

PATHOLOGICAL FINDINGS ASSOCIATED WITH HIGHLY PATHOGENIC AVIAN INFLUENZA VIRUS (H5N1) INFECTION IN NATURALLY INFECTED FREE-RANGING BIRDS IN BARCELONA ZOO

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INTRODUCTION

Currently, highly pathogenic avian influenza viruses (HPAI) are circulating widely in wild birds, and causing mass mortality events¹. Common pathological findings in these species are not fully characterised. The purpose of this communication is to describe the pathological outcome of an H5N1 HPAI outbreak in wild birds in Barcelona.

SPECIES	GROSS FINDINGS	HISTOLOGICAL FINDINGS	IP SIV
<i>Grey heron (Ardea cinerea)</i>	Diffuse haemorrhagic enteritis	Diffuse haemorrhagic and necrotizing enteritis Multisystemic vasculitis Multifocal splenic necrosis Multifocal gliosis and neuronal degeneration	Positive (endotelial and glial cells)
<i>Yellow-legged gull (Larus michahellis)</i>	Multifocal pancreatic necrosis Multiorgan congestion	Multifocal pancreatic necrosis Multifocal pulmonary necrosis Multisystemic vasculitis	Positive (pancreatic, endotelial and glial cells)
<i>Cattle egret (Bubulcus ibis)</i>	Subcutaneous haematoma (neck)	Mild multisystemic vasculitis	Negative

MATERIALS AND METHODS

In December 2022, two animals were officially positive for H5N1 HPAI in Barcelona Zoo.

- Grey heron (*Ardea cinerea*): positive by preliminary (IRTA-CRESA) and definitive (Laboratorio Central de Veterinaria- LCV) testing
- Yellow-legged gull (*Larus michahellis*): + IRTA-CRESA; - LCV
- Cattle egret (*Bubulcus ibis*): + IRTA-CRESA; - LCV.

RESULTS

Table: summary of macroscopic and microscopic findings and IP SIV staining results from the two HPAI positive animals and the animal only positive by IRTA-CRESA.

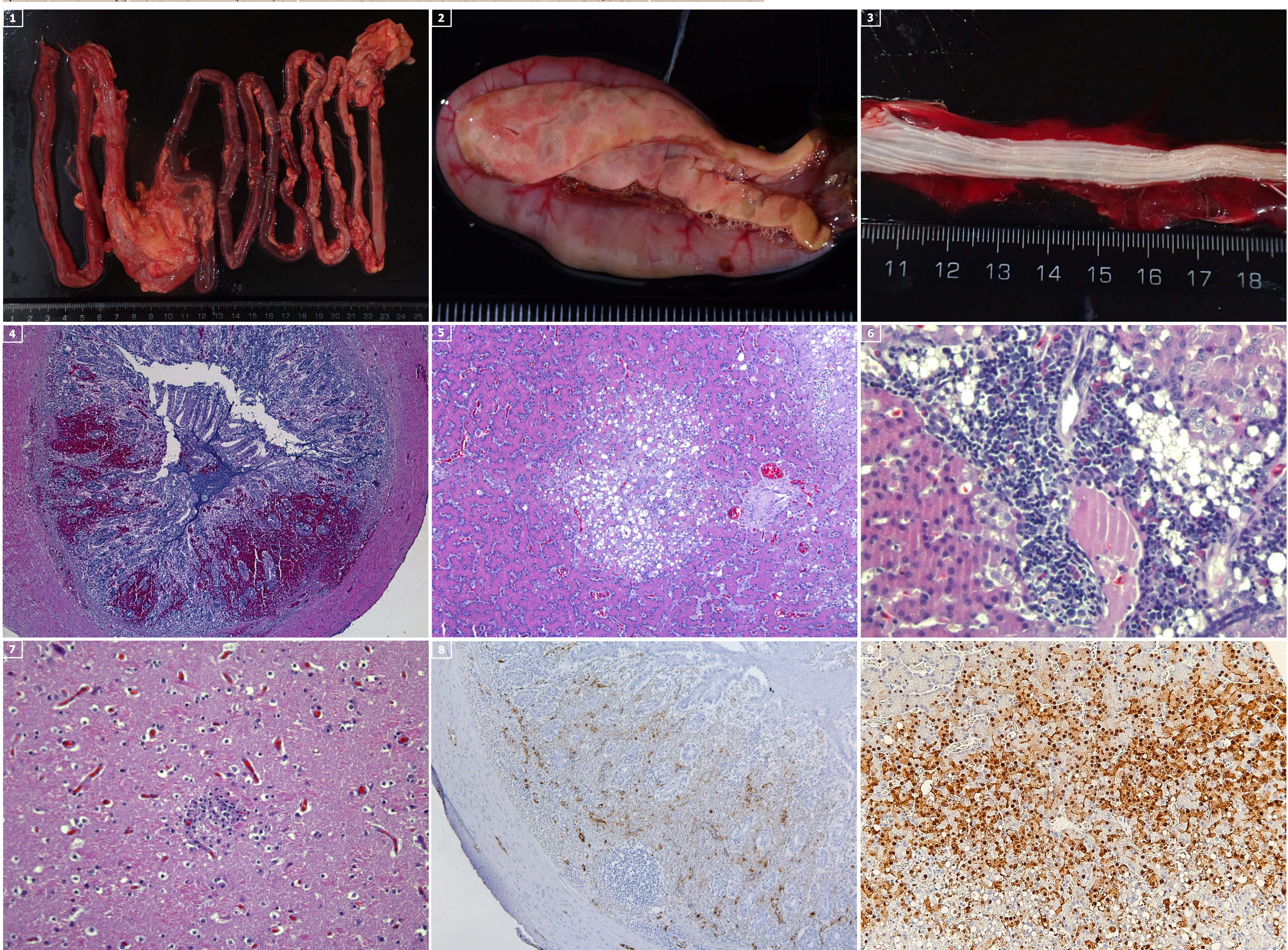


Fig. 1-10

Fig. 1-3: Gross lesions; 1) *A. cinerea*, intestines. Diffuse intestinal haemorrhages 2) *L. michahellis*, pancreas. Multifocal to coalescing pancreatic necrosis 3) *B. ibis*, neck. Subcutaneous diffuse haemorrhage (haematoma) **Fig. 4-7 Histopathology (HE);** 4) *A. cinerea*, intestine. Multifocal to coalescing haemorrhagic and necrotizing enteritis 5) *L. michahellis*, pancreas. Multifocal pancreatic necrosis 6) *B. ibis*, liver. Lymphoplasmacytic and heterophilic vasculitis 7) *A. cinerea*, CNS. Focal foci of gliosis **Fig. 8-10 Immunoperoxidase (IP) SIV;** 8) *A. cinerea*, intestine. Marked immunoreaction of endothelial cells and moderate of lamina propria mononuclear cells 9) *L. michahellis*, pancreas. Diffuse cytoplasmic and nuclear immunoreaction of the pancreatic exocrine cells and endothelial cells 10a) *L. michahellis*, CNS. Marked immunostaining of endothelial and glial cells 10b) *A. cinerea*, CNS. Marked immunoreaction in glial nodules and endothelial cells 10c) *B. ibis*, CNS. Negative

CONCLUSIONS

Our findings align with the reported increase in natural HPAI infections in these taxa. The widespread haemorrhagic enteritis due to HPAI is reported infrequently, so it must be considered in the differential diagnoses.

REFERENCES:

1: Adlhoeh, Fusaro, A., Gonzales, J. L., Kuiken, T., Melidou, A., Mirinavičūtė, G., Niqueux, É., Stähl, K., Staubach, C., Terregino, C., Baldinelli, F., Broglia, A., & Kohlme, L. (2023). Avian influenza overview April – June 2023. EFSA Journal, 21(7), e08191-n/a. <https://doi.org/10.2903/j.efsa.2023.8191>

