Cutaneous neuro-myofibroblastic sarcoma induced by avian leukemia virus subgroup J in a rooster (*Gallus gallus domesticus*)

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**Abstract:**
An adult native cock (*Gallus gallus domesticus*) referred to the aviary clinic with multiple different sizes of round dermal nodules. The bird died few days later, and was then submitted for further evaluation. Macroscopic and microscopic examinations as well as a PCR test were done to identify type and cause of the tumor. In histopathological assessment of biopsy specimen, it consisted of interlacing bundles of fibroblasts that orientated in different directions with plump or elongated spindle shaped nuclei and fairly abundant cytoplasm. At necropsy several large white nodules were implanted in lung and liver. Microscopically the proliferated fibroblastic cells were invaded to both organs, and were similar to those described for skin lesion. The tumor cells had immunoreaction for alpha smooth muscle actin, vimentin and S100 protein, whereas they were negative for desmin and pancytokeratin, suggesting a diagnosis of metastatic neuro-myofibroblastic sarcoma. A PCR test specific for avian leukemia virus subgroup J (ALV-J) confirmed the presence of that virus in tumor specimens. Sequencing and phylogenetic analysis showed a relatively low similarity in the LTR segment (90%) of the studied virus with other ALV-J strains. It might be the first report of cutaneous neuro-myofibroblastic sarcoma, potentiated to metastasis to other organs induced by ALV-J.

**Key words:**
avian leukemia, cutaneous sarcoma, *Gallus gallus*, myofibroblastic tumor, rooster

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**Case History**

The etiology of neoplastic diseases, specifically those appearing in exotic or wild birds is not well-defined, conversely the oncogenesis in poultry is more commonly identified, in which the most documented causes are infective. Avian leukemia/sarcoma viruses (ALSVs; subgroups A-E and J) related to the oncogenic retroviruses, are involved in the pathogenesis of numerous classified tumors originated from either mesenchymal or epithelial cells (Hafner et al. 1998; Ono et al. 2004; Ochi et al. 2012; Wang et al. 2013).

Among the ALV-encoded proteins, the envelope glycoprotein (env) on the surface of retroviral particles is the major determinant of the subgroup phenotype, host range and antigenicity. The env gene sequence of the prototype virus of subgroup J, HPRS-103, differs extremely from other ALV