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Pathological diagnosis of hydropericardium syndrome (HPS) in chick: A case report

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Abstract

The present study described the case report of HPS in 5-week-old chick, which was presented for necropsy to the Department of Veterinary Pathology, Veterinary College and Research Institute, Salem. Grossly, the heart lesion showed hydropericardium, i.e., Accumulation of clear straw coloured, jelly like fluid in the pericardial sac, with the quantity of fluid ranging from 3-5 mL which gives a flabby appearance to the heart and liver lesions included, pale and swollen liver with numerous focal necrotic areas. The histopathological lesions in the liver showed diffused areas of coagulative necrosis and mononuclear cells infiltrations. Some hepatocytes showed cell swelling, partial clearing of cytoplasm and shrunken cells with pyknotic nuclei. The characteristic histopathological lesion in the liver was identified with the presence of intranuclear inclusion bodies in the hepatocytes and surround by clear halo, or as a filling in the entire nucleus. Based on the gross and characteristic microscopic findings, the HPS was diagnosed in chick. This is the first case report on HPS in Salem district of Tamil Nadu.

Keywords: Hydropericardium, heart, liver, poultry

Introduction

Hydropericardium syndrome is a recently emerging contagious disease in young chicks and causing enormous economic loss to the farmers. The disease is caused by Fowl Adenovirus Serotype (A-E) which is a non-enveloped, icosahedral virus and is characterized by hydropericardium and hepatitis with intranuclear inclusion bodies in hepatocytes (Koncicki *et al.*, 2006); McFerran and Adair, 2003)^[4, 5]. Generally, the disease called in various names in different countries 'Angara disease' in Pakistan, 'Leechy disease' or 'Litchi disease' in India or inclusion body hepatitis-hydropericardium syndrome (IBH-HPS and finally 'Hydropericardium syndrome (HPS)' (Kataria *et al.*, 2013)^[3]. Clinical diagnosis of the disease is difficult since the birds to not exhibit specific clinical signs. Therefore, the pathological diagnosis of HPS in a chick is reviewed in this paper.

Materials and Methods

A dead chick from local poultry farm was presented to the Department of Veterinary Pathology, Veterinary College and Research Institute, Salem for postmortem examination with the history of dull and weakness for 2 days and suddenly died without showing any signs (10% mortality in flock and vaccination done properly). A detailed necropsy was performed and lesions were recorded. Liver samples were collected in 10% formalin, processed and then stained with Hematoxylin-Eosin (H&E) as per the method described by Bancroft and Gamble (2008)^[2].

Results and Discussion

HPS causing viral agent is quickly transmitted horizontally by mechanical vectors and also by contamination (McFerran and Adair, 2003; Balamurugan and Kataria, 2004)^[5, 1]. The viral agent has high affinity to lymphoid organs *viz.*, spleen, thymus, bursa of Fabricius and caecal tonsil which results in immunosuppression (McFerran and Adair, 2003)^[5].

In this study, based on postmortem finding, the case was reliably confirmed as hydropericardium syndrome (HPS). The necropsy lesions in the heart showed hydropericardium, i.e., Accumulation of clear straw coloured, jelly like fluid in the pericardial

sac, with the quantity of fluid ranging from 3-5 mL (Fig. 1). The heart appears flabby with its apex floating in the sac which also reported in Meenakshi *et al.* (2005) [6] studies. Liver lesions included, pale and swollen liver with numerous focal necrotic areas and petechial haemorrhages.

In the present study, the histopathological lesions in the liver showed diffused areas of coagulative necrosis and mononuclear cells (MNC) infiltrations (Fig. 2). Some hepatocytes showed cell swelling, partial clearing of cytoplasm and shrunken hepatocytes with pyknotic nuclei (Fig. 3). The characteristic histopathological lesion in the liver

was identified with the presence of eosinophilic intranuclear inclusion bodies in the hepatocytes and surround by a clear halo, or as a filling in the entire nucleus (Fig. 4). These results are concurrence with the report of Balamurugan and Kataria, (2004) [1] and Singh *et al.*, (2004) [7].

Hence, the present study was concluded with the diagnosis of hydropericardium syndrome done on the basis of gross and histopathological findings, particularly by the detection of intranuclear inclusion bodies in hepatocytes. This is the first confirmative report at the Salem District of Tamil Nadu.



Fig 1: Hydropericardium and pale, swollen liver

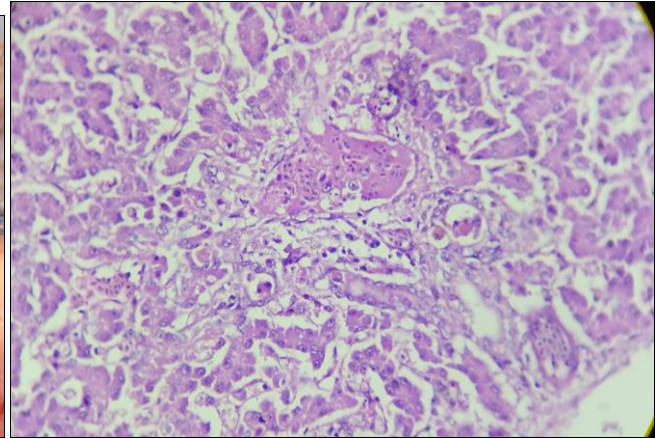


Fig 2: Coagulative necrosis and MNC Infiltration (H & E: 10x)

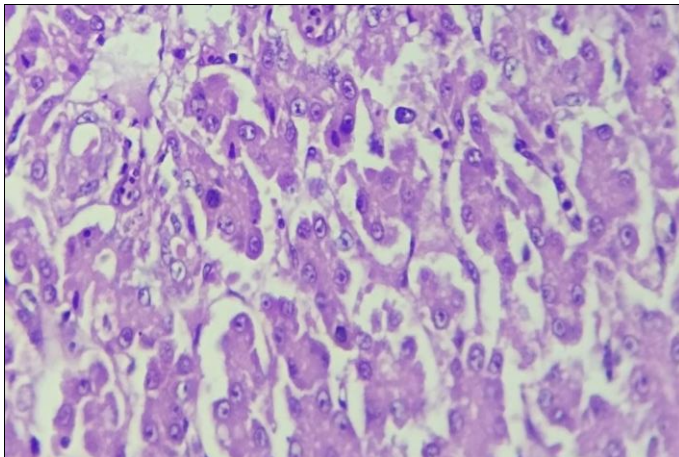


Fig 3: Cell swelling, partial clearing of cytoplasm and shrunken hepatocytes with pyknotic nuclei. (H & E: 10x)

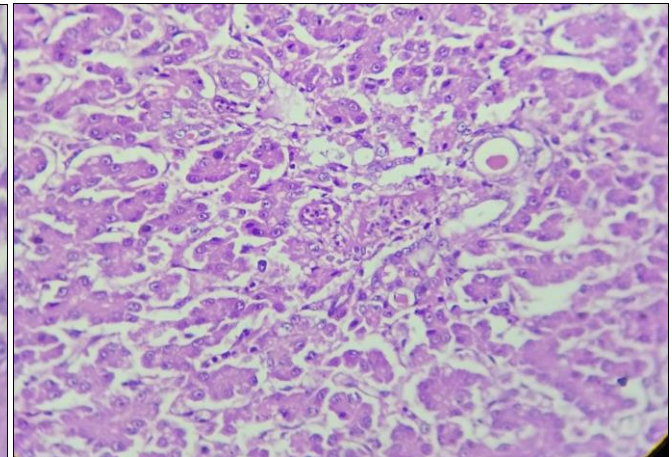


Fig 4: Eosinophilic intranuclear inclusion bodies in hepatocytes (H & E: 10x)

Author's Contributions

UN: Collected the information and wrote the manuscript;
CTAK: Reviewed and corrected the manuscript and R.S. Helped in histopathological works.

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References

1. Balamurugan V, Kataria JM. The hydropericardium syndrome in poultry-A current scenario. *Vet Res Commun.* 2004;28:127-148.
2. Bancroft JD, Gamble M. *Theory and practice of histological techniques.* 6th Edn. Churchill Living Stone, Newyork, 2008.
3. Kataria JM, Dhama K, Nagarajan S, Chakraborty S, Kaushal A, *et al.* Fowl adenoviruses causing

hydropericardium syndrome in poultry. *Adv Anim Vet Sci.* 2013;1(4S):5-13.

4. Koncicki A, Krasnodebska-Depta A, Mazur-Gonkowska B. New data concerning the significance of adenovirus in poultry pathogenicity. *Med Weter.* 2006;62:739-743.
5. McFerran JB, Adair BM. Hydropericardium Syndrome. In: *Diseases of Poultry*, 11th Edn. YM Saif, JH Barnes, JR Glisson, AM Fadly, LR McDougald and DE Swayne, Iowa State University Press, Ames, USA, 2003, p. 220-221.
6. Meenakshi Bal MS, Kumar H, Sandhu KS. Pathology of hydro-pericardium syndrome in an outbreak in broilers. *Ind J Vet Pathol.* 2005;29:46-47.
7. Singh A, Kumari A, Maiti NK, Oberoi MS. Characterization of fowl adenoviruses isolated from field outbreaks of hydropericardium syndrome in Punjab. *Ind J Anim Sci.* 2004;74(5):457-461.