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Sarcocystosis with thin Wall Cyst in Cardiac Muscle of Bullock : A Case Report

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Sarcocystosis is a parasitic zoonoses caused by species of *Sarcocystis*, an intracellular protozoan parasite in the phylum Apicomplexa. In cattle *Sarcocystis* is mainly caused by *Sarcocystis cruzi*, *Sarcocystis hominis* and *Sarcocystis hirsute*. Bovine sarcocystosis caused by *Sarcocystis cruzi* mainly by ingesting the protozoan eggs through feed. The infection is mainly characterized by cyst formation in muscular tissue. Heart, diaphragm and skeletal muscles are the preferred locations for *Sarcocystis* spp in intermediate host and are more prevalent in adult animals (Rao and Hafeez, 2002). Bovine *Sarcocystis* results in weight loss, anorexia, decreased milk production, anemia, and prostration and in fatal cases often culminating in death of animals (Dafedar *et al.*, 2011). The significance of bovine *Sarcocystis* infection prompted us to put the present case on record.

Case History, Clinical Observations and Diagnosis

A five year old, non-descript bullock was reported to the Veterinary Clinic at village Mukti, District Dhule (Maharashtra) with history of mild fever, decreased feed intake since few days. The conjunctiva was pale indicating anaemia. Depending upon the history and clinical sings the animal was treated symptomatically for 3 days, however no improvement was observed and the animal was found dead in one morning without a previous history of recumbency. The carcass was examined for necropsy and gross pathological observations were recorded. On necropsy examination, carcass showed poor body condition, anemia, slightly icteric membrane with pale eyes and haemorrhages on the serosal surface. On opening, the carcass revealed with multiple petechial haemorrhages on lungs, heart and kidneys. Other pathological findings recorded were necrotic foci on liver and distended gall bladder with thick bile content. Lungs were mild oedematous and heart showed hypertrophy.

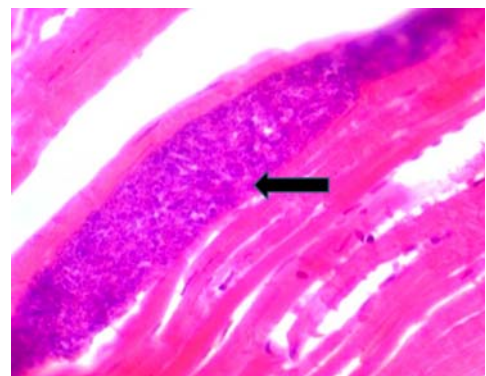


Fig. 1: Heart (Longitudinal section) showing sarcocystis cyst in cardiac muscles filled with bradyzoites inside the thin cyst wall (H & E x 400).

For histopathological study the tissues of heart, lung, liver and spleen were collected in the 10 percent formal saline solution, embedded in paraffin, cut into 4-5 μ thick section and stained with hematoxyline and eosin (Luna, 1968). On microscopic observations, sections of liver showed haemorrhages with focal areas of necrosis while sections of lung showed mild interstitial pneumonia, edema and blood venous congestion. Microscopically spleen showed normal histological architecture. Sections of heart revealed the presence of thin walled Sarcocysts (< 1 μ m) in the cardiac muscles. The sarcocyst appear as basophilic bodies (bradyzoites) round or elongated in shape depending on the cutting plane, bordered by a radial thin wall (Fig. 1, 2 and 3). Some of the cysts showed necrosis and degenerative changes surrounding the area. There were different stages of inflammation showing haemorrhages and polymorphonuclear cell infiltration. Degenerated area around the cyst composed of macrophages, lymphocytes, fibroblasts and connective tissue proliferation. In some of the loci there was no inflammatory response but revealed with an increase in the interstitial connective tissue separating the muscle fibers. On the basis of fact that *S. cruzi* only produces microscopic cysts while *S. hirsuita* produces macroscopic cyst, the case was diagnosed as thin wall cyst caused by *S. cruzi*.

Discussion

The clinical signs observed in the present case cannot be correlated with any of the specific disease or disease conditions; hence the case was treated with symptomatic treatment. Kaltungo and Musa (2013) stated that most of the animals infected with *Sarcocystis* spp. remain asymptomatic, but clinical signs are often dependant on the number of *Sarcocystis* and the species ingested. Present findings of thin walled cyst in heart was in agreement with Nourollahi *et al.* (2015) who also observed thin-walled cysts (*S. Cruzi*) in heart, and thick-walled cyst (*S. hominis* or *S. Hirsute*) were mostly detected in diaphragm. *S. cruzi* produce microscopic cysts, principally in myocardium.

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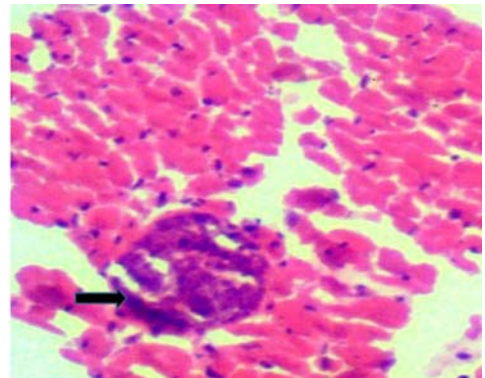


Fig. 2: Heart (Cross section) showing sarcocystis cyst (arrow) filled with bradyzoites inside the thin cyst wall (H & E x 400).

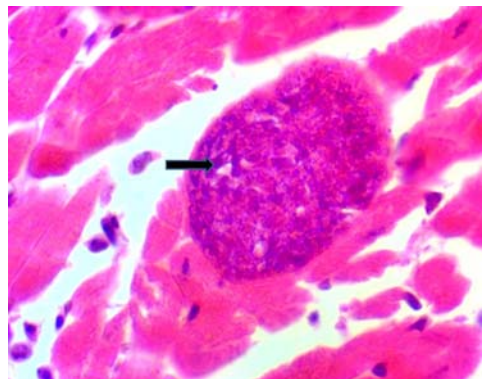


Fig. 3: Encysted parasite in skeletal muscle showing internal bradyzoite nuclei (arrow) lymphocytes, fibroblasts and fibrous connective tissue between the muscles. (H & E x400)

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