

An unusual case of cavernous haemangioma in indigenous chicken

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Received: 17.3.26; Accepted: 8.4.26

ABSTRACT

Vascular tumours are seldom found in birds. An adult 35 weeks old indigenous chicken was brought for postmortem examination with the history of sudden death. On postmortem examination, multiple tiny reddish nodules were noticed on liver. Histopathological examination revealed wide blood-filled vascular structure densely packed with nucleated erythrocytes compressing liver parenchyma. Based on gross and histopathology, the case was diagnosed as cavernous haemangioma.

Keywords: Chicken, Liver, Haemangioma, Nucleated erythrocytes

Haemangioma is a benign tumour arising from blood vessels and usually composed of tiny blood vessels and vascular endothelial cells. These tumours include cavernous haemangioma, capillary haemangioma, haemangio-endothelioma and haemangio-endotheliosarcoma frequently seen in humans and mammals¹. Cutaneous haemangiomas usually start as red spots with increased endothelial proliferation, later formed new capillaries and eventually progress into cavernous forms, which are characterized by dilated blood vessels filled with erythrocytes². Most avian haemangiomas tend to rupture easily, often leading to fatal bleeding, but their mode of induction is unclear³.

Cavernous haemangiomas are most prevalent in avian species and primarily affecting broilers. These tumours are seldom found in internal organs of birds but there are few reports of haemangioma in liver of quail⁴, Amazona farinose parrot⁵,

spleen of budgerigar¹ and liver of layer chicken⁶. The present case reports the very common findings of cavernous haemangioma in an indigenous chicken.

An adult 35 weeks old indigenous chicken was brought to Department of Veterinary Pathology, Veterinary College and Research Institute, Namakkal for postmortem examination. As described by the owner, the bird showed clinical signs like debility, dullness and depression, reduced feed intake and died shortly. Detailed post mortem was carried out and samples were collected in 10 % formalin. Paraffin embedded tissue sections were cut into 4µm thickness and were stained with Haematoxylin and Eosin staining⁷.

The dead bird was markedly emaciated and dehydrated. External examination revealed ruffled feathers, an enlarged abdomen and feather loss over abdomen and inner thighs. Internally, multiple tiny reddish nodules were appreciable on the liver (Fig.1). The nodules were variable in size and were scattered distinctly on the entire liver parenchyma (Fig.2) On incision, they were found to extend

How to cite this article : Monisha, D.C., Gopal, K., Sowmya, K. and Arulmozhi, A. 2026. An unusual case of cavernous haemangioma in indigenous chicken. Indian J. Vet. Pathol., 50(3) : 278-279.

deep into the parenchyma. The nodules appeared reddish brown in colour, soft in consistency and exuded red tinged fluid on incision. Microscopically, variable sized vascular structures

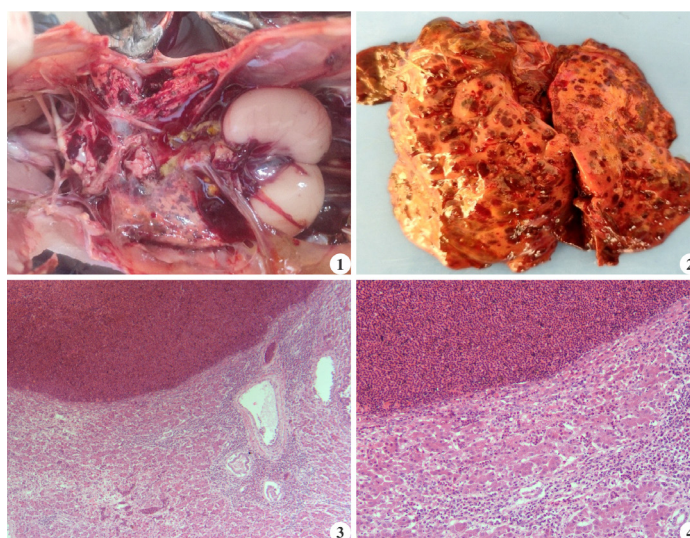


Fig. 1. The emaciated bird showing reddish brown nodules on liver; **Fig. 2.** Gross picture of liver showing multiple tiny reddish-brown nodules on the parenchyma; **Fig. 3.** Liver – A wide blood-filled vascular structure and compression of parenchyma. (H&E x40); **Fig. 4.** Liver – hepatic parenchyma replaced by numerous capillary structures filled with nucleated erythrocytes and compression of adjacent hepatocytes (H&E x400)

were observed in liver parenchyma and these structures densely packed with nucleated erythrocytes (Fig.3) compressing the liver parenchyma that leads to loss of normal hepatic architecture. The hepatic architecture is completely replaced by numerous capillary structures filled with nucleated erythrocytes and compression of adjacent hepatocytes (Fig.4). The tumour exhibited the appearance of a cavernous haemangioma. The vascular endothelial cells were hyper chromatic, with round to spindle shaped nucleus and indistinct cytoplasmic boundaries and mitotic figures were not evident.

The incidence of cavernous haemangioma in avian species was reported above five weeks of age¹. In the current case, the bird was 35 weeks old. These tumours in birds are usually multifocal, and most of the affected birds had more than one tumour. The skin is the most frequently affected site (85% of the hens), followed by muscle and extremities involvement (61%), then liver (31%) and other organs⁸. In this case, the tumours were identified in liver and there were no appreciable lesions in the skin. Grossly, the tumour appeared as tiny reddish mass with varying diameter. Upon incision, the tumour masses were found to be deeply embedded in the liver parenchyma. This is correlated with the previous findings of ^{2,8}.

The histopathological study revealed that the liver had an excessively irregular appearance and the hepatic parenchyma lost its typical architecture with hepatic triads being absent⁶. Liver showed widened blood-filled vascular structures, lined with plump endothelial cells. These findings are consistent with reports of ^{8,9} except for the presence of solid cell mass and intra vascular papillary endothelial proliferation. In electron microscopy, cutaneous haemangioma primarily composed of undifferentiated mesenchymal cells with an alveolar structure⁹.

Avian Leucosis Virus subtypeJ (ALV-J) is commonly responsible for development of haemangiomas in most of the spontaneous cases^{10,11}. Hens affected with ALV-J-induced haemangiomas often die suddenly due to massive haemorrhages or anaemia³. This is in accordance with the current case where the bird experienced sudden death although the haemangioma did not rupture. The LTR and env genes are associated with both pathogenic as well as biological characteristics of ALV-J¹². However, ALV-J induces oncogenesis by insertional mutagenesis and integrations in the MET oncogene can drive the over expression of MET and contribute to the development of haemangiomas¹³. The exact molecular mechanism is not fully understood.

Bases on the gross and histopathological examination, the current case was diagnosed as cavernous haemangioma in indigenous chicken.

ACKNOWLEDGEMENT

The author extends their deep gratitude to the Head and Staff of the Department of Veterinary Pathology, Veterinary College and Research Institute, Namakkal necessary to carry out this case report.

Financial support and sponsorship: None

Conflict of Interest: None

Use of Artificial Intelligence for manuscript preparation:

The author confirms that there was no use of AI-assisted technology for assisting in the writing of the manuscript and no images were manipulated using AI.

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