

Prevalence of Sarcocysts in Tongue and Esophagus of Dromedary Camels from Bikaner district of Rajasthan[#]

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ABSTRACT

The prevalence of sarcocysts was investigated by histopathological examination of 80 tongue and esophagus samples collected from camel (*Camelus dromedarius*) irrespective of age, sex and breed during July 2017 to June 2018 from Bikaner district of Rajasthan. The infection rates of Sarcocysts in the tongue and esophagus was 5 per cent (4 of 80) and 6.25 per cent (5 of 80), respectively. Histopathologically, different sized dark stained sarcocysts in between muscle bundles of tongue and esophagus were seen along with mild cellular infiltration mainly of eosinophilic granulocytes surrounding the lesion. The tissue response to Sarcocysts was minimal and reaction to the cysts caused tissue damages resulting in congestion, haemorrhages, mononuclear cells infiltration, necrotic changes and fibrosis. On the basis of overall findings it can be stated that sarcocysts infection rate in camels can be massive and the cysts may remain *in situ* for a long time.

Key words: Camel, Sarcocysts, Histopathology, Rajasthan.

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INTRODUCTION

Camels have diverse roles in the livelihood of pastoralists and live in areas which are not suitable for crop production (Asopa *et al*, 2021). Camel (*Camelus dromedarius*) is the most important livestock animal in arid and semi-arid regions and provides basic necessities to millions of people (Iraizoz *et al*, 2021). Sarcocystosis is considered one of the major parasitic diseases with a worldwide distribution and caused by obligate intracellular apicomplexan protozoan parasite of the genus *sarcocystis*. The parasite can infect a variety of intermediate hosts, whereas carnivores act as the final hosts (Saeed *et al.*, 2018). Sarcocystosis results in significant economic losses due to its impact on productivity and milk yield (Gareh *et al*, 2020). Sarcocyst is common in upper gastrointestinal tract of camel. However, the clinical manifestation is subclinical or asymptomatic in which animals appear normal but are performing at below their full potential (Kumar *et al.*, 2016). It could reduce the productivity of the infected dromedary camel. There is paucity of literature on prevalence of sarcocysts in tongue and esophagus of camel. On the basis of this deliberation, the present study was designed to provide preliminary information on the prevalence along with histopathological changes caused by sarcocysts in tongue and esophagus of camels in Bikaner district of Rajasthan.

MATERIALS AND METHODS

For the present study, 80 tissue samples of tongue and esophagus, were collected from carcasses of camels of either sex, irrespective of age groups and breeds during post-mortem examination from July 2017 to June 2018 from

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Bikaner district of Rajasthan. All the tissue samples were collected in 10% buffered formalin for histopathological examination. The tissues were processed mechanically for paraffin embedding by acetone and benzene technique (Lillie, 1965). The tissue sections of 4-5 microns thickness were cut and stained with haematoxylin and eosin staining method as routine. The detailed histopathological observations were recorded.

RESULTS AND DISCUSSION

Sarcocysts in tongue was recorded in 4 (5.00 per cent) cases. Almost similar prevalence (5.12%) was reported by Kumar (2015). A higher prevalence (28.00%) was reported by Valinezhad *et al.* (2008). Histopathologically, dark stained

sarcocyst in between muscle bundles of tongue was seen along with congestion and mild haemorrhages (Fig. 1). In some sections, sarcocyst was surrounded by thin layer of muscle fibers along with cellular infiltration mainly of eosinophilic granulocytes (Fig. 2). These findings were also reported by Valinezhad *et al.* (2008) and Vangeel *et al.* (2012).

Sarcocysts in esophagus was recorded in 5 (6.25 per cent) cases. A relatively higher incidence of 16.8 and 10.25 per cent was reported by Shekarforoush *et al.* (2006) and Kumar (2015) respectively. At the same time a very high incidence of 58.8 and 55.22 per cent was reported by Valinezhad *et al.* (2008) and Hamidinejat *et al.* (2013) respectively. Microscopically, different sized dark stained sarcocysts in between muscle bundles of esophagus were seen (Fig. 3) along with mild cellular infiltration mainly of eosinophilic granulocytes surrounding the lesion (Fig. 4). These findings were in agreement with Valinezhad *et al.* (2008) and Kumar (2015).

These histopathological changes in tongue and esophagus might be due to reaction of host's tissue against Sarcocystis infection. The variation of prevalence of *sarcocysts* between present results and those previously mentioned could be attributed to various factors including the degree of contact between camels and dogs since some camel pastoralists are not using dogs in camel rearing; therefore, differences in the systems used for camel keeping could influence the infection rate (Valinezhad *et al.* 2008; Dubey *et al.*, 2015).

CONCLUSION

The infection can be massive and the cysts may remain *in situ* for a long time, it would not be too presumptuous to declare the condition as an important camel ailment warranting further detailed investigations.

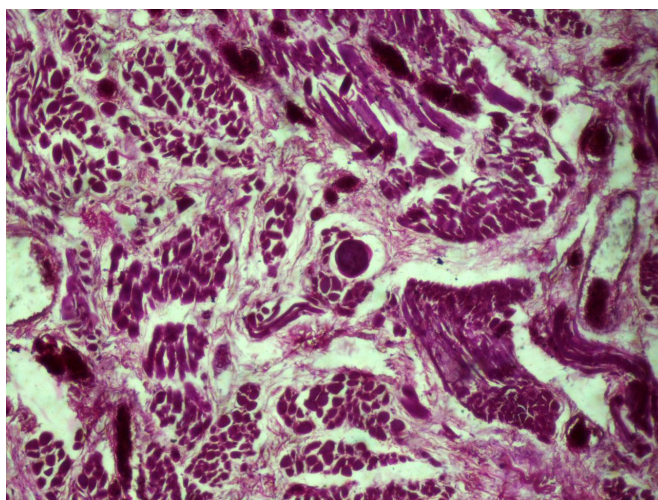


Fig. 1. Microphotograph of tongue showing dark stained sarcocyst in between muscle bundles along with congestion and mild haemorrhages. H&E 100X

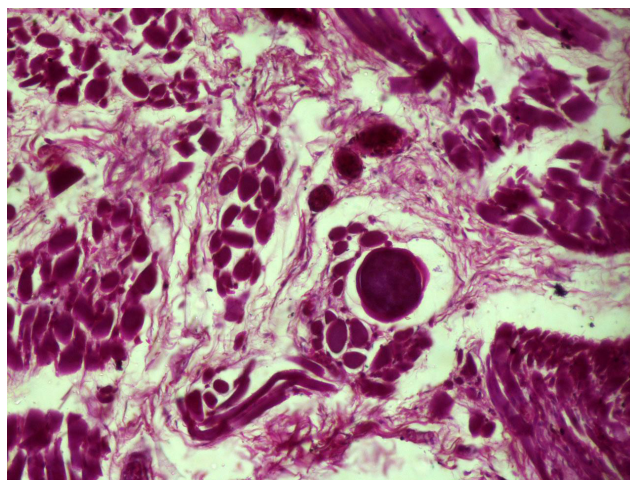


Fig. 2. Microphotograph of tongue showing dark stained sarcocyst surrounded by thin layer of muscle fibers along with congestion and mild eosinophilic infiltration. H&E 200X

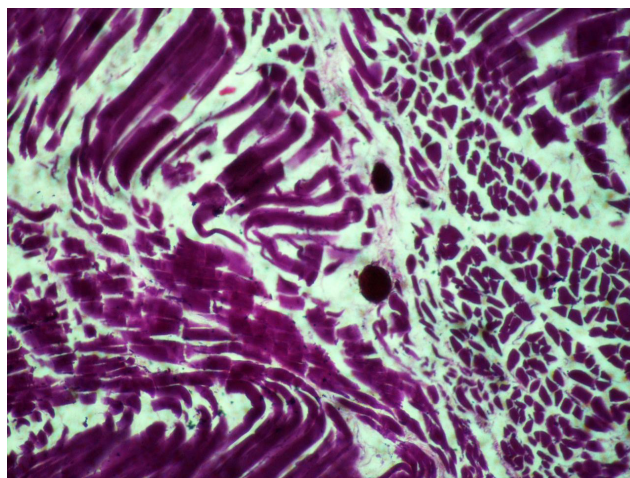


Fig. 3. Microphotograph of esophagus showing two dark stained sarcocyst in between muscle bundles. H&E 100X

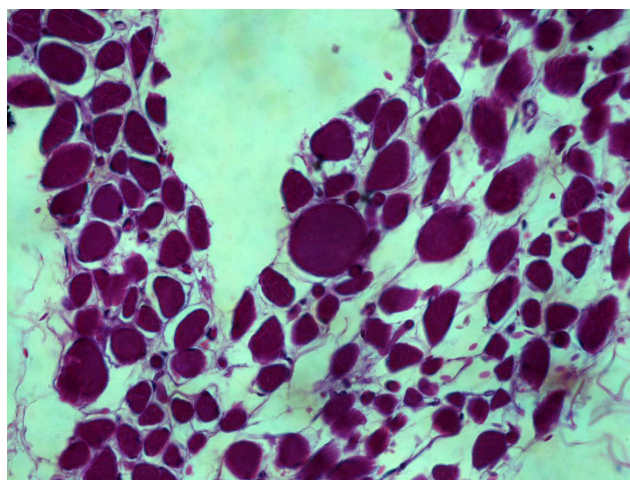


Fig. 4. Microphotograph of esophagus showing sarcocyst along with mild cellular infiltration mainly of eosinophilic granulocytes surrounding the lesion. H&E 400X

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