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What is This?
Thoracoabdominal myelolipomas and carcinoma in a lovebird (Agapomis sp.)

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Myelolipomas are uncommon benign tumors composed of mature fat cells and hematopoietic cells (myeloid, erythroid, and lymphoid) in various proportions. In humans, these neoplasms rarely cause symptoms unless they are unusually large or unless they hemorrhage. Myelolipomas have been found incidentally at postmortem examination; however, their antemortem diagnosis is becoming more common in humans with increased use of ultrasound and computed tomography. In contrast, myelolipomas are reported infrequently in animals. Carcinomas (malignant tumors of epithelial origin) are found in many species of animals. In this report, we describe 2 intraabdominal myelolipomas and a cranial thoracic carcinoma of undetermined origin in a lovebird.

An 8-year-old female lovebird had an 11-month history of depression, emaciation, fluffed feathers, labored breathing, recurring posture of tilting its head down with tail elevated, and loss of appetite. Treatment with oral doxycycline had improved the bird’s appetite and demeanor for several months, but the bird was found dead following a short reappearance of these signs. The attending veterinarian performed a necropsy on the bird and encountered 1 oval 0.9-cm-diameter tissue mass in the cranial thorax near the thoracic inlet and 2 other round, tan 1-cm-diameter masses in the left and right sides of the abdomen. No other abnormalities were observed at necropsy. The tissue masses and liver were submitted in buffered formalin to the Oregon State University Veterinary Diagnostic Laboratory for histologic examination.

Two encapsulated round masses, 5 mm x 9 mm and 6 mm x 11 mm, contained a uniform mixture of 50% mature adipocytes and 50% hematopoietic cells (Fig. 1). The hematopoietic cells were immature myeloid cells, primarily of the heterophilic series, and erythroid precursors (Fig. 2). Cells resembling blast-type cells with slightly dispersed chromatin, vesicular round to oval nuclei, and scant basophilic cytoplasm also were present throughout the mass. The mitotic rate of the hematopoietic cells was 1 or 2 mitoses/40 x field. Stromal elements included scattered capillaries and foci of smooth muscle. Multifocal infiltrations of the fibrous capsule by immature heterophils and blasts were observed. The presence of a fibrous connective tissue capsule and smooth muscle trabeculae could indicate that the tumor originated from splenic tissue. The masses were diagnosed as myelolipomas.

The mass from the thoracic area was composed of tubules lined by epithelial cells with somewhat pleomorphic round to oval vesicular nuclei and scant basophilic cytoplasm. The tubular lumina often contained papillary to coalescing accumulations of cells that occasionally resembled primitive glomeruli (Fig. 3). The neoplastic tubules were present in a collagenous stroma that projected from a fibrous connective tissue stalk adjacent to bone. Immunohistochemical staining of sections for cytokeratin and vimentin was inconclusive. The mass was diagnosed as a carcinoma of unknown origin. Histologically, the bird’s liver was unremarkable.

Myelolipomas recently have been reported in avian species. In a report of myelolipomas in 4 different species of caged birds, 1 case of multiple hepatic myelolipomas was
described in a saffron toucanet and subcutaneous myelolipomas were described in a hyacinth macaw, a cockatiel, and a society finch. The subcutaneous myelolipomas, in an unusual site compared with mammalian species, grossly resembled adipose tissue or a lipoma with hemorrhage. The myelolipoma in the present case represents yet another presentation of this tumor in an avian species.

Myelolipomas have been reported in several mammalian species, including domestic cats, cattle, and primates. In wild and domestic felids, myelolipomas tend to be multiple growths involving the liver or the spleen, but in humans they usually are associated with the adrenal gland. In cattle and nonhuman primates, myelolipomas also are commonly reported to be associated with the adrenal glands. Myelolipomas are, however, infrequently reported in other mammalian species. Foci of mineralization or ossification have been found in myelolipomas of animals.

In humans, myelolipomas usually are associated with the adrenal gland but also are found as isolated soft tissue masses, often in the pelvic region. They are infrequently encountered in persons under 40 years of age, rarely exceed 5 cm in diameter, and often cause no symptoms. The histogenesis of myelolipomas is not completely understood, but they are thought to represent hamartomas or choristomas rather than true neoplasms.

Human adrenal myelolipomas can occur secondarily to prolonged stress and stimulation with adrenocorticotropic hormones or may be associated with a variety of endocrine disorders. Many neoplasms of endocrine glands have been found to be functionally active. Myelolipomas in humans sometimes are found in association with other functional endocrine neoplasms, such as adrenal adenoma or an adrenocorticotrophic hormone-producing oat cell carcinoma of the lung. It was not possible in the present case to determine whether the carcinoma was endocrinologically functional or whether there was a relationship between it and the development of the 2 myelolipomas. In addition, there were no gross abnormalities of the kidneys or ovaries that would implicate these organs in the primary histogenesis of the carcinoma.

Sources and manufacturers
a. Super Sensitive Multilink Immunostaining Kit, BioGenex Laboratories, San Ramon, CA.

References