

INCLUSION BODY HEPATITIS IN BROILERS: EVOLUTION OF THE LESIONS

Pizarro M¹, González M¹, Tabanera E¹, Rodríguez A^{1,2}.

¹Pathology Service. Veterinary Clinical Hospital. Veterinary Faculty. ²Animal Health Surveillance Center (VISAVENT), Complutense University of Madrid, 28040 Madrid. Spain
mpizarro@ucm.es

SUMMARY. Twenty day old broilers (n= 8) with viral hepatitis suspected were necropsied. All animals show ascites and pale mottled reddish livers. Lymphoid tissues (thymus and bursa of Fabricius) were atrophied. Microscopic study revealed subacute hepatitis with multifocal necrosis and presence of inclusion bodies by adenovirus. Bursa displayed a severe and extensive necrosis of lymphoid cells in four animals. Histological findings suggested the final diagnosis of Inclusion Body Hepatitis (IBH). Additional samples from 8 birds (liver, spleen, bursa and tracheae) at 42 day old, from the same flock were submitted. Pathological study revealed severe atrophy of the bursa of Fabricius with marked depletion of lymphoid tissue and chronic hepatitis in 4/8 livers (inclusion bodies are not appreciated). We discussed the infection by adenovirus in chickens as a primary pathogen; however it can also be secondary with other infectious agents, such as virus of Gumboro Disease, caused a severe immunosuppression of animals.

RESUMEN. Se realiza la necropsia de broilers (n= 8) de veinte días de edad que eran sospechosos de padecer hepatitis vírica. Todos los animales mostraron ascitis, así como hígados pálidos con moteado rojizo. Los órganos linfoides (timo y bolsa de Fabricio) aparecían atrofiados. El estudio microscópico reveló una hepatitis subaguda con necrosis multifocal y presencia de cuerpos de inclusión por adenovirus. La bolsa mostró una extensa y grave necrosis de células linfoides en cuatro animales. Los hallazgos histológicos sugieren un diagnóstico final de Hepatitis con Cuerpos de Inclusión (HCI). Fueron remitidas nuevas muestras de 8 aves del mismo lote de animales a los 42 días de edad, que incluían hígados, bazos, bolsas y tráqueas. El estudio patológico realizado reveló una atrofia severa de la bolsa de Fabricio con marcada depleción de tejido linfoide y hepatitis crónica en 4/8 hígados (no se observaron cuerpos de inclusión). Discutimos la infección por adenovirus en pollos como un patógeno primario, ya que también podría ser secundaria a otros agentes infecciosos, tales como el virus de la enfermedad de Gumboro, que provoca una inmunodepresión severa a los animales.

CASE REPORT

The disease Inclusion Body Hepatitis (IBH) is an adenovirus infection described in young chickens, from 4 up 8 weeks. Macroscopically, this disease is characterized by hepatomegaly, ascites and the presence of white or reddish multifocal areas (mottled). Histologically, multifocal necrosis of hepatocytes with inflammation is observed. Basophilic intranuclear inclusion bodies are often seen in the cellular elements around the necrotic focus. Chicken infection could be primary or secondary to an immunosuppression process due to other previous viral infections like Gumboro disease or infectious anaemia, playing a role of secondary pathogen in these cases.

Eight broilers of twenty days-old with viral hepatitis suspected are received in the Pathology Service. Significant mortality at 17-18 days of age were observed, reaching

10% of the flock. At necropsy, all animals displayed ascites, pale kidneys, yellowish livers with mottled reddish foci, as well as a bursa of Fabricius and thymus atrophy.

A subacute hepatitis with multifocal necrosis and presence of inclusion bodies by adenovirus in all animals were observed under a microscope. Marked necrosis of lymphoid tissue were observed in the bursa of the four animals. Therefore, the final diagnosis was a viral inclusion body hepatitis (adenovirus), possibly as consequence of a severe immunosuppression due to Gumboro virus.

Follow-up 42 days marked a high mortality, reaching 22% of animals (of a total of 33,000 animals, almost 7000 die to infectious process). Additional samples from livers, spleens, bursa and tracheae fixed in formalin were submitted for histological examination. Microscopical diagnosis showed: bursa of Fabricius with marked depletion of lymphoid cells and severe atrophy. Chronic hepatitis in 4/8 livers (inclusion bodies are not appreciated). Mild nonspecific diffuse tracheitis.

Our case described typical lesions of a severe immunodeficiency (suspect of Gumboro disease) with chronic course. Chronic hepatitis in some animals could be the result of the evolution of the infection by adenovirus (no intranuclear inclusion bodies were observed). Final conclusion is considered that adenovirus induced of hepatitis in chicken as primary pathogen, and can also be secondary or act associated with other agents, such as Gumboro virus, giving place to clinical pictures with severe immunosuppression in birds.

REFERENCES

- Alemnesh W., Hair-Bejo M., Aini I., Omar AR. Pathogenicity of fowl adenovirus in specific pathogen free chicken embryos. *J Comp Pathol.* 146(2-3):223-229. 2012.
- Fitzgerald, S.D. Adenovirus infections. In: Diseases of Poultry, 12 th ed. Y.M. Sayf, ed. Blackwell publishing, Ames, Iowa, pp. 251-290. 2008.
- Gomis S., Goodhope A.R., Ojkic A.D., Willson P. Inclusion body hepatitis as a primary disease in broilers in Saskatchewan, Canada. *Avian Dis.* 50(4): 550-555. 2006.
- Mase M., Nakamura K., Minami F. Fowl adenoviruses isolated from chickens with inclusion body hepatitis in Japan, 2009-2010. *J Vet Med Sci.* 74(8): 1087-1089. 2012.