COMPARISON BETWEEN CONVENTIONAL AND ELISA METHODS FOR DIAGNOSIS OF SARCOCYSTOSIS IN BUFFALOES

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SUMMARY

The present study was undertaken to compare the conventional and ELISA methods for diagnosis of sarcocystosis in buffaloes. A total number of 100 female buffaloes were subjected to study. Macroscopic sarcocystis was collected from the esophagus of buffaloes slaughtered in Mosha slaughterhouse (Mosha, Assiut Governorate, Egypt) during the period from February to June 2010. Part from the esophagus containing the sarcocystis was fixed in 10% formol saline and was processed for histopathological exam. Serum samples from all animals were subjected to ELISA for detection of antibody to sarcocystis. The prevalence of macroscopic sarcocystis was 23%. On the other hand, ELISA technique revealed that 94.44% of examined animals were infected with sarcocystis. The sensitivity of the macroscopic method was 27%. Specificity was 100%. Positive predictive value was 100%, and negative predictive value was 7.46%. Histopathological sections of infected muscles showed cross and longitudinal sections of sarcocystis with different shape and size. The current study revealed that macroscopic examination for detection of sarcocystis is not sufficient. Animals must be subjected to ELISA to ensure that the animals are free from the parasite. It is recommended to apply control measures for the source of infection at the area of study.

Keywords: sarcocystis, ELISA, Buffaloes.

INTRODUCTION

Sarcocystis is a protozoan parasite. It has an obligatory prey-predator two host life cycle, that has carnivorous predator hosts (dogs, cats and man) and a wide variety of prey hosts (sheep, cattle, buffaloes, pigs, camels, birds, fish and man), species of sarcocystis are more specific for their prey hosts than for their predator hosts. There are three species of Sarcocystis, which naturally infect buffaloes namely; Sarcocystis fusiformis, Sarcocystis levinei sp. no., and S. buffalonis [2, 9, 12]. The diagnosis of sarcocystosis has long been based on the identification of the encysted parasites in the muscles by direct microscopic examination. Such technique, although is simple and valuable in screening is not adaptable for diagnostic purposes. ELISA is generally preferred as being efficient, sensitive, objective and less time consuming [14]. The present study was carried out to compare the macroscopic diagnosis of sarcocystis in buffaloes with the ELISA method in Assiut governorate, Assiut, Egypt.

MATERIALS AND METHODS

A total number of 100 female buffaloes were subjected to study. Macroscopic sarcocystis was collected from the esophagus of buffaloes slaughtered in Mosha slaughterhouse (Mosha, Assiut Governorate, Egypt) during the period from February to June 2010. Part from the esophagus containing the sarcocystis was fixed in 10% formol-saline and was processed for histopathological examination [15]. Serum samples from all animals were subjected to ELISA for detection of antibody to sarcocystis [17]. Antigen was prepared according to procedures in a previous study [14].

RESULTS

The prevalence of macroscopic Sarcocystis sp. (Fig.1) was 23%. Examination of the sarcocystis by using the light microscope depending on gross and histopathological sections revealed that all sarcocystis in the present study are Sarcocystis fusiformis, both small and large cyst was detected. On the other hand, ELISA technique revealed that 94.44% of examined animals were infected with sarcocystis. The sensitivity of the macroscopic method was 27%. Specificity was 100%. Positive predictive value was 100%, and negative predictive value was 7.46%. Histopathological sections of infected muscles showed cross and longitudinal sections of sarcocystis with different shape and size (Fig. 2).
Sarcocystosis is distributed worldwide. Many investigations have concerned the prevalence of Sarcocystis spp. infection in muscles of slaughtered cattle and buffaloes. In the present study, Sarcocystis sp. was detected in the esophagus and tongue muscles of slaughtered buffaloes. Esophagus is the most frequently infected organ with either macroscopic or microscopic sarcocyst [5, 7]. Distribution of sarcocyst does not follow a specific pattern in most of the infected organs in buffaloes, except for macroscopic cysts, which tend to be located in the esophagus. In addition, hearts of these animals do not usually contain any macroscopic forms [10].

The prevalence of macroscopic Sarcocystis sp. was 23%, ELISA technique revealed that 94.44% of examined animals were infected with sarcocystis. Similar results were reported by previous studies, a prevalence rate of 76.8% was reported in Assiut Governorate [16], 72.6% in examined buffaloes in Qena Governorate, Egypt [4] and 94% among cattle in Egypt [3]. Higher infection rates have also been recorded in other countries that have similar climatic conditions, such as 87% in India [13], 79% in Vietnam [8] and 82.9% in Iraq [11]. However, there have also been reports indicating lower prevalences, among them 65% in the Philippines [1] and 57% in Iran [6].

The current study demonstrated that ELISA is efficient in diagnosis of sarcocystosis in buffaloes. Because of the low sensitivity of the macroscopic method (27%), it can't be used as the only method for diagnosis. It is recommended to diagnose sarcocystosis by using ELISA method, which will benefit both diagnosis and control of sarcocystosis.

CONCLUSIONS

The current study revealed that macroscopic examination for detection of sarcocystis is not sufficient. Animals must be subjected to ELISA to ensure that the animals are free from the parasite. It is recommended to apply control measures for the source of infection at the area of study.

REFERENCES

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