AN AUTOPSY SURVEY ON THE PATHOANATOMICAL FORMS OF CANINE SPIROCERCOSIS IN TANZANIA

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SUMMARY

Necropsy records of 104 dogs autopsied in the department over a period of 5 years (1988-1993) were reviewed for purposes of assessing the frequency and pathoanatomical patterns of spirocercosis in dogs in Tanzania. Records showed that spirocercosis accounted for 18.3% of all cases examined *post mortem* at our department. With regard to pathoanatomical diversity of the lesions, it was found out that 52.6% of the spirocercosis cases presented with classic benign pyogranulomas beset intramurally within the oesophageal walls. Cases of fatal aortic rupture with hemothorax were recorded in 21.1% of the cases. In addition there was recorded one case (5.3%) that presented with a mixture of pyothorax and hemothorax due to perforations in both the aorta and the oesophagus. Characteristic occluding fibrosarcomas protruding into the lumen were seen in another 21.1% lot of the cases. This is the first report on the profile of *Spirocerca lupi* induced lesions in dogs in Tanzania.

INTRODUCTION

Spirocercosis in dogs has been reported to be variously characterized by dysphagia, vomiting, aneurysms in thoracic aortas, perforations in oesophagia and paraplegia (King, 1990; Chhabra, 1973; Wandera, 1976; Ndiritu & Al-Said, 1976; Pathak *et al.*, 1988). The clinical presentation appears to depend on the nature, severity and location of the lesions produced by the worm *Spirocerca lupi* as it migrates to its predilection site in the oesophageal wall (Smith and Knottenbolt, 1989; Hansen *et al.*, 1957; Chhabra and Singh, 1973). A phenomenon which results in a diversity of pathoanatomical forms of the disease in dogs. Studies exist in other parts of the world where attempts have been made to verify on the relative frequencies with which the various pathoanatomical forms of spirocercosis occur in dogs (Ramachandran *et al.*, 1984; Rogers and Obwolo, 1988). Reports on the same with regard to dogs in Tanzania do not exist. This report therefore, highlights on the pathoanatomical forms of the disease as they have been encountered in dogs in Tanzania.

MATERIALS & METHODS

Necropsy records of 104 dogs autopsied in the department over a period of 5 years (1988-1993) were reviewed. In the course of this review the proportion of dogs diagnosed of Spirocercosis was sought and recorded. The data was further analyzed with respect to the type, severity and

fatality of the lesions detected and their relative prevalence in the different dog breeds. The data obtained was summarized in manner that allowed for direct comparison.

RESULTS

Spirocerca lupi worms and their induced lesions were recorded in 19 (18.3%) of the 104 dogs necropsied over the 5 year period. The pathoanatomical diversity of the *Spirocerca lupi* induced lesions recorded included, ten cases (52.5%) of ordinary pyogranulomas beset intramurally in the oesophageal wall with their luminal surfaces as smooth as the oesophageal mucosa (Fig.1).

Four cases (21.1%) were occluding fibrosarcomas protruding into the lumina of distal oesophagus (Fig. 2), another four cases (21.1%) of fatal aortic rupture (Fig. 3) and one case (5.3%) with perforations in the thoracic aorta and oesophagus.
The ordinary pyogranulomas beset in the wall of the distal part of the thoracic oesophagus took form of nodular lesions protruding into the lumen and had their surfaces as smooth as the oesophageal mucosa itself (Fig.1). 6 out of the 10 cases in this group were detected only as incidental finding in dogs that had died of different causes. One out of the remaining four died naturally, whereas the other three were euthanized following progressive deterioration due to persistent hiceups, dysphagia and vomiting. Histopathologically the lesions had heavy neutrophilic infiltrations around the parasites and fibrous tissue capsule formation around the foci.
As for the fibrosarcomas, all the four cases were diagnosed in dogs that had died after a protracted illness characterized by persistent dysphagia and vomiting shortly after meals. All of them were voluminous masses occluding the lumen of the distal oesophagus. Their surfaces were roughed by formation of a series of smaller nodulations and recesses between the nodules in a manner reminiscent of a cauliflower (Fig.2). In one of such cases there were metastases to the lungs and kidney (Fig 2). Histopathologically the lesions were characteristically fibrosarcomatous with osteogenic tendencies in some of them.

All aortic ruptures were diagnosed in dogs that had died suddenly. Such deaths had provisionally been diagnosed as attributable to either poisoning or snake bites. All such dogs were in very good body condition. The outstanding lesions were copious hemothorax, (Fig.3), extreme parlor of the mucous membranes, perforating aneurysms in the oesophagus and a number of worms in both the aneurysms and the oesophagus (Fig.4). In the one case where both the aorta and the oesophagus were perforated, there was a mixture of blood, pus and fibrin flakes in the thoracic cavity.Out of the 19 cases of spirocercosis seven (36.8%) were from German Shepherds alone. All cases of aneurysms and aortic ruptures which were responsible for 50% of the spirocercosis associated deaths were also all from German Shepherds alone.

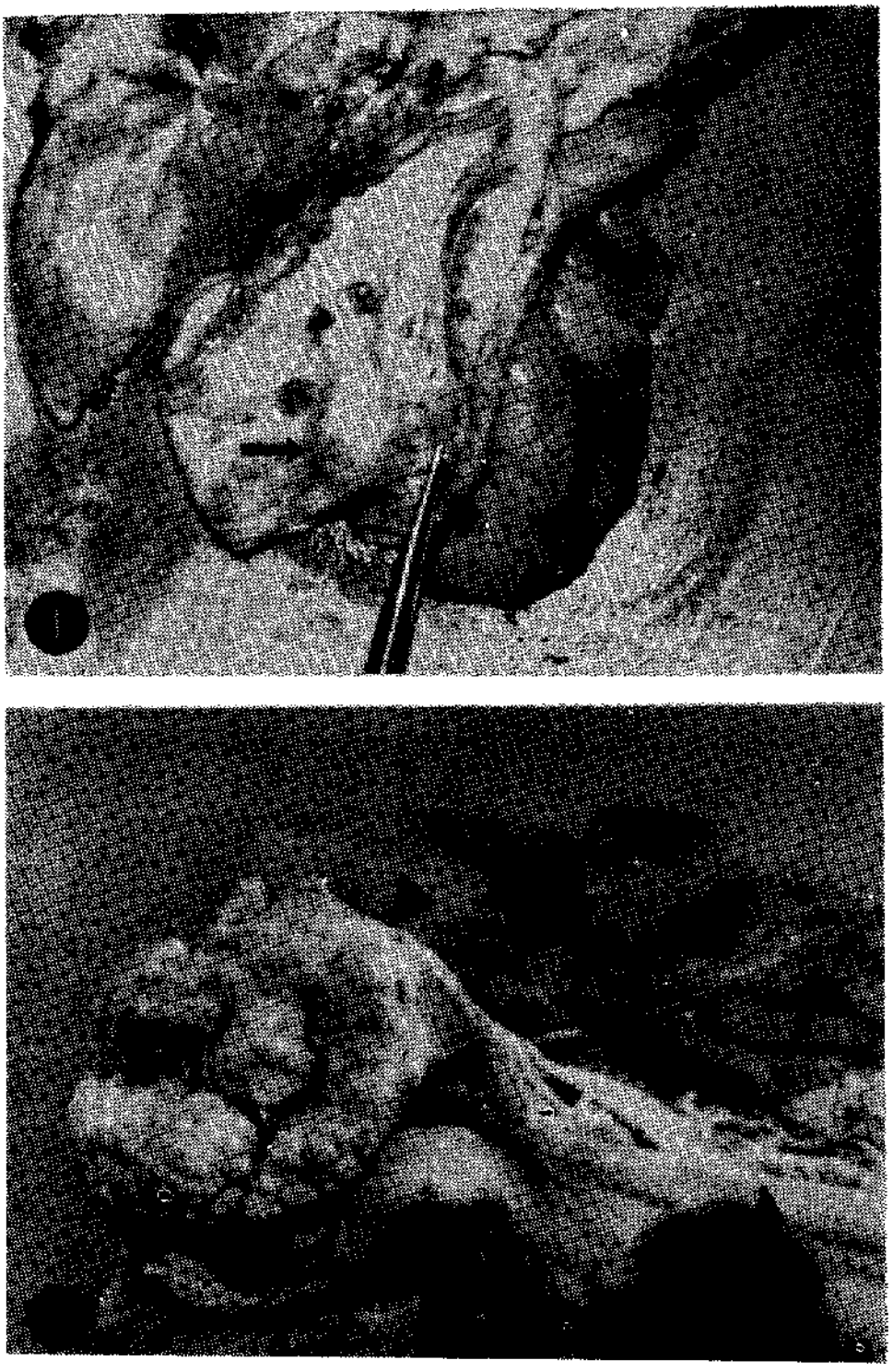

Figure 1: Smooth surface intramural *Spirocerca lupi* pyogranuloma in the distal oesophageal wall (arrow). Note the presence of *Spirocerca lupi* on the aesophageal mucosa.

Figure 2: Opened oesophagus showing an occluding mass of *Spirocerca lupi* induced fibrosarcoma (large arrowheads) with multiple cauliflower like nodules. Note the metastases to the lungs (small arrowheads), which were also seen in the kidney.

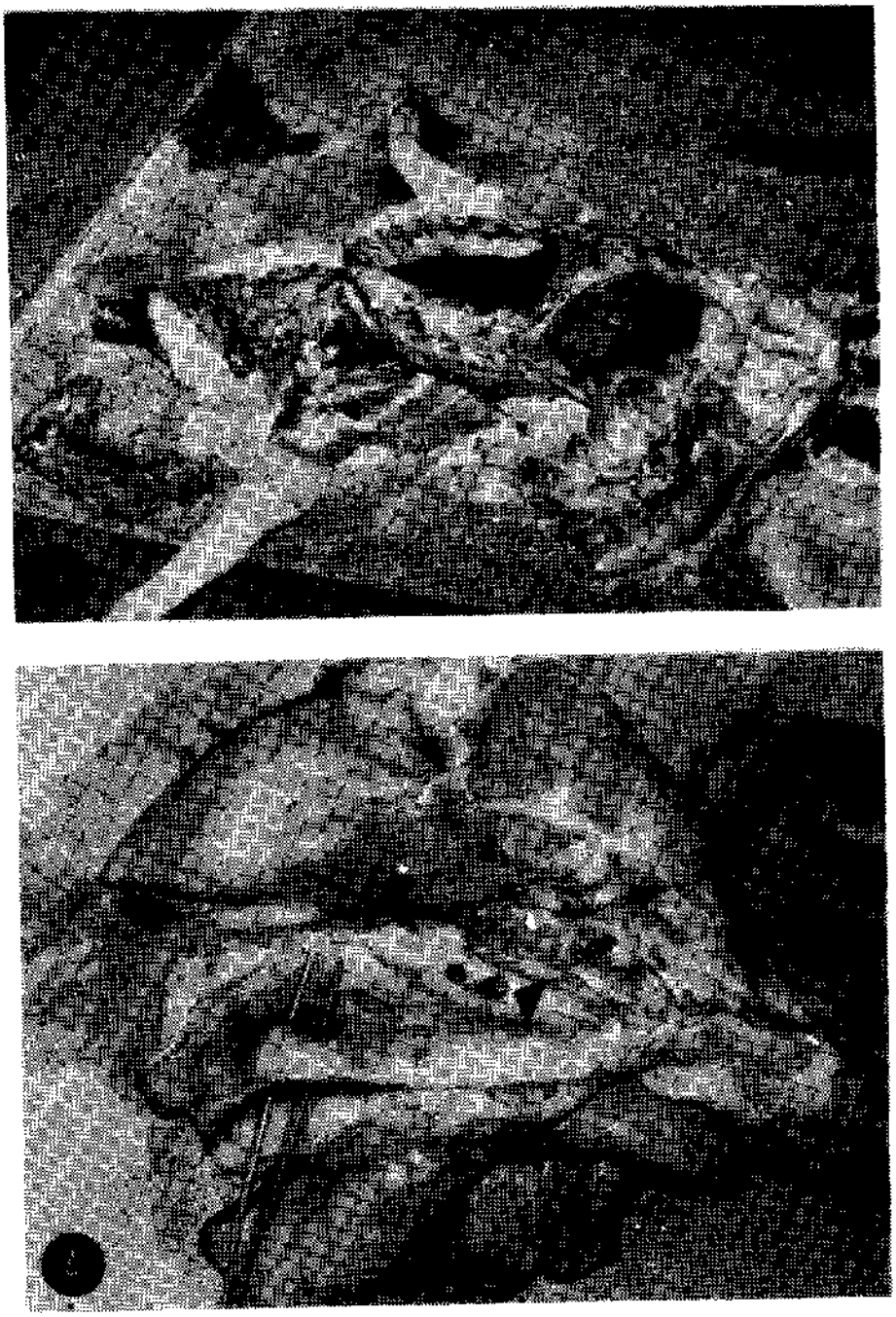

Figure 3: Copious hemathorax due to *Spirocerca lupi* aortic rupture in a German shepherd dog.

Figure 4: A perforation in the wall of the aorta (forceps) and free *Spirocerca lupi* worms (arrowhead) in the lumen of the oesophagus.

DISCUSSION

Canine Spirocercosis and its associated lesions of oesophageal tumours, granulomas and aortic ruptures have been reported in many parts of the world (Moulton,1973; Soulsby, 1982; Jubb *et al.*, 1993). This study elucidates on the relative frequency of pathoanatomical forms of the disease as encountered in Tanzania. Observations made in India by Ramachandran *et al.* (1984) show that of the 635 cases of Spirocercosis, aortic ruptures were responsible for only 5.35% of the deaths and also that fibrosarcomas were only recorded in 2 cases.

This report records as high as 21% of deaths attributed to the aortic ruptures and an equally high rate in the prevalence of *Spirocerca lupi* induced oesophageal fibrosarcomas. In addition, the present report records a much rare case in which perforations were observed in both the aorta and the oesophagus.

The sample sizes, however, between these two studies are vastly different, a factor that could possibly account for the apparent disparity in the figures recorded. Nevertheless there is a close agreement with the observation that the Alsatian is the singie breed with the highest prevalence. In yet another study by Rogers & Obwolo (1988) in Zimbabwe, Spirocercosis of unspecified pathoanatomicai form was diagnosed in only 8 of the 82 cases autopsied at the department. A prevalence rate much lower than the one reported here. It seems therefore that prevalence figures can possibly vary from one country to the other as well as from one method of study to another.

Although the sample size in the present study is not as large, the cases do however present most of the pathoanatomical forms of the disease including the rare pyothorax when the oesophagus is perforated. Therefore, this report serves well to present the relative prevalences of the various pathoanatomical forms of *Spirocerca lupi* induced lesions in dogs in Tanzania. The study further illustrates on the extent to which spirocercosis in form of fatal aortic ruptures may be responsihle for sudden deaths, especially in German Shepherd, an observation which has also been reported by Hamir (1984 & 1986). Although spirocercosis is frequently diagnosed here, this is the first report on the relative frequency of the various pathoanatomical forms of the disease in Tanzania.

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