MULTIPLE NEOPLASIA IN A CAPTIVE JUNGLE CAT (Felis chaus) — THYROID ADENOCARCINOMA, GASTRIC ADENOCARCINOMA, RENAL ADENOMA, AND SERTOLI CELL TUMOR

Authors: SAGARTZ, J. W., GARNER, F. M., and SAUER, R. M.

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MULTIPLE NEOPLASIA IN A CAPTIVE JUNGLE CAT (*Felis chaus*)— THYROID ADENOCARCINOMA, GASTRIC ADENOCARCINOMA, RENAL ADENOMA, AND SERTOLI CELL TUMOR

J. W. SAGARTZ[1], F. M. GARNER[2], and R. M. SAUER[3]

Abstract: A 23-year-old captive male jungle cat *(Felis chaus)* was euthanatized because of declining health and advanced age. The following neoplasms were identified at necropsy: adenocarcinoma of the thyroid gland, adenocarcinoma of the stomach, Sertoli cell tumor, and adenoma of the kidney.

INTRODUCTION

Reports of neoplasia in wild Felidae are extremely rare. This case is unusual in that four distinctly different neoplasms were discovered in a single animal at necropsy: adenocarcinoma of the thyroid gland, adenocarcinoma of the stomach, Sertoli cell tumor, and adenoma of the kidney.

Lombard and Witte,[3] in their survey of neoplasia at the Philadelphia Zoological Garden, reported single cases of carcinoma of the thyroid gland in each of four captive wild feline species: leopard *(Panthera pardis);* lion *(Panthera leo);* puma *(Felis concolor);* and Sumatran tiger *(Panthera tigris sondaica).* The Registry of Veterinary Pathology of the American Registry of Pathology contains two cases of neoplasms of the thyroid gland, an adenoma and an adenocarcinoma, both in pumas. El Sergany[2] reported a carcinoma of the stomach in a lion.

To our knowledge, neoplasms of neither the testis nor kidney have been reported in wild Felidae. We were able to find only one report of two cases of Sertoil cell tumors in domestic cats.[4] Occasional cases of primary adenomas of the kidney have been reported in domestic cats.

CASE REPORT

A 23-year-old male jungle cat was removed from exhibition at the National Zoological Park, Washington, D.C., because of emaciation. Cardiac and renal diseases were suspected. Because of advanced age and deteriorating condition the prognosis was poor, and euthanasia was performed by intraperitoneal injection of sodium pentabarbital.

Necropsy was performed immediately after death. The body weighed 4.5 kg; the hair coat was rough and matted. The right testicle was markedly enlarged, measuring 2.9 x 2.4 x 1.9 cm. Upon

[1] (Captain, VC, USA), Veterinary Pathology Division, Armed Forces Institute of Pathology (AFIP), Washington, D.C. 20305, U.S.A.

[2] (Colonel, USA), Chief, Veterinary Pathology Division, AFIP, at time this work was done.

[3] Head, Department of Pathology, National Zoological Park, Washington, D.C.

In conducting the research described in this report, the investigators adhered to the "Guide for Laboratory Animal Facilities and Care," as promulgated by the Committee on the Guide for Laboratory Animal Facilities and Care of the Institute of Laboratory Animal Resources, National Academy of Sciences - National Research Council.

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incision it was found to contain a friable, pale-yellow mass, which constituted nearly the entire bulk of the organ and compressed the remaining parenchyma into a narrow peripheral rim beneath the tunic. No lesions were observed in the left testicle, which measured 1.5 x 1.0 x 0.8 cm. The mucosal surface of the greater curvature of the stomach contained a crateriform ulcer (Fig. 1). The crater was 1.5 cm in diameter and 1.3 cm in depth. The kidneys were swollen and the cortices moderately congested. No neoplastic lesions were observed grossly in the kidneys or thyroid glands.

Representative samples of all organs and lesions were preserved in 10% neutral buffered formalin and prepared for histopathologic examination. The paraffin-embedded tissues were cut at a thickness of 6 microns and stained with hematoxylin and eosin.

Microscopically the right testis was seen to contain a Sertoli cell tumor, with a large central area of liquefactive necrosis (Fig. 2). The Sertoli cells were arranged in a tubular pattern with their long axes at right angles to the stromal walls (Fig. 3). The cytoplasm was pale, eosinophilic, and vacuolated. The nuclei were round to ovoid. Mitotic figures were rarely observed.

The ulcer in the fundus of the stomach was found to be the result of an adenocarcinoma. The neoplasm was composed of small pleomorphic glandular cells arranged in solid sheets (Fig. 4) and acinar clusters (Fig. 5). The stroma was sparse and consisted of thin strands of fibrous connective tissue. The neoplastic cells contained pale, faintly granular cytoplasm and ovoid hyperchromatic nuclei with reticulated chromatin and small nucleoli. Two to three mitotic figures were found per high-power field (430X).

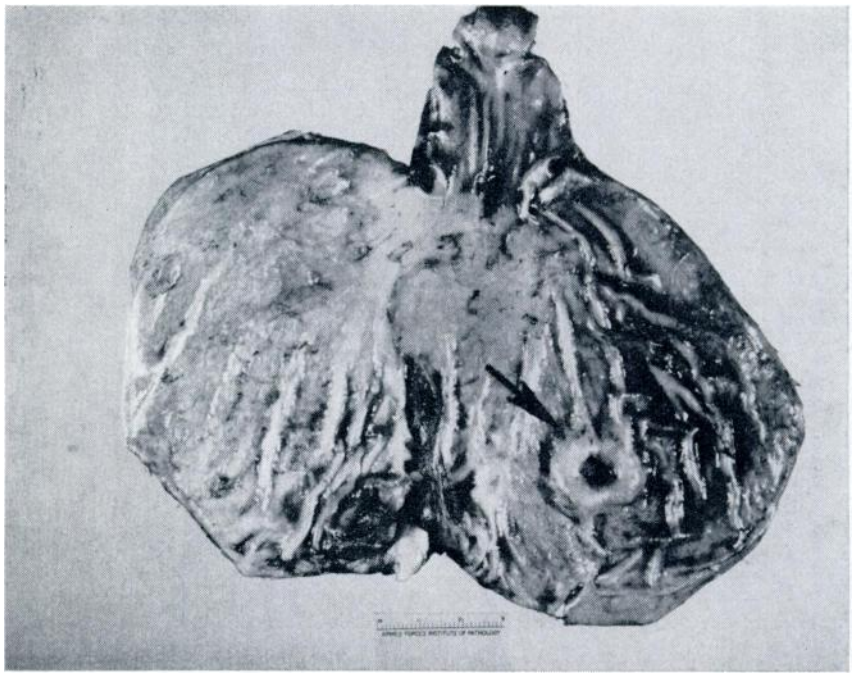

FIGURE 1. Adenocarcinoma (arrow) on mucosal surface of greater curvature of stomach. AFIP Neg. 56-3239.

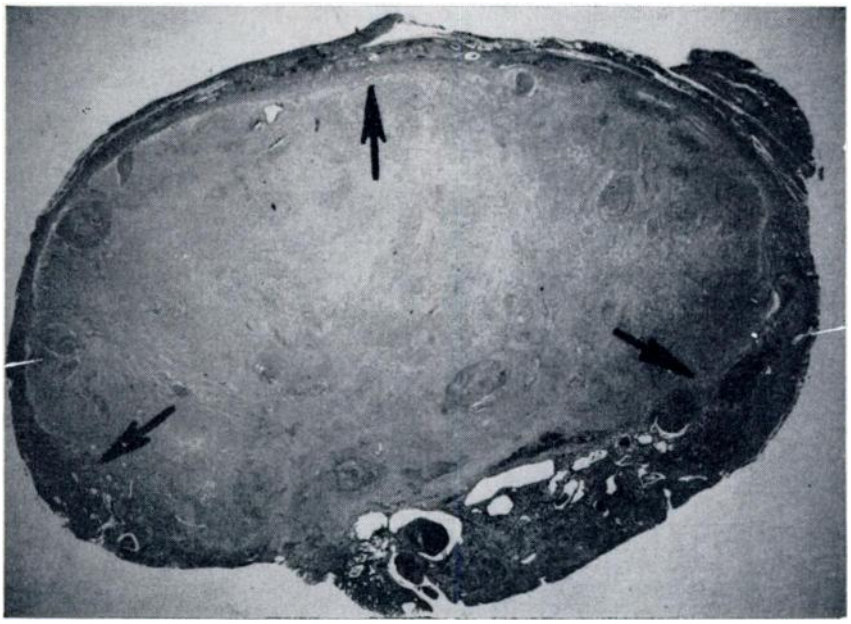

FIGURE 2. Right testis containing a Sertoli cell tumor (arrows) with a large necrotic central area. H&E, X2½. AFIP Neg. 72-1313.

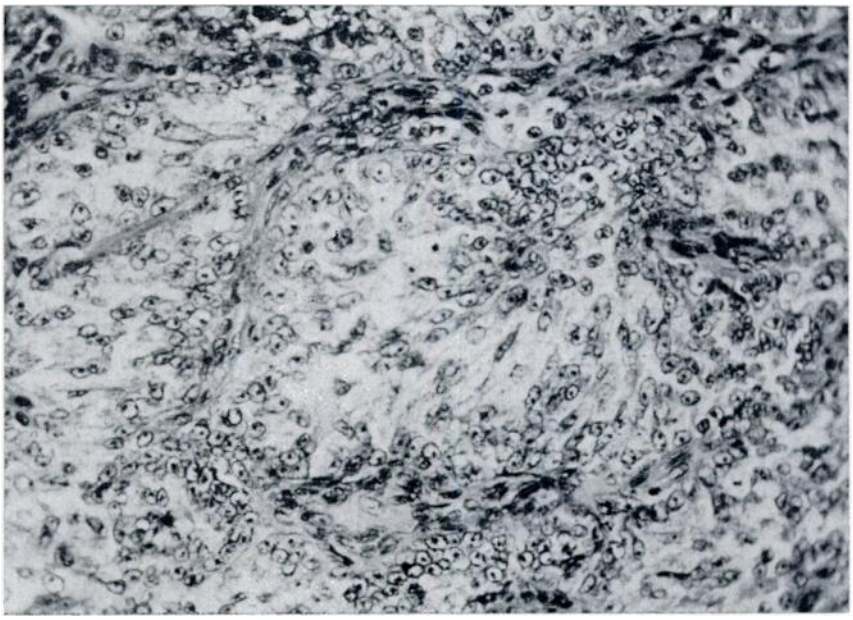

FIGURE 3. Sertoli cell tumor. Neoplastic cells are elongated, vacuolated, and in a tubular arrangement. H&E, X100. AFIP Neg. 70-9528.

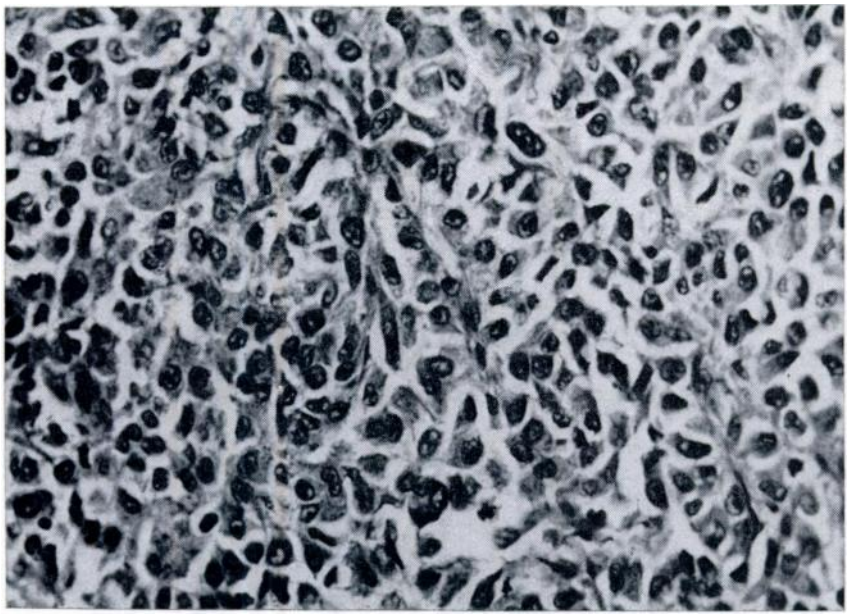

FIGURE 4. Gastric adenocarcinoma. Solid sheet of neoplastic epithelial cells. H&E, X350. AFIP Neg. 72-1316.

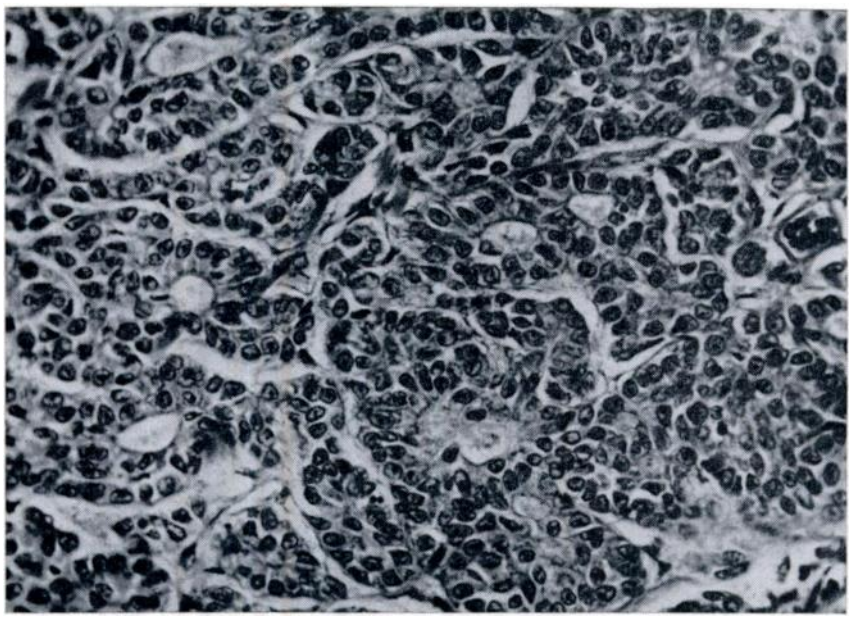

FIGURE 5. Gastric adenocarcinoma. Neoplastic epithelial cells arranged in acinar pattern. H&E, X350. AFIP Neg. 72-1319.

A spherical 7-mm neoplastic mass was present in the cortex of one kidney. The renal neoplasm was an adenoma composed of large polyhedral cells compactly arranged in a solid mass (Fig. 6). The cytoplasm was brightly eosinophilic and finely granular. The round to ovoid nuclei varied in size and contained small amounts of reticulated chomatin and occasional small basophilic nucleoli. Mitotic figures were rare, and the stroma was inconspicuous.

The thyroid gland contained a nonencapsulated adenocarcinoma in which the neoplastic cells formed follicular structures of varying sizes (Fig. 7). Many neoplastic follicles contained mixtures of colloid, neutrophils, and cellular debris. Small aggregates of neutrophils were found throughout the coarse collagenous stroma. The neoplastic cells were columnar and had well-defined borders and eosinophilic, finely granular cytoplasm. The basally located nuclei were round, hyperchromatic, and occasionally contained single basophilic nucleoli. There were numerous mitotic figures and a few multinucleated giant cells.

In addition to the neoplastic lesions described above, approximately 90% of the pancreatic islets contained variable amounts of intercellular pale-pink, amorphous material. When stained with Congo red and examined in polarized light, this material exhibited green birefringence characteristic for amyloid.

It appears likely that the clinical deterioration of the cat was due to the combined effects of the four neoplasms and the pancreatic lesions. The presence of amyloid in the pancreatic islets suggests that the animal may have suffered from diabetes mellitus. Unfortunately, no clinical laboratory data were available to substantiate this suspicion.

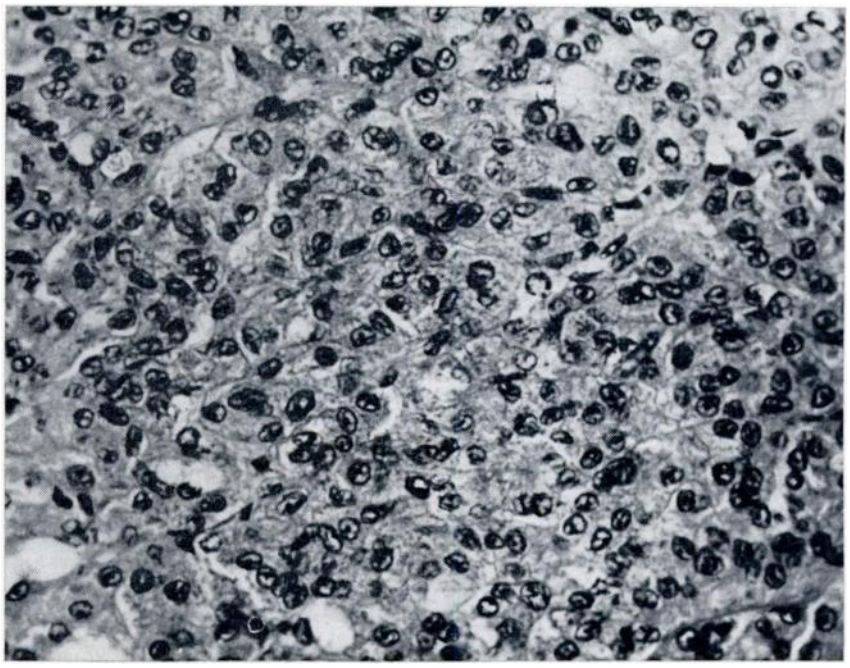

FIGURE 6. Renal adenoma. Uniform dense mass of neoplastic cells. H&E, X350. AFIP Neg. 72-1315.

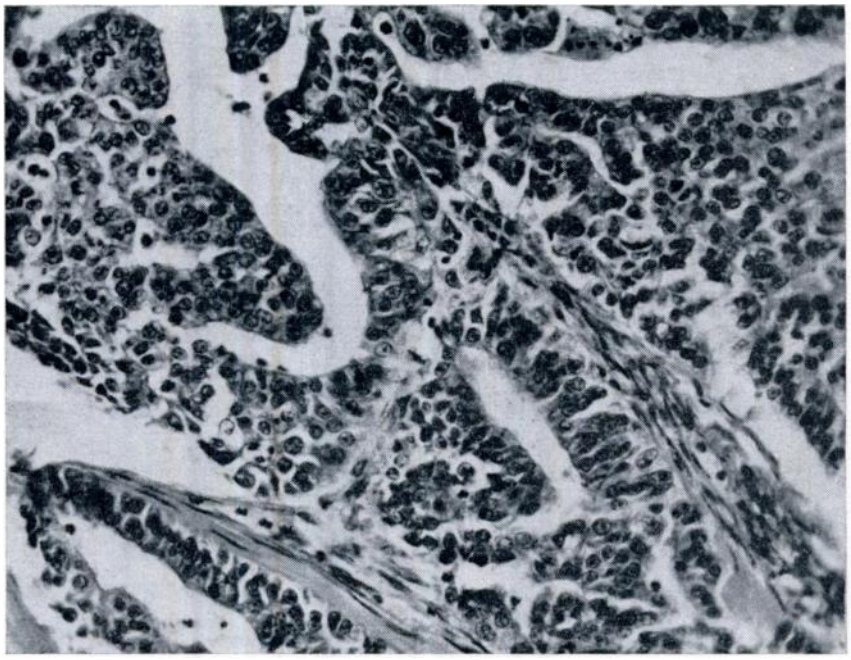

FIGURE 7. Thyroid adenocarcinoma. Columnar neoplastic cells in a follicular arrangement. H&E, X305. AFIP Neg. 70-9530.

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