

# Metastasis of a Perianal Gland Adenocarcinoma in a Dog

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## SUMMARY

A seven-year-old male Airdale was found upon clinical examination, biopsy, and radiography to have neoplasms in the lungs as well as on the back in the lumbar region. The gross and microscopic post mortem examination revealed the neoplasm to originate from the perianal glands and to be metastatic in the lungs, kidneys, liver, lymph nodes, and intestine. Microscopically the neoplasm consisted of large hepatoid cells surrounded by smaller reserve cells; also present were epithelial pearls and intercellular bridges.

## INTRODUCTION

Of all the domesticated animals, neoplasms occur most commonly in the dog and the tumors of the dog most frequently involve the cutaneous and subcutaneous tissue.<sup>4, 8</sup> Dogs are the only species of domestic animals in which the perianal gland tumors are reported; these tumors are one of the most prevalent in dogs and appear in all breeds.<sup>6, 9, 10</sup> A significantly higher per cent of male dogs have perianal gland tumors than females, and perianal tumors have been reported much more frequently in dogs older than 8 years.<sup>6</sup>

The perianal glands are cutaneous structures that histologically consist of cords and lobules of acidophilic polyhedral cells

surrounded by small basophilic columnar cells or reserve cells. Found most abundantly around the anus, the perianal glands may, however, be found elsewhere in subcutaneous tissue. Most authors consider the perianal glands to consist of nonfunctional sebaceous glands that failed to develop fully.<sup>7</sup>

## HISTORY

A seven-year-old male Airdale was admitted to Stange Memorial Clinic on June 21, 1967. The accompanying history indicated that the dog was treated by a local veterinarian in December, 1966, for back wounds that resulted from a bear fight in October, 1966; at this time a tumor was also removed from the back of the dog which was not present at the time of the bear fight. In February, 1967, several more tumors were removed from the back of the dog. The following month, the dog was examined by the veterinarian who then placed the dog on cuprous iodide until July when the veterinarian noticed a cough and suspected metastasis in the lungs of the dog. The dog was referred to the Stange Clinic in June.

## CLINICAL OBSERVATIONS

Upon admission, the dog had three irregular ulcerating growths on the left side of the lumbar vertebrae. Although the dog was thin, the physical examination revealed no abnormalities.

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On June 22, a blood examination was performed and the following results were obtained: hemoglobin 8.86 gm/100cc, hematocrit 28%, and a total white blood cell count of 14,000/cu. mm. The peripheral smear indicated 7% eosinophils, 2% band neutrophils, 80% segmented neutrophils, and 11% lymphocytes.

Radiographs were taken on June 23 and discrete nodules throughout the lungs were discovered. A biopsy of the growths on the back was diagnosed as a squamous cell carcinoma. The same day, the owner was notified of the diagnosis and euthanasia was requested. A necropsy was performed on June 26; at this time a second blood sample and a urine sample were taken for examination. The results of the hemogram are as follows: hemoglobin 8.51 gm/100 cc, hematocrit 27%, and total white blood cell count of 9,850/cu. mm.; the peripheral smear consisted of 13% eosinophils, 72% segmented neutrophils, 2% band neutrophils, and 13% lymphocytes. Blood chemistry showed a serum glutamic-oxaloacetic transaminase value of 28 Sigma-Frankel units, serum glutamic-pyruvic transaminase of 14 Sigma-Frankel units, and an alkaline phosphatase value of 1 Bessy Lowry Brock unit. The values of the urinalysis were the following: specific gravity 1.012, a moderate amount of occult blood, and a protein value of +3. The urine was a turbid yellow color and the sediment consisted of a large number of white blood cells, a few erythrocytes, and a few transitional epithelial cells.

### NECROPSY

As mentioned earlier, there were three large irregular ulcerating growths on the left side of the back near the lumbar vertebrae (Fig. 1). Both lungs contained numerous discrete whitish nodules and the left and right ventricles of the heart were moderately dilated (Fig. 2). The bronchial, mediastinal and pelvic lymph nodes were greatly enlarged and contained discrete nodules similar to the lungs. Examination of the urogenital system revealed that the left kidney was enlarged to twice normal size and had numerous discrete areas in the cortex and pelvis (Fig. 3).



Figure 1. Ulcerating neoplasms on the back.



Figure 2. Multiple nodules throughout the lungs.



Figure 3. Midline section through the kidneys reveal neoplastic nodules. The left kidney of the dog was nearly twice its normal size.

There were a few enlarged Peyer's patches in the small intestine and a mild hemorrhagic enteritis.

Histologically, the neoplastic lesions of

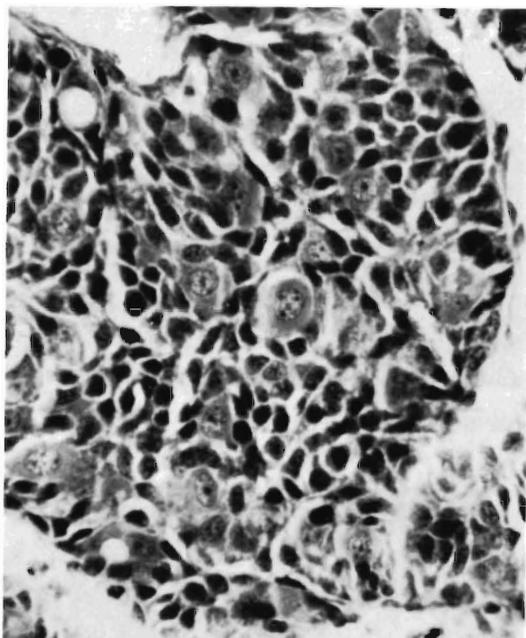


Figure 4. Cell types in a perianal gland adenocarcinoma. In this section the smaller reserve cells predominate over the larger acidophilic cells. H & E stain. X400.

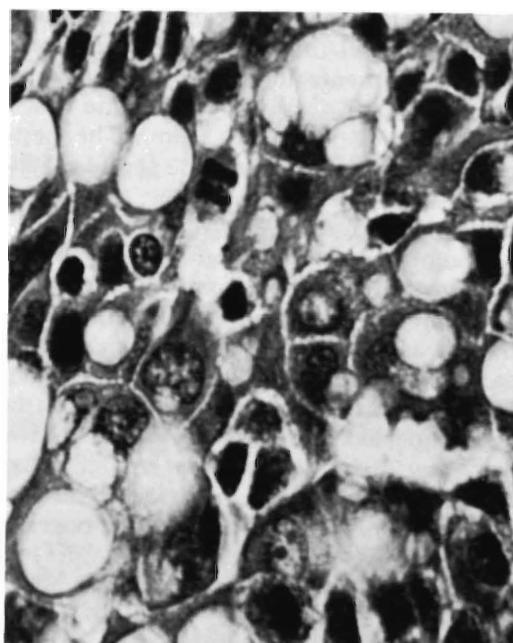


Figure 6. Prominent intercellular bridges are between the large hepatoid cells. Large fat vacuoles as well as mitotic figures can also be seen. H & E stain. X1000.

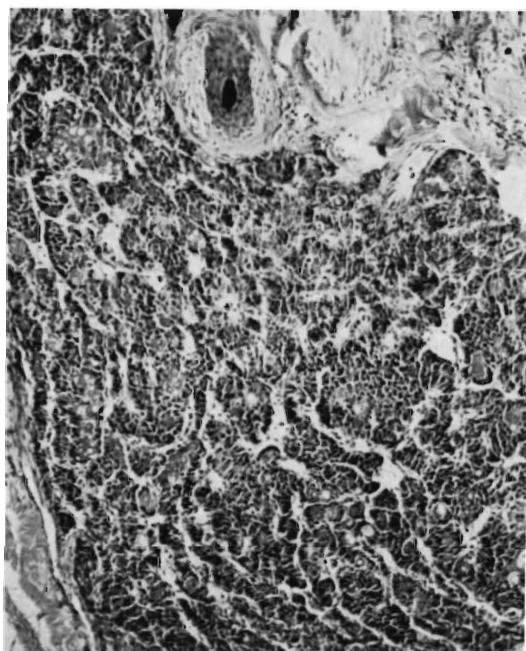


Figure 5. Perianal gland neoplasm involving the skin. The acidophilic cells are surrounded by smaller basophilic cells and the cells are separated into cords. H & E stain. X100.

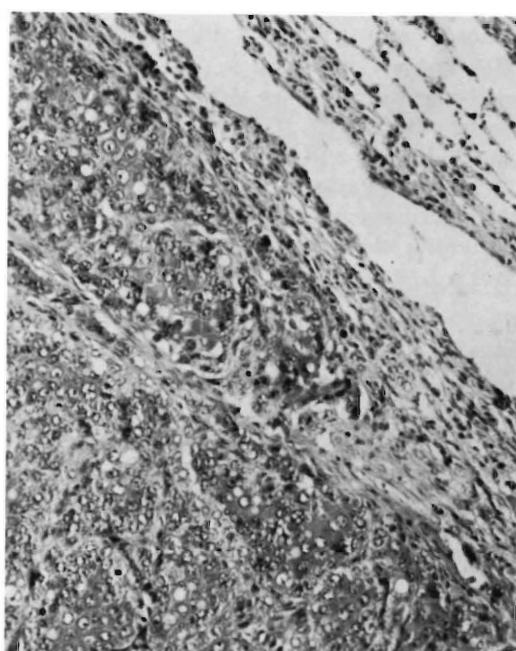


Figure 7. Neoplastic perianal gland cells invading lung tissue. The groups of cells are more disorderly and the differentiation between the two cell types is less distinct than in Figures 4 or 5. H & E stain. X400.

the kidney, lung, intestine, lymph nodes, and skin were in distinct areas and the tumors consisted of two types of cells. One type was a large polyhedral, slightly acidophilic cell with a vacuolated, centrally located nucleus; around the periphery of groups of these cells were small basophilic cells (Fig. 4). A delicate connective tissue stroma containing blood vessels separated the cells into cords and acini structures (Fig. 5). In some areas in which the periphery of the cytoplasm of the polyhedral cells could be seen, intercellular bridges could be detected (Fig. 6i). In other areas, the vacuolated nuclei were adjacent to each other and little cytoplasm could be seen; in these areas, there was some difficulty in differentiating the two types of cells. A few mitotic figures could be seen as well as attempts at the formation of epithelial pearls (Fig. 7).

### DISCUSSION

While perianal gland adenomas are relatively common, metastatic perianal gland adenocarcinomas are very rare.<sup>3, 9, 10</sup> Of six separate published reports involving 587 perianal gland neoplasms, none were reported as metastatic.<sup>3, 10</sup>

The histological diagnosis of the metastatic neoplasms can be confusing. The adenoma may characteristically contain the large eosinophilic cells or "hepatoid" cells surrounded by reserve cells; the cells are arranged in cords and vary little from normal perianal glands.<sup>6, 7</sup> In the adenocarcinoma, one or the other cell types may predominate and lobules are often less distinct than in the benign neoplasm. In the normal gland, epithelial pearls are frequently found and are the result of degeneration and keratinization of centrally located cells.<sup>7</sup> The epithelial pearls are indistinguishable from squamous metaplasia and the intercellular bridges also confuse the histopathology.<sup>10</sup> Although intercellular bridges are infrequently re-

ported in perianal gland adenocarcinomas, there is reason to believe that these bridges can and do occur because of the gland's common embryological origin as part of the integument. Some authors consider the final criterion for malignancy to be invasion.<sup>6</sup>

The primary site of most perianal gland tumors is near the anus; however, in this case there was no involvement of the region of the anus.<sup>6, 9</sup> The primary site of the tumor was probably the back and was metastatic in the other organs. To draw a relationship between the neoplasm and the bear fight is an interesting speculation and certainly would require one to considerably stretch his imagination. Nevertheless, at least one author has found a resemblance between the regional distribution of bite wounds in the dog and the regional frequency of basilomas and squamous cell carcinomas.<sup>1</sup>

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