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CRYPTOSPORIDIA IN THE BURSA OF A DUCK

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SUMMARY: Cryptosporidium was detected histologically and electron-microscopically in the bursa of one of the four two-month-old ducks that was submitted for disease investigation. The cryptosporidial infection was an incidental finding rather than the primary cause of high mortality in the ducks.

Keywords: Cryptosporidia, duck, bursa of Fabricius

INTRODUCTION

In Malaysia, poultry cryptosporidial infection was first reported by Mahani *et al.*, (1991). Cryptosporidiosis in chicken associated with respiratory problems (Ranck and Hoerr, 1987) and diarrhoea (Goodwin, 1988) has been described. In ducks, cryptosporidia was detected in the conjunctiva (Mason, 1986), bursa of Fabricius (BF) (Tsai *et al.*, 1983) and in the trachea and nasal cavities (O'Donoughue *et al.*, 1987). This note records the incidental finding of cryptosporidia in the BF of a duck.

MATERIALS AND METHODS

Case Report

Four 2 months old moribund Pekin ducks were submitted to our laboratory for disease investigation. The ducks were from a layer flock with a history of 40% mortality over a period of one month. Clinical signs observed were depression, rales, soiled vent and dehydration. Autopsy revealed mild to moderate ecchymotic haemorrhages in the livers and atrophy of the thymus and the BF. Tissue samples were collected for bacteriological, virological and histopathological examinations. Formalin-fixed pieces of the BF were processed for scanning and transmission electron microscopic examination using the method described by Kobayashi (1991).

RESULTS

Salmonella hadar was isolated from the rectum of all ducks and liver of one duck. Duck plaque virus was isolated after inoculation of pooled organs into embryonating duck eggs. Histologically, necrosis on the mucosal surface of the digestive tract, necrosis

and lymphocyte depletion in the thymus, spleen and BF, focal haemorrhages and necrosis in the liver and kidney were seen. Inclusion bodies were present in the hepatocytes, reticular cells of the lymphoid organs, endothelial cells of digestive and respiratory tracts. Few oval cryptosporidia were found attached to the surface epithelial cells of the BF while follicles and the inter-follicular areas of BF had undergone severe necrosis. Scanning electron microscopy revealed cryptosporidia adhering to the surface of the epithelium of the BF (Fig. 1). Different ultrastructural stages of cryptosporidia mostly the tropozoite and schizont were recognised on the microvillar brush border of epithelial cells of the BF.

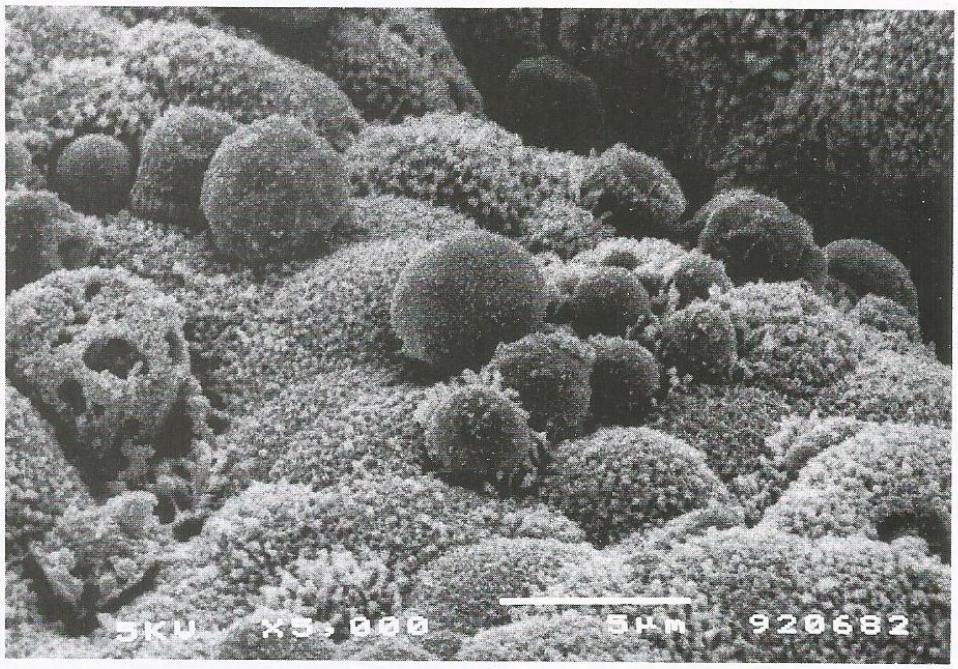

Figure 1. Oval cryptosporidia are adherent to the surface of epithelium of the bursa of Fabricius. SEM

DISCUSSION

The parasites on the epithelium of the BF were identified as cryptosporidia by light and electron microscopy (Current and Reese, 1986). Inflammatory changes of the bursal epithelium which were associated with cryptosporidia infections in ducks (O'Donoghue *et al.*, 1987 and Lindsay *et al.*, 1989) and chickens (Mahani *et al.*, 1991) were absent in this case. This probably was due to the presence of a relatively few cryptosporidia on the BF. Gorham *et al.* (1987) observed that only moderate and heavy infections caused significant epithelial proliferation. Although the origin of the cryptosporidial infection in the present case is not known, it probably resulted through ingestion of contaminated faeces. This assumption is based upon the fact that both oral and intratracheal cryptosporidial inoculation in domestic ducks had developmental stages of cryptosporidia in the BF and cloaca (Lindsay *et al.*, 1989). The cryptosporidiosis in the BF was an incidental finding and not a predisposing factor in duck plaque infection or salmonellosis. Since cryptosporidia could infect a wide range of avian hosts, further work should be carried out on the distribution and pathogenicity of cryptosporidia in Malaysia.

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RINGKASAN

KRIPTOSPORIDIUM PADA BURSA ITIK

Kriptosporidium telah dikesan secara histologi dan mikroskopi elektron dalam bursa satu daripada empat ekor itik berumur dua bulan yang telah dihantar untuk penyiasatan penyakit. Jangkitan kriptosporidium ini merupakan penemuan kebetulan dan bukan penyebab utama kadar kematian tinggi pada itik.