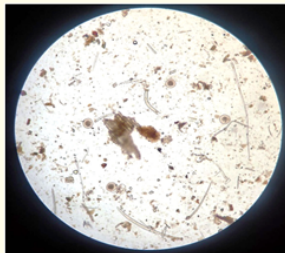


Figure 5: Microscopic appearance of eggs of *T. vitulorum*.

Discussion

As reported, it is a transplacental & trans-mammary transmission, causing disease characterized by anorexia, diarrhea, weight loss & severe anemia in buffalo calves (1-3 months) [10]. A search of milk produced by infected cows did, however, reveal the presence of ascaridoid larvae which possessed an oesophageal ventriculus and it was found that when foster calves ingested milk from infected cows some calves developed patent *T. vitulorum* infection [9]. Ingestion of larvated egg by the adults does not directly leads to patent infection. Larva is distributed to various internal organs and remains dormant there until parturition and prenatal infection established during this time [4,5,9].

Adult ascarid worms are prolific egg layers and the infective larvated eggs are very resistant and long lived, so these points should be taken into account while designing control procedures against ascarid infection. In buffalo calves, single time administration of compound with high activity against larval stages of *T. vitulorum* at day 10-16 gives good result. Present study denotes that effective control of *Toxocara vitulorum* in calves also necessitates simultaneous use of anthelmintic in dam, which was communicated to owner [3].

Conclusion

The present study demonstrated that male calf get infected through colostrum after birth and as per findings of morphological & faecal sample examination, it was confirmed as *Toxocara vitulorum* infection. And it is recommended that for effective control of *Toxocara vitulorum* in calves it is essential to use of anthelmintic in calves.

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