

Occurrence of leukosis-sarcoma virus related neoplasms and antibody in Nigerian local chickens

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RÉSUMÉ

ADENE (D. F.), HOWES (K.). Observation de néoplasmes dus au groupe viral sarcome-leucose et d'anticorps spécifiques chez des poulets locaux Nigériens. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (2) : 160-164.

Les poulets indigènes ont une importance considérable dans l'économie rurale et agricole du Nigeria, ce qui a entraîné un intérêt pour les problèmes nutritionnels, de reproduction et de pathologie.

Dans cette étude, 12,1 p. 100 de tous les poulets examinés présentaient des croissances néoplasiques comprenant de l'ostéopétrose et des sarcomes du tissu cellulaire liés à la leucose.

Au cours d'une autre recherche, l'anticorps neutralisant le sous groupe « A » du virus sarcome-leucose a été décelé dans cinq prélèvements dont un provenant de poulets locaux nigériens. Aucune information n'a été publiée sur l'aspect du groupe sarcome-leucose des néoplasmes aviaires chez les poulets locaux nigériens.

Mots-clés : Néoplasmes - Groupe viral sarcome - Leucose - Poulets - Nigeria.

SUMMARY

ADENE (D. F.), HOWES (K.). Occurrence of leukosis-sarcoma virus related neoplasms and antibody in Nigerian local chickens. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (2) : 160-164.

The local (indigenous) chicken commands considerable degree of importance in agricultural and rural economy in Nigeria and this has generated interest on many aspects such as nutritional studies, reproduction and disease problems. In the present study, 12.1 % of all local chickens examined had neoplastic growths including osteopetrosis and connective tissue sarcomas which are leukosis related. In a separate investigation, subgroup « A » neutralising antibody to leukosis-sarcoma virus was detected in 5 samples including one from a Nigerian local chicken. There has been no published information on any aspect of leukosis-sarcoma group of avian neoplasms in the Nigerian local chicken.

Key words : Neoplasms - Leucosis - Sarcoma virus - Chickens - Nigeria.

INTRODUCTION

The Nigerian indigenous chickens are mongrel small-bodied fowls which are structurally similar to the progenitor native fowl (*Gallus gallus*). Although they constitute the greater portion of the total poultry population and have contributed substantially to protein food requirements and rural economy in Nigeria as in many other similar places, their production practices remained at the subsistence level of

farming. There has therefore been increasing interest in the study of the local chicken, especially its reproductive biology (3), nutrition and disease problems (8). Observations on some aspects of neoplasms particularly Marek's disease in these chickens have been reported by HILL and DAVIS (6) and subsequently by WOODE and CAMPBELL (9), ADENE (1,2) and by NAWATHE *et al.* (7). This report relates to the occurrence of components of the leukosis-sarcoma group which have hitherto not been studied or reported.

MATERIALS AND METHOD

Source of local chickens :

Several of the small backyard units of local chickens as well as the experimental flocks of local chickens at the University of Ibadan Teaching and Research Farm, were periodically visited and live chickens showing any form of growth on the body were acquired. Owners were also encouraged to present sick or dead local chickens for examination at our Departmental Clinic, where diagnostic and advisory services were offered in return.

Diagnostic Methods :

Any chicken with an abnormal growth or unusual enlargement of part(s) of the body was examined. The examination included palpation and incision to eliminate non-neoplastic enlargement, such as oedema and haematoma. Tissue specimens from neoplastic growths were collected and fixed in formal-saline, sectioned and stained with haematoxylin and eosin (H & E). The observed morphological and histopathological features of the growth were then



Fig. 1 : Unilateral osteopetrosis of left (arrow) metatarsus in a Nigerian local chicken.

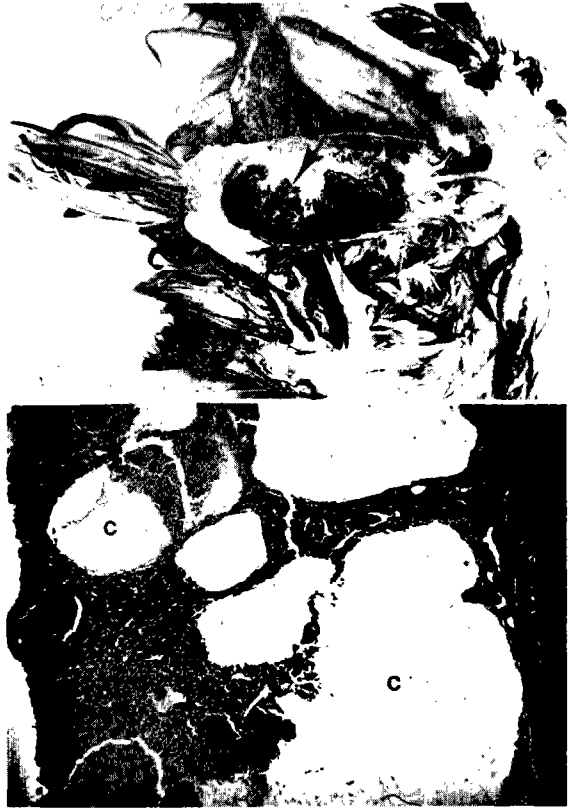


Fig. 2 (Upper) : Haemangioma (arrow) affecting the liver of a Nigerian local chicken.

(Bottom) : Histological section of the liver, showing the cavernous spaces (c) of the haemangioma H & E.

employed for the identification and classification of the tumours.

Serum neutralisation test :

Forty heat-inactivated serum samples, including two from Nigerian local chickens were examined for neutralising antibody to subgroup « A » leukosis-sarcoma virus at the Houghton Poultry Research Station, U.K., by the serum neutralisation test based on the method described by BURMESTER and OKAZAKI, (4). Positive titres were determined at a relative sensitivity (RS) not exceeding 0.5.

RESULTS

A total of 66 local chickens with suspected neoplastic growths were examined. Eight of these (12.1 %) were confirmed cases of tumour which included one osteopetrosis of the metatarsus (Fig. 1), one haemangioma of the liver (Fig. 2), and six connective tissue tumours which were all located on external appendages of the chickens. Upon histological



Fig. 3 (Upper) : A myxomatous growth under the wing of a Nigerian local chicken.

(Bottom) : Histological appearance showing fusiform (f), stellate (s) cells and copious mucillagenous matrix (m). (H and E).

examination, the six were identified as myxoma (one case), histiosarcoma (two cases) and fibrosarcoma (three cases). The myxoma (Fig. 3) was a lobulated soft and rather massive pedunculated growth under the left wing. Histologically, it consisted of densely basophilic fusiform and stellate cells, the later with thready branches which ramified into the copious mucillagenous matrix. The histiosarcoma as represented by (Fig. 4), was firm and not pedunculated but in multiple locations suggestive of metastasis. Histologically, it consisted of numerous differentiated spindle shaped cells, some basophilic cells of varying sizes and the typical stellate cells. Cellular pleomorphism was clearly visible in each case. The third group which consisted of three cases of fibrosarcoma was represented by (Fig. 5), a massive growth below the intermandibular space. Microscopically, there were numerous densely stained cells including fibroblastic and lymphoid types as well as some mitotic figures. The section showed considerable amount of collagenous matrix.

Five out of the 40 samples which were tested, demonstrated presence of neutralising antibody to subgroup « A » avian leukosis-sarcoma virus, at an (RS) value not exceeding 0.5. One of these five positive samples was from the two Nigerian local chicken sera in the batch.

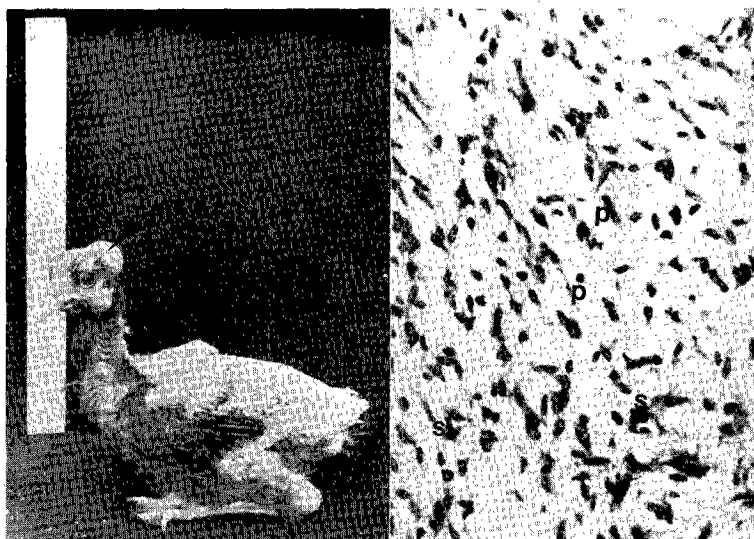


Fig. 4 (left) : An histiosarcoma on the head of a Nigerian local chicken, with a smaller growth below the eye.

(Right) : Histological section, showing stellate cell(s), cellular pleomorphism (p) and other features of histiosarcoma (H and E).



Fig. 5 (Upper) : A fibrosarcoma involving the inter-mandibular space in a Nigerian local chicken.

(Bottom) : Histological section showing mixed population of lymphoblastic (L) and fibroblastic (f) cells and mitotic figures (m). (H and E).

DISCUSSION

Although only 66 local chickens with suspected tumours were presented for diagnostic ex-

amination, it was noteworthy that none of the eight confirmed cases of neoplasms was of the Marek's disease type. The observed neoplasms included haemangioma and osteopetrosis both of which are rare and the only reported cases in the Nigerian local chicken. The low number of local chickens studied is not unusual because they are invariably kept on non-commercial scales. Thus in a previous study covering a period of ten years, 45 local chickens were examined and two cases (4.4 %) of « visceral lymphomatosis » recorded (5). It would however appear that the term « lymphomatosis » as employed by these authors represented the visceral form of Marek's disease because the report also referred to 5.2 % of visceral and ocular « lymphomatosis » in cross breeds.

Haemangioma, osteopetrosis and particularly the connective tissue tumours, as suggested by BURMESTER and WALTER (5), bear aetiologic relationship to visceral leukosis. The single local chicken which demonstrated presence of neutralising antibody to « A » subgroup of leukosis-sarcoma virus, was at least a token evidence of occurrence of infection among local chickens. In a similar investigation (2), there was an incidence of 8.3 % of Marek's disease precipitating antibodies and 12.4 % MD virus in the local chicken examined, despite absence of any MD neoplasm in them. These findings showed that the local chicken, despite speculations on its hardiness, was in fact susceptible to infection with oncogenic viruses. Its role in the epizootiology and control of diseases of poultry should therefore deserve further investigation.

RESUMEN

ADENE (D. F.), HOWES (K.). Observación de neoplasmas causados por el grupo viral sarcoma-leucosis y de anticuerpos específicos en pollos locales de Nigeria. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (2) : 160-164.

Los pollos tienen una importancia considerable para la economía rural y agrícola del Nigeria, lo que provocó un interés para los problemas de nutrición, de reproducción y de patología.

En este estudio, 12,1 p. 100 de todos los pollos observa-

dos tenían crecimientos neoplásicos incluyendo osteopetrosis y sarcoma del tejido celular ligados con la leucosis.

Durante otra investigación, se descubrió el anticuerpo neutralizando el subgrupo « A » del virus sarcoma-leucosis en cinco muestras de las que uno proviniendo de pollos locales de Nigeria. No se publicó ninguna información sobre el aspecto del grupo sarcoma-leucosis de los neoplasmas aviares en los pollos locales de Nigeria.

Palabras claves : Neoplasmas - Grupo viral sarcoma-leucosis - Pollos - Nigeria.

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