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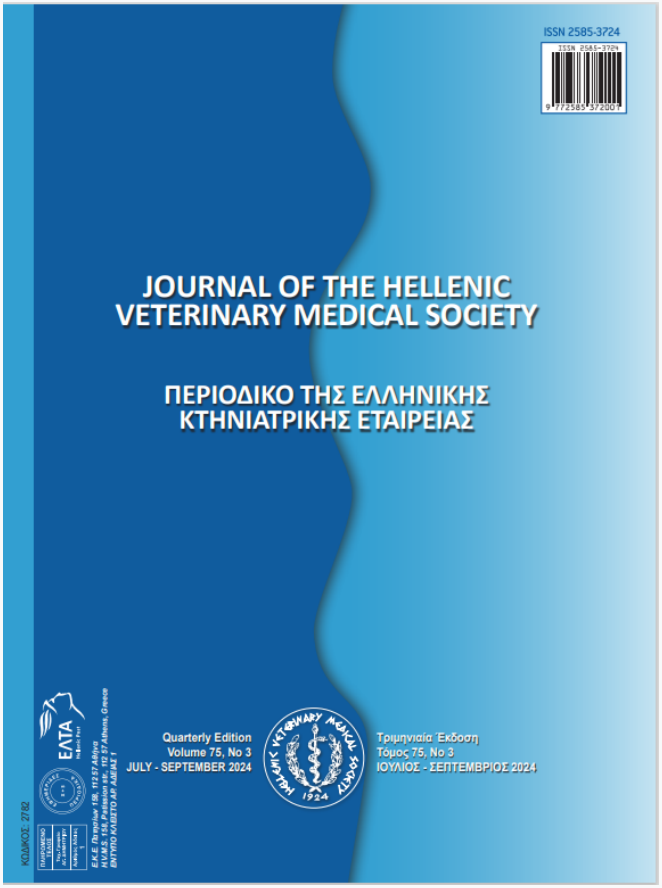

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Case report
Κλινικό περιστατικό

Pancreatic exocrine carcinoma in a lohmann brown chicken

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ABSTRACT. A 23-month-old lohmann brown breed chicken showed symptoms of anorexia, depression and diarrhea before dying. It presented to the pathology laboratory for necropsy. The necropsy confirmed serosal, white and nodular widespread tumor infiltrations in different sizes in the intestines and periton adjacent to the pancreas. In the histological examination, poorly differentiated epithelial cells were seen to form tubular structures in the pancreatic tissue located between the duodenum. According to pathology, this case was diagnosed as pancreatic exocrine carcinoma. This case report provides histologic descriptions of the pancreatic exocrine carcinoma in a chicken that have been reported extremely rare in poultry and pet birds.

Key words: *Pancreatic exocrine carcinoma; lohmann brown; chicken; pathology*

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INTRODUCTION

Pancreatic carcinoma is one of the most lethal forms of cancer in humans and is usually classified as originating from either the exocrine pancreas or the endocrine pancreas (Kloppel et al., 1996). In animals, adenocarcinomas of the exocrine pancreas are rare in dogs and cats and are reported sporadically in other domestic animals such as cattle, sheep, pigs and horses (Dill-Macky, 1993; Munday et al., 2017). This type of carcinoma exhibits aggressive progression in both animals and as well as in humans and may arise from ductal or acinar epithelium (Azadeh and Campbell, 2006; Hecht et al., 2007). In the literature, only a few reports of pancreatic carcinoma in poultry and pet birds have been documented, including cases in cockatiel, guinea fowl and chicken (Swartout and Wyman, 1987; Okoye and Ilochi, 1993; Abdul-Aziz, 1995).

CASE HISTORY

A 23-month-old lohmann brown breed chicken (*Gallus gallus domesticus)* was presented to the pathology laboratory for necropsy. According to the anamnesis, the chicken had died after showing signs of anorexia, depression and diarrhea. Tissue samples collected during necropsy, fixed in 10% formalin solution and processed routinely for further histopathological examination.

Macroscopically, the chicken's carcass exhibited significant cachexia. Upon opening the abdominal cavity yellow colored abdominal effusion was noted. Widespread serosal, white, nodular, tumor infiltrations of varying sizes were observed in the intestine and peritoneum adjacent to the pancreas (Figure 1).

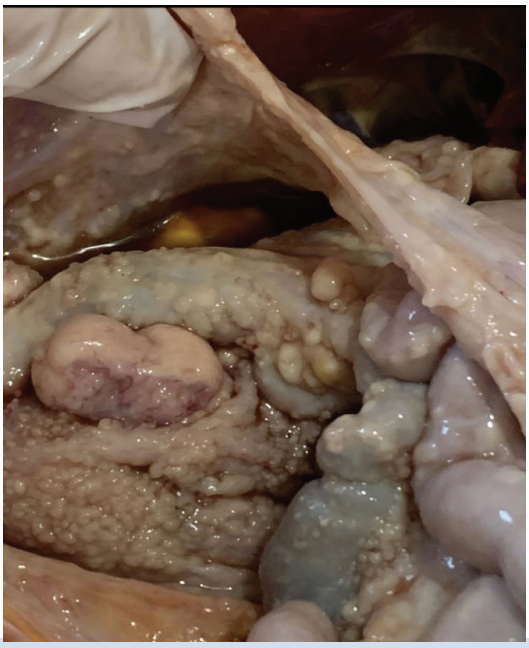

Figure 1. Macroscopic appearance of serosal and widespread nodules in different sizes in the intestines and periton adjacent to the pancreas.

Detailed examination revealed no evidence of metastatic spread to other body sites.

Microscopically, the pancreatic tissue located between the duodenal sections revealed poorly differentiated epithelial cells forming tubular structures (Figure 2), which were surrounded by stromal tissue. The tumor cells exhibited abundant eosinophilic cytoplasm and round, hyperchromatic nuclei. Notably, eosinophilic hyaline material was present in the lumina of some tubular structures (Figure 3). Mitotic figures were prominent in some areas (1-2 mitoses per 10 high-power fields).

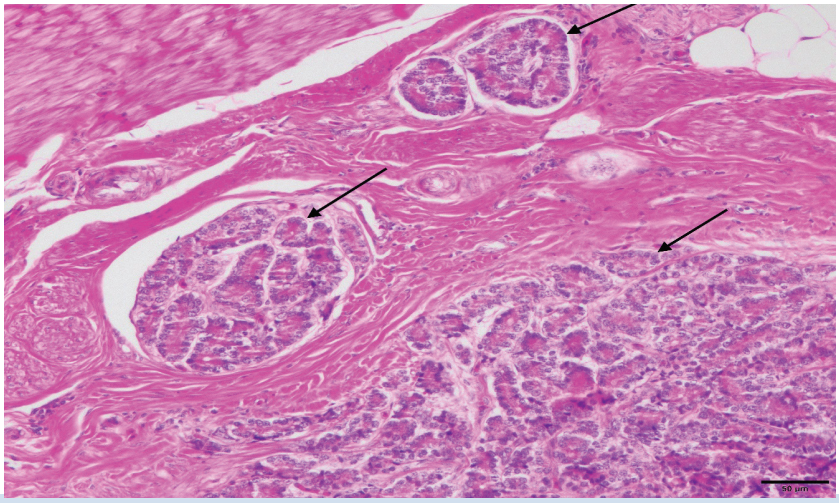

Figure 2. Nodular formations in the pancreatic tissue located between the duodenum: tubular structures of poorly differentiated epithelial cells (arrows). H.E., Bar: 50 µm

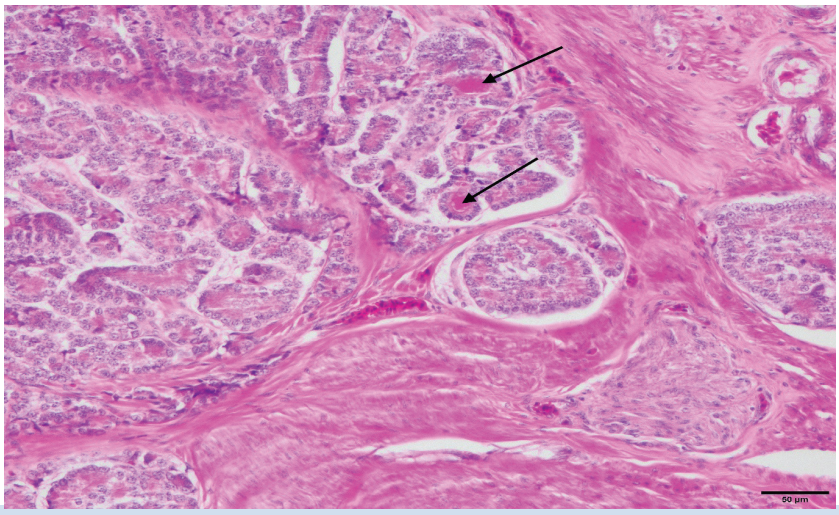

Figure 3. Nodular formations in the pancreatic tissue located between the duodenum: the eosinophilic hyaline material in the lumina of the some tubular structures (arrows). H.E., Bar: 50 µm

DISCUSSION

Pancreatic exocrine carcinoma is a rare malignant tumor associated with a rapid progression, a poor prognosis and a high metastatic rate in dogs and cats (Bennett et al., 2001; Munday et al., 2017). In other animals, especially in poultry and pet birds such as cockatiel, guinea fowl and chicken, this tumor is seen extremely rare (Swartout and Wyman, 1987; Okoye and Ilochi, 1993; Abdul-Aziz, 1995; Munday et al., 2017). This report details a case of pancreatic exocrine carcinoma in a Lohmann Brown breed chicken, emphasizing its histopathology features. To our knowledge, aside from the present case, only one case has been documented in chickens (Abdul-Aziz, 1995).

The most common clinical signs of this neoplasm, as also seen in our case, are weight loss, anorexia, vomiting, palpable abdominal mass, lethargy, icterus and diarrhea in dogs and cats (Linderman et al., 2013; Munday et al., 2017).

Grossly, neoplasia is observed as firm, pale, and solid nodular masses. Obvious multifocal or diffusely infiltration of the adjacent small intestine by the tumor is generally seen. Abdominal effusion is one of the common findings of this tumor (Dennis et al., 2008; Schmidt and Reavill, 2014; Munday et al., 2017). In addition, serous adhesions may be observed that bind the intestines and other internal organs together with the tumor mass as a solid mass in chicken (Abdul-Aziz, 1995). In this case, in accordance with the literature, yellow colored abdominal effusion in the abdominal cavity together with serosal, firm, pale and nodular widespread tumor infiltrations in different sizes in the intestines and periton adjacent to the pancreas were seen. However, serous adhesions binding the intestines, other internal organs, and the tumor mass as a single solid mass were not observed.

Histopathology and cytology is the basis for the diagnosis of exocrine pancreatic carcinomas (Ritchey et al., 1997; Linderman et al., 2013; Munday et al., 2017). In this case, gross pathological and histopathological findings were evaluated together for diagnosis.

Adenocarcinoma of exocrine pancreas consist of poorly differentiated polygonal, cuboidal and columnar epithelial cells that are arranged in tubules, ducts, acini, solid lobules, sheets and nests often with cysts (Ritchey et al., 1997). Abdominal effusion has been noted as an important common finding in birds. However, this has not been considered a significant finding in mammals (Ritchey et al., 1997; Munday et al., 2017). Anaplasia can be prominent with mitotic figures and variable amounts of stroma. Diagnosis is easier when cytoplasmic zymogen granules are seen in the acinar adenocarcinomas (Ritchey et al., 1997; Dennis et al., 2008; Linderman et al., 2013; Munday et al., 2017). In this case, poorly differentiated epithelial cells were formed tubular structures and these were surrounded by a stromal tissue. Proliferations of cuboidal epithelial cells with anaplastic features were seen in these tubular structures. In addition, in a case report, the presence of aggregates of eosinophilic hyaline material in the tubular structures of pancreatic adenocarcinoma is reported as a distinctive feature for this tumor and it may be the material indicating a se-

cretory product (Dennis et al., 2008). Similarly, in this report, the eosinophilic hyaline material in the lumina of the some tubules was observed.

In dogs, metastases of pancreatic adenocarcinomas occur in the regional lymph nodes, liver, lung and small intestine, while in cats they occur in the regional lymph nodes, lung and liver (Linderman et al., 2013; Munday et al., 2017). In our case, in the detailed examination, there was no evidence for metastatic spread of tumor in other sites of the body except in the intestines and periton adjacent to the pancreas.

In summary, avian exocrine adenocarcinomas of pancreas are extremely rare and their clinicopathologic features and pathogenesis remain unclear. Therefore, this extremely rare case has been reported with its pathological findings to contribute to avian tumor pathology.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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