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Occurrence of Myeloid leucosis in broiler breeder chickens

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ABSTRACT

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Myeloid leucosis (ML) was diagnosed in two different broiler breeder chickens farms. Necropsy examination of these affected birds revealed slightly soft, grey to white coloured nodules of varied size on peritoneum, inner surface of ribs, liver, mucosal surface of trachea and on the head of femur bones. Histopathological examination of the affected tissues revealed marked proliferation of myelocytes and had a large, vesicular and eccentrically placed nucleus where as cytoplasm was tightly packed with eosinophilic (pink) granules.

Keywords: Broiler breeder chicken, histopathology, myelocytomatosis, myeloid leucosis

Myeloid leucosis or myelocytomatosis (ML) is a neoplastic disease caused by Avian leucosis/ sarcoma group viruses (subgroup J) of retroviridae family[1]. It may occur as myeloblastosis originating in bone marrow and involving immature myeloid cells or as a myelocytomatosis affecting more mature myelocytes. In Myelocytomatosis, tumours occur on wide range organs including liver, kidney spleen and have predilection for visceral surface of flat bones such as ribs, sternum, skull and pelvis. It is a sporadic disease mainly affecting adult broiler breeder birds[1]. Present paper put on record the occurrence of myeloid leucosis (Myelocytomatosis) in adult broiler breeder bird of two different farms.

Case history

Nine adult birds from one farm (Farm-1) and one bird (Farm-2) from other farm were presented to know the cause of death. History taken from owner revealed that the birds from both the farm have lingering mortality. Total of five broiler breeder birds of 23 week age, one bird of 43 week age and three birds of 49 week age were necropsied from a different flock of farm-1. Necropsy examination of bird of 43 week age revealed tumours on ribs (Fig. 1), peritoneum, liver and head of humorous bone and flaccid and discolored ova. The tumours were discrete, creamy white in colour and varied in sizes from peanut to as large as 2-3 cm in diameter. All the birds of age 23 and 49 week revealed peritonitis due *Escherchia coli*. Egg production of the birds of age 43 week was 67.9 %.

Another broiler breeder bird of 43 week (farm-2) was necropsied. Necropsy examination of the bird revealed slightly soft, grey to white coloured nodules of varied size on mucosal surface of trachea, inner surface of ribs and on the head of femur bones (Fig. 2). The gross lesions observed in the present investigation are akin to the observation of various authors in which they have suggested that myeloid leucosis can be recognized on gross examination with certain certainty as tumors occur characteristically on surface of bones, visceral surface of flat ribs and cartilage, although any tissue can be affected[1,2,5]. The tissue samples of affected parts of the dead birds from both the flock, viz ribs, peritoneum, liver, trachea, rib growth and head of humorous bone, etc were collected in 10% formalin, processed and embedded in paraffin blocks. Section of 5 µm were taken and stained with haematoxylin and eosin[3].

Histopathological examination of the affected tissues *viz* ribs, peritoneum, liver, trachea, growth over ribs and tumorous portion on the head of humorous bone revealed marked proliferation of myelocytes (Fig. 3). Histologically, the morphology of cells involved in myeloid leucosis was comparable with that of myelocytes. The cytoplasm of cells was filled with tightly packed eosinophilic (pink) granules where as the nucleus was large, vesicular and eccentrically placed and was varied in shape. These masses of myelocytes were intermixed with adipose tissue, particularly of ribs. In liver, perivascular infiltrations of proliferating myelocytes were observed, although in one birds diffuse involvement of hepatocytes replacing most of myelocytes were observed. However, microscopic features such as tumour cells with slightly basophilic cytoplasm and voluminous nuclei were lacking, which are features of myeloblastosis[4]. The present findings are in accordance with the observation of various researchers[1,2,4,5,6].

Myelocytomatosis has been suggested to be a disease of broiler breeder chickens which corroborates our findings as it is not observed in layer birds from author's observation on necropsy and histopathological study data from 2004 till date and published report from India.

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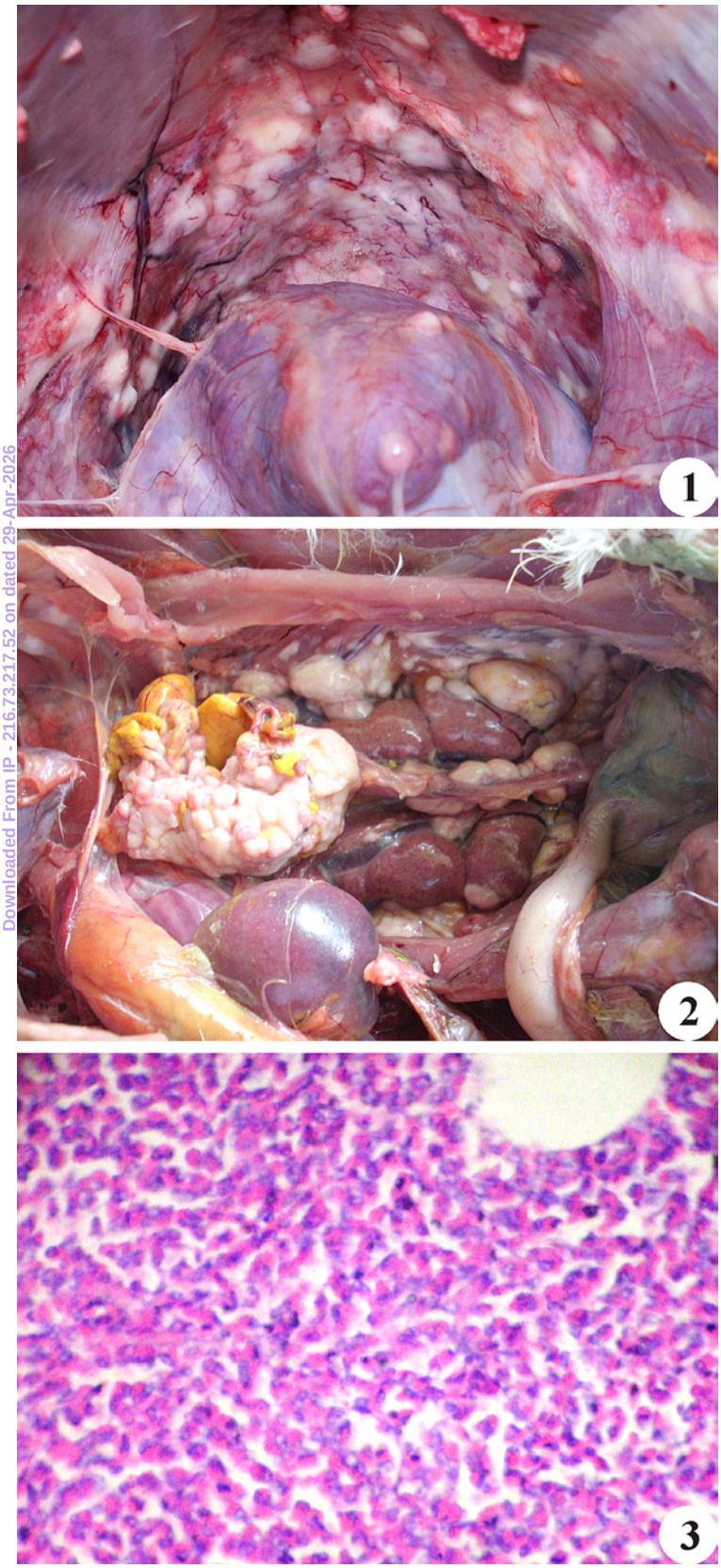

Fig 1. White to grey coloured nodules on inner surface of rib and pericardium; **Fig. 2.** White coloured nodules on bones present around kidneys; **Fig. 3.** Section of tumor over rib showing myelocytes. H&E x200.

The granules in the cells of heterophils and eosinophils are very similar to granules of myelocytes. However, the heterophils and eosinophils occur in tissue as sparse infiltrating inflammatory cells or as a result of hypersensitivity reaction or parasitic infection and always occurs as mixed population of inflammatory cells but never as a diffuse proliferative cells and lack anaplastic features[6]. The cells in myelocytomatosis were more immature, larger in size than the inflammatory cells and showed properties of cancerous cells *viz.* anaplasia, hyperchromasia, metastasis as well as predilection for bones and cartilage which is characteristic feature of myelocytomatosis. On the basis of gross lesions (prediction to bone and cartilage) and microscopic observation of proliferating cells, the case was confirmed as a myelocytomatosis[1,2]. This appears to be the first report of Myeloid leukosis in India, to the authors best knowledge.

REFERENCES

1. Payne LN. 1999. Retroviridae. *In: Poultry diseases*. Jordan F., Pattison M., Alexander D., Faragher T. (Eds.). 5th edn. pp. 241-254.
2. Fadly AM and Payne LN. 2003. Leucosis/ Sarcoma group. *In*: In : Saif YM, Barnes HJ, Glisson JR, Fadly AM, Mc Dougald LR, Swayne DE (Eds). *Diseases of poultry*, 11th edn. Pp: 465-516. Blackwell Publication. Iowa State Press.
3. Culling CFA. 1963. *Hand book of histopathological and histochemical techniques.* 3rd edn. Butter Worths and Co. (Publishers), Ltd. Landon. pp. 268-270.
4. Jordan FT and Pattison M. 1996. *Poultry diseases*. 4th edn. Philadelphia: W. B. Saunders. pp. 123-13.
5. Hablolvarid MH and Gholami MR. 2007. Occurrence of Myelocytoma in a Broiler Flock in Tehran Province, Iran (Case report). *Arch. Razi Inst*., **62 (1)**: 49-51.
6. Manzan RM, Baccaro MR Ferreira AJP, Sinhorini IL and Moren AM. 2006. Histopathological and ultrastructural characteristics of myeloid leukosis in broiler chicken. *Arq. Bras. Med. Vet. Zootec.*, **58 (5):**757-761.