

LESIONS IN THE BURSA OF FABRICIUS OF MARKET-AGE BROILERS AT SLAUGHTER

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SUMMARY: A total of 545 bursae of Fabricius from clinically normal market age broilers were examined grossly and histopathologically. Gross lesions were detected in 8% of the bursae while histopathological changes were evident in 11% of the bursae of Fabricius. The pathological alterations were suggestive of a single and or mixed infection, but none were pathognomonic of infectious bursal disease.

Key words: infectious bursal disease, broilers

INTRODUCTION

The bursa of Fabricius (BF), a median diverticulum of the proctodeal region of the cloaca is observed in all domestic birds in the early development stages. The BF is important in the development of immunocompetence and antibody production. In a number of poultry diseases, including infectious bursal disease (IBD), changes in the BF have been well documented (Chineme and Cho, 1984; Okoye and Uzoukwu, 1984). Although IBD has been recognized in this country (Joseph, 1986), very little work on the disease has been carried out.

This study was undertaken to determine if lesions could be detected in the BF and whether these lesions could be used to determine the incidence of IBD from market-age broilers at slaughter.

MATERIALS AND METHODS

Bursae of Fabricius were collected from a poultry stall at the Gunong Rapat market in Ipoh. The broilers were about 7-8 weeks of age, weighed 2.0 - 2.2 kg (live weight) and were from Bukit Mertajam, Gopeng, Tronoh and Ipoh. The bursae were removed from the slaughtered birds, incised and examined grossly for changes. The bursae were then fixed in 10% buffered formal saline, embedded in paraffin wax, sectioned at 5 μ m, stained with haematoxylin and eosin and examined under a light microscope.

RESULTS AND DISCUSSION

The results of the study are shown in Table 1.

TABLE 1
Summary of bursal lesions

No. of bursae examined		545
No. of bursae with gross lesions		45
	Oedema/haemorrhage	22
No. of bursae with histopathological lesions	Degeneration and necrosis of lymphocytes in follicles	20
	Atrophy, lymphocytic depletion of follicles, increase in interfollicular connective tissue	16

Gross Examination

Gross changes were observed in 45 of the bursae examined. Oedema of the bursal folds was noted in 31 bursae, petechial haemorrhage on bursal folds in 12 and two bursae had yellowish caseated necrotic exudate in the lumen of the bursae. The exudate was partially attached to the bursal folds and could be removed easily.

Histopathology

Three types of abnormalities in the bursae were detected histopathologically. The first type involved 22 bursae. The lesions included oedema of the bursae folds with petechial haemorrhage and a few inflammatory cells, predominantly heterophils. The second type involving 20 bursae was characterized by degeneration and necrosis of lymphocytes in the medullary areas of the bursal follicles (Fig. 2). Heterophils infiltrated and mixed with the degenerating lymphocytes. Macrophages were less commonly seen. The third type affected 16 bursae and was characterized by prominent papillary infolding of the bursal epithelium, increase in the interfollicular connective tissue and atrophy of the bursal follicles with marked depletion of lymphocytes in the follicle (Fig. 3). From these 16 bursae, 9 bursae also had cystic cavities in the medulla containing eosinophilic inflammatory fluid, necrotic cells and debris (Fig. 4). These lesions were not seen in the bursae of normal broilers surveyed. (Fig. 1)

The bursal sections in our study had oedema, haemorrhage, cystic cavities, necrosis of follicles with atrophy, fibroplasia of interfollicular connective tissue and papillary infolding of the epithelium. Some of these changes are non-specific and have also been observed in Newcastle disease (Kato, 1974), infectious bronchitis (MacDonald and McMartin, 1976), inclusion body hepatitis (Hoffman and Dorn, 1978), infectious bursal disease (Chivelle, 1967; Sivanandan *et al.*, 1986), Marek's disease (Fugimoto *et al.*, 1974), mycotoxicosis (Hoerr *et al.*, 1981), vitamin A deficiency (Bang *et al.*, 1972), cyclophosphamide toxicosis (Hiraga *et al.*, 1976), experimental *Escherichia coli* infection (Nakamura *et al.*, 1986) and chicken anaemia agent (Taniguchi *et al.*, 1982).

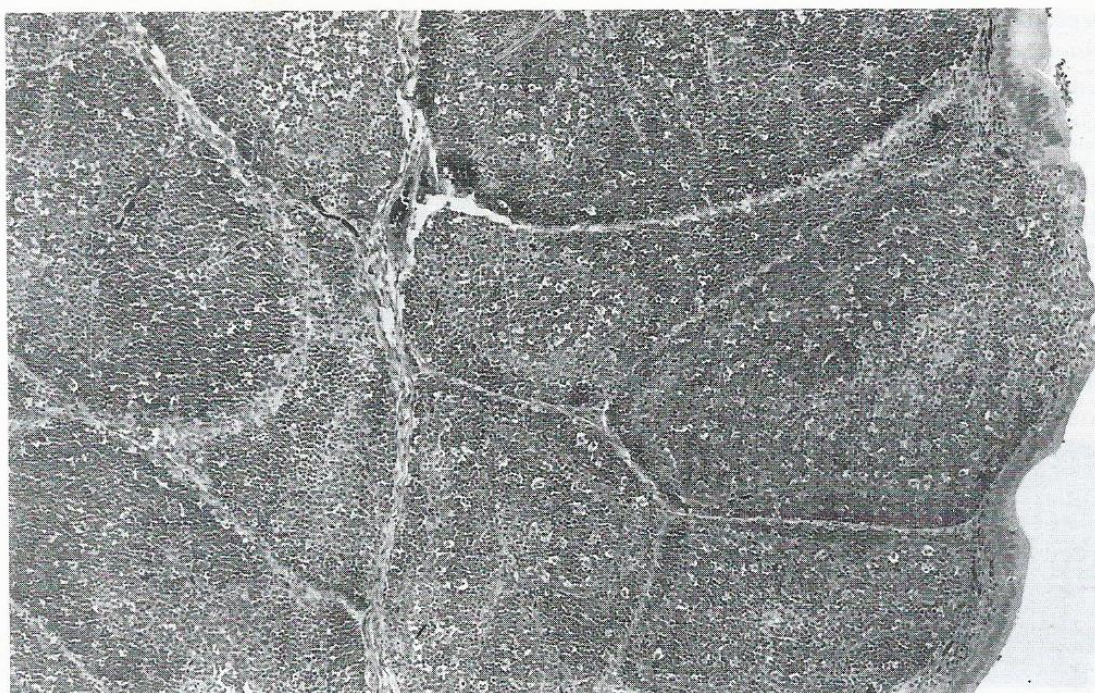


FIG. 1: Normal bursa of Fabricius. HE \times 100

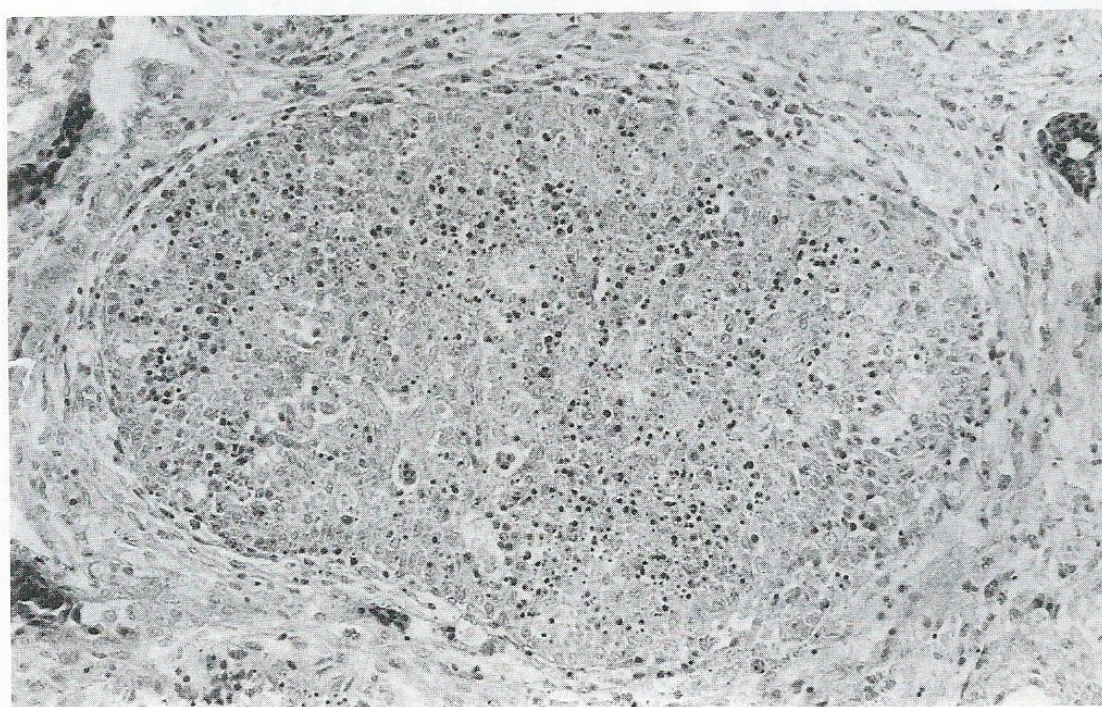


FIG. 2: Necrosis in the medulla of a follicle. HE \times 250

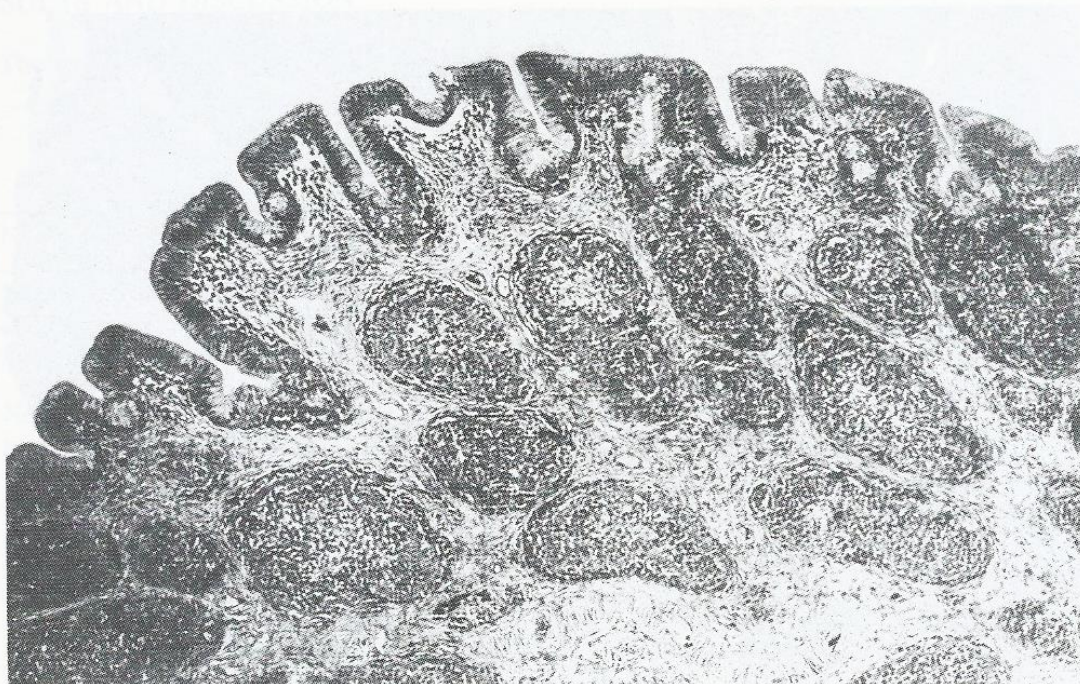


FIG. 3: Atrophy of follicles and increase in interfollicular connective tissue. (HE \times 100)

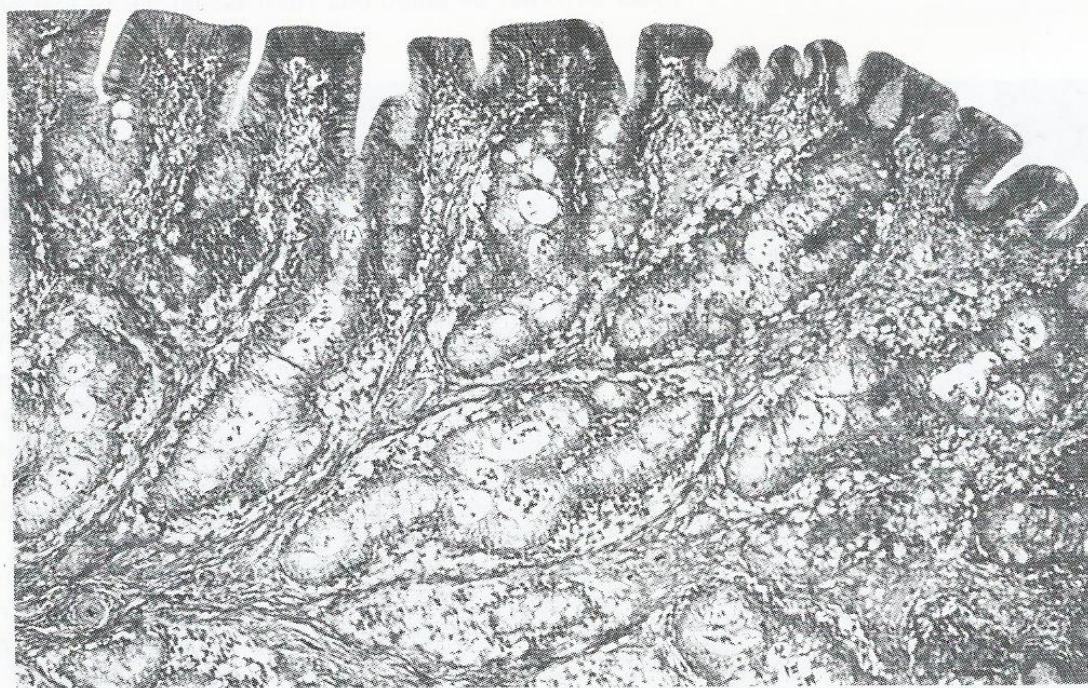


FIG 4: Depletion of lymphocytes, increase in interfollicular connective tissue and cystic cavities containing necrotic cells and debris. (HE \times 100)

In the absence of bacterial and viral isolation and other laboratory confirmation, it is not possible from our pathological study to positively identify any particular disease or condition. Studies on vitamin A deficiency and cyclophosphamide toxicosis have not been reported in this country. On the contrary, the other diseases that were considered in the differential diagnosis are known to be present. Reports on infectious bronchitis (Omar and Lim, 1968; Opitz *et al.*, 1979), inclusion body hepatitis (Vasandra Devi and Lim, 1983), infectious bursal disease (Joseph 1986), Marek's disease (Omar and Lim, 1968, Mustaffa-Babjee *et al.*, 1969), mycotoxins (Abdul Salam and Ong, 1981) and chicken anaemia agent (Chai and Yuasa, 1981) have been described. It is relevant to mention that in another study carried out during the same period from nerve specimens, a 22 percent incidence of classical Marek's disease was recorded (Loganathan and Harizam, 1987). Therefore, it is reasonable to assume that these diseases existed singly or in combination.

More comprehensive studies should be carried out to determine the status of IBD in broilers in this country. From this study, it can only be concluded that although 11 percent of the bursae examined histopathologically had lesions which would tend to suggest single and or mixed infections, none were pathognomonic of IBD.

ACKNOWLEDGEMENTS

The authors wish to thank the Director-General of Veterinary Services, Malaysia for permission to publish this paper. Thanks are also extended to the pathology division for technical assistance, Mr. Liew Sin Wah for photography and to Cik Noorbizah Hamzah for typing this paper.

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RINGKASAN

LESI PADA PUNDI SERABUT AYAM PADA UMUR PASARAN SEMASA SEMBELIHAN

Sejumlah 545 pundi serabut telah diperiksa secara patologi kasar dan histologi dari ayam-ayam yang telah mencapai umur pasaran. Ayam-ayam ini kelihatan normal semasa pemeriksaan dijalankan. Perubahan kasar kelihatan pada 8 peratus pundi serabut manakala perubahan histologi terdapat pada 11 peratus dari pundi serabut yang diperiksa. Perubahan ini menunjukkan jangkitan tetapi tiada tanda-tanda patognomonik penyakit bursa berjangkit.