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Case Report—

Cryptosporidiosis in Chickens from Southern Spain

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SUMMARY. Cryptosporidiosis in chickens from southern Spain is reported. Cryptosporidia were found in the trachea, esophagus, and epithelium of the bursa of Fabricius in chickens from different regions. In one flock, cryptosporidiosis was associated with respiratory problems and high mortality. In another flock, it was associated with low mortality and weight loss.

RESUMEN. *Reporte de Caso*—Criptosporidiosis en pollos del Sur de España.
Se reporta la criptosporidiosis en pollos del sur de España. Se encontraron criptosporidios en la tráquea, esófago y el epitelio de la bolsa de Fabricio en pollos procedentes de diferentes regiones del sur de España. La criptosporidiosis se asoció con problemas respiratorios y alta mortalidad en un lote. En otro, hubo baja mortalidad y pérdida de peso.

Cryptosporidia are coccidial parasites (genus *Cryptosporidium,* suborder Eimerionoina) (10) that usually develop in intracellular, extracytoplasmatic locations (14) at the apical surface of parasitized host epithelial cells.

Tyzzer published the earliest report on cryptosporidiosis in a chicken (cecum) (18). Currently, the literature on this topic amounts to over 300 references (4).

Cryptosporidia have been recovered from chickens, turkeys, quails, peacock chicks, black-throated finches, red-lored parrots, ring-necked peasants, and domestic geese (4).

In 1986, Current *et al.* (2) coined the name *Cryptosporidium baileyi* for those species found in domestic chickens (*Gallus gallus domesticus*). Respiratory and intestinal cryptosporidiosis has been reported in a variety of avian species. In most cases, however, neither the parasite nor its pathogenicity or host specificity has been fully characterized.

In this laboratory, cryptosporidia have been found to be associated with diarrhea in suckling swine, lambs, kids, calves (unpublished results), and foals (5). However, no report on the occurrence of *Cryptosporidium* spp. in birds in Spain has been published to date.

CASE REPORT

Case 1. The first cases of cryptosporidiosis were detected in Labell chickens of 70 to 80 days of age from an 800-bird poultry farm in Murcia. Morbidity was 90%, and mortality was 7–12 birds per week, the hens showing signs of respiratory disease.

Histological findings included a multifocal perivascular infiltrate of mononuclear cells in the liver and a lymphocytic infiltrate in the mucosa of the proventriculus, as well as a variety of coccidial forms in the cytoplasm of the epithelial cells of the small intestine.

Cryptosporidia were found in the trachea and the esophagus. In the trachea, they occurred on the surface of the epithelial cells of the mucosa. Significant hyperplasia was found in the epithelium, and heterophils, lymphocytes, and plasma cells infiltrated the lamina propria. The esophagus showed papilliform hyperplasia of the glands, with cryptosporidia located at the apical pole of glandular cells (Fig. 1). No histological changes were detected in the lamina propia of the mucosa.

The bursa of Fabricius was not examined in these chickens.

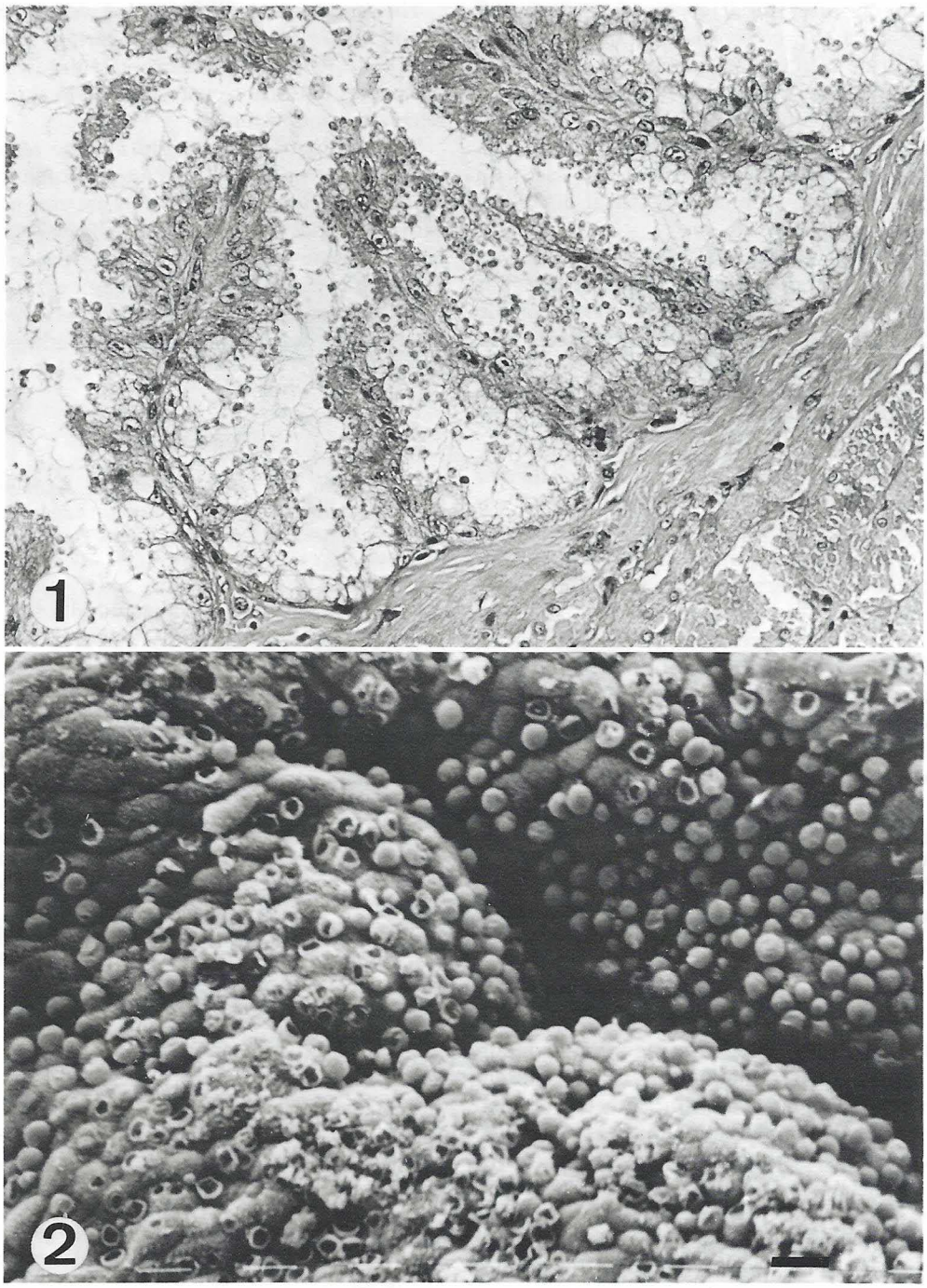

Fig. 1. (Case 1) Light photomicrograph. Papilliform hyperplasia of the esophagus glands with numerous cryptosporidia. 200×.

Fig. 2. (Case 2) Scanning electron photomicrograph showing large numbers of cryptosporidia at bursal surface. Bar = 10 μm.

Case 2. After the diagnosis of cryptosporidiosis in Case 1, cryptosporidia were found in the bursae of three broilers of 3 weeks of age that had been forwarded to our laboratory from a flock in the province of Huelva. A large number of the chickens in the flock had weight loss, although mortality was low. Chickens had been vaccinated against infectious bursal disease at 12 days of age.

The chief histological change was the increase in the population of mononuclear cells in the liver and in the lamina propia of the proventriculus and intestine. The heart showed focal heterophil aggregates.

The bursal epithelium was hyperplastic and frequently showed cystic structures and intraepithelial heterophils, in addition to large numbers of surface protozoa (Fig. 2). Interfollicular edema was present, as were subepithelial heterophils, together with lymphocytes and plasma cells. The lymphoid follicles showed medullary depletion and necrotic areas, which led to the consideration of Marek's disease virus and/or infectious bursal disease as the causative agent.

Case 3. Two 3-week-old broilers with swollen edematous bursae were sent to this laboratory from the province of Córdoba in January 1989. Infectious bursal disease was suspected.

Microscopically, there was hyperplasia of bursal epithelium, together with numerous cryptosporidia. Also present were marked interfollicular edema, lymphocytic depletion of the follicles, and infiltrating heterophils in the lamina propria.

DISCUSSION

In the past few years, cryptosporidia frequently have been reported to occur in different species of mammals and birds, usually associated with other infectious processes (4).

In broilers, cryptosporidia have been reported in the bursa (6) and respiratory tract (3). There are a number of reports concerning occurrence of cryptosporidia (1,7,16), their location (3,6), and their pathogenicity (8,11,12,13).

The occurrence of cryptosporidia in chickens has been associated with other infectious processes, namely Marek's disease (3,4) infectious bursal disease (11), and reovirus infection (9).

The symptoms and lesions observed in Cases 2 and 3 are consistent with earlier reports (3,8,15,16,17). All are associated with low mortality rates but major economic losses through decreased body weights.

The finding of cryptosporidia in the respiratory tract, as well as the symptoms, high mortality, and lesions seen in Case 1 are consistent with cryptosporidiosis reported in broilers (1,3).

This report emphasizes the worldwide occurrence of these protozoa and their economic significance to poultry production, whether or not they are associated with other pathogenic agents.

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