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Diagnosis and management of canine anal sac adenocarcinoma

Canine anal sac adenocarcinoma is a malignant tumour that arises from the apocrine glands of the anal sac. Metastases are often present at diagnosis with sublumbar lymph nodes most commonly affected. Distant metastasis to the liver, spleen, lungs and other organs can also occur later in the course of disease. Surgery clearly improves outcome in patients with anal sac adenocarcinoma and the longest survival times are reported with a combination of surgery, chemotherapy and radiation therapy.

Key words: Anal sac adenocarcinoma, perianal tumours, chemotherapy, radiation therapy, canine cancer

Clinical presentation

Dogs with anal sac adenocarcinoma are usually presented for investigation of a perianal mass or clinical signs associated with sublumbar lymph node metastasis. The patient may be scooting, biting or licking the perianal area. A unilateral mass may be visible at the 4 o'clock or 8 o'clock position around the anus (Figures 1-2). In up to 10% of patients, bilateral anal sac adenocarcinoma may be present at diagnosis (Emms 2005). Primary tumour size can vary from a few millimetres in diameter to several centimetres. In patients with a very small primary tumour anal sac adenocarcinoma may be an incidental finding following routine rectal examination.

Dogs presenting with signs associated with sublumbar metastasis may show tenesmus, obstipation or constipation due to physical interference with defecation. In these cases sublumbar lymphadenomegaly (sacral, hypogastric, medial iliac lymph nodes) is often palpable on rectal examination alongside a perianal mass. In some cases the perianal mass can be small in size with the metastatic lymph nodes larger in size and responsible for the majority of clinical signs.

Approximately 30% of dogs with anal sac adenocarcinoma will have hypercalcaemia due to the secretion of parathyroid hormone related peptide from the tumour (Turek 2014). Clinical signs such as polyuria/polydipsia, vomiting, anorexia or depression may be present at diagnosis.

Diagnosis

Virtually any tumour can occur in the perianal region and potential differential diagnoses include perianal adenoma, perianal adenocarcinoma, soft tissue sarcoma, mast cell tumour, melanoma, leiomyoma, transmissible venereal tumour, rhabdomyosarcoma, squamous cell carcinoma,

lymphoma as well as non-neoplastic conditions (Table 1).

Table 1: Differential diagnoses for perianal masses

Anal sacculitis
Abscess
Inspissated anal sac contents
Neoplasia
Hernia
Cyst
Haematoma

The diagnosis of anal sac adenocarcinoma is generally achievable by fine-needle aspirate cytology. On cytology anal sac adenocarcinoma appears as predominantly neuroendocrine-like cells, uniform in appearance, organised in clusters and displaying few criteria of malignancy (Figure 3).

In some cases, the diagnosis of anal sac adenocarcinoma can be complicated by inflammation or infection resulting in a misdiagnosis on cytology. Where a diagnosis is not reached following fine-needle aspirate cytology, or where inflammation/infection is diagnosed on cytology when a tumour is suspected, a biopsy should be performed. This is particularly important where there is a history of a lack of response to antibiotic and anti-inflammatory therapy. A wedge, tru-cut or punch biopsy is generally sufficient to achieve a diagnosis. In choosing a tumour location for biopsy it is important not to choose an area of abscessation as this may obscure underlying neoplasia. It is also important to choose a biopsy location that can easily be excised at the time of removal of the primary mass.

Clinical staging

Metastases are identified at the time of diagnosis in approximately 50% of patients, even those with a small primary mass (Bennett *et al.* 2002, Emms 2005, Williams *et al.* 2003, Wouda *et al.* 2016). Clinical staging allows for identification of metastasis and facilitates treatment planning (Table 2). As metastasis generally occurs via the lymphatic system clinical staging begins with rectal examination to evaluate the primary mass and the sacral lymph nodes along the ventral aspect of the lumbar vertebrae.

Table 2: Clinical Staging for Canine Anal Sac Adenocarcinoma

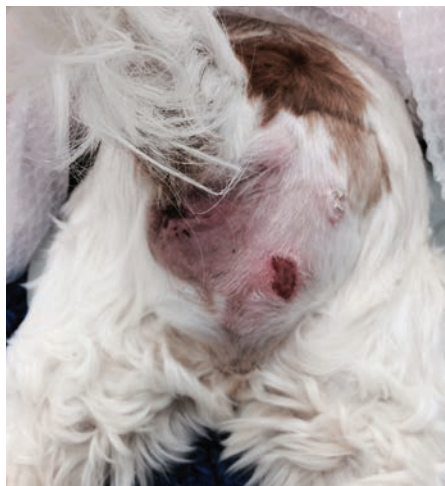
Rectal examination
Haematology, serum biochemistry, ionised calcium, urinalysis
Thoracic and abdominal imaging
Fine needle aspirate cytology of suspected metastases

Evaluation of remaining sublumbar lymph nodes (hypogastric and iliac) and distant organs requires abdominal and thoracic imaging. Abdominal and thoracic computed tomography (CT) will allow the most detailed assessment for metastatic disease (Figures 4–6). Abdominal ultrasonography and 3-view thoracic radiography (left lateral, right lateral and VD/DV) are acceptable alternatives where CT is not available or affordable (Palladino *et al.* 2016). MRI has also been reported as a sensitive tool for the detection of abdominal lymphadenopathy (Anderson *et al.* 2015). Metastases to the lumbar vertebrae are reported and this region should also be included in imaging, particularly if lumbar pain is present clinically. Fine-needle aspirate cytology of any suspected metastases should be performed when possible.

Haematology, serum biochemistry, ionised calcium and urinalysis are also recommended to assess for subclinical hypercalcaemia and evaluate general health and organ function.

Treatment

Unfortunately, due to the lack of high quality clinical trials, there is no consensus regarding standard of care for treatment of canine anal sac adenocarcinoma. It is, however, generally accepted that surgical excision of the primary mass and metastatic lymph nodes (when present) is a good first step. Excising the local and regional tumour burden removes the



Figures 1 and 2: A large right sided perianal mass subsequently diagnosed as anal sac adenocarcinoma. Courtesy: Isabelle Desmas.

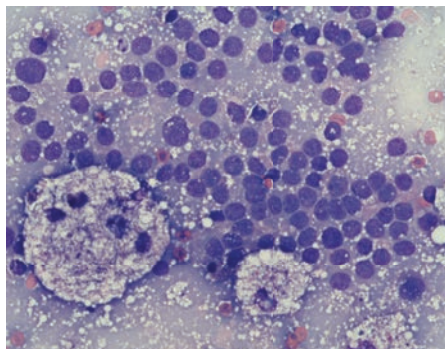


Figure 3: Cytology of anal sac adenocarcinoma showing predominantly neuroendocrine-like cells, uniform in appearance, organised in clusters and displaying few criteria of malignancy.

source of potential pain and discomfort for many of these animals and improves quality of life. Adjuvant radiation therapy and/or chemotherapy is then often recommended in an attempt to delay recurrence and metastasis.

Surgical treatment

Surgical excision of the primary anal sac adenocarcinoma with wide margins is recommended but is rarely possible due to the challenging perianal location. As a compromise it is recommended to

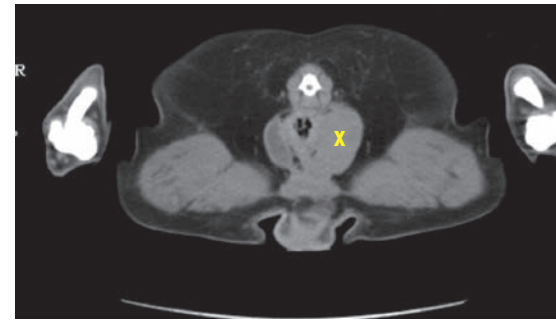


Figure 4: CT image showing a left sided anal sac adenocarcinoma marked 'x'.

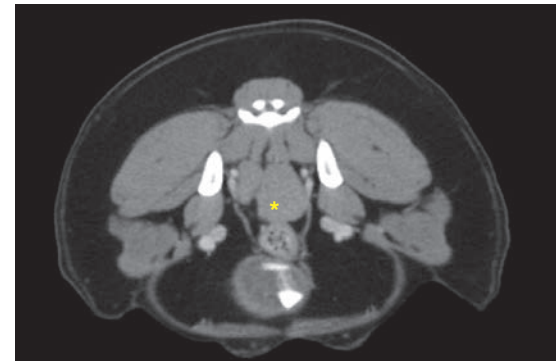


Figure 5: CT image showing lymph node metastasis of anal sac adenocarcinoma marked with yellow asterisk.*

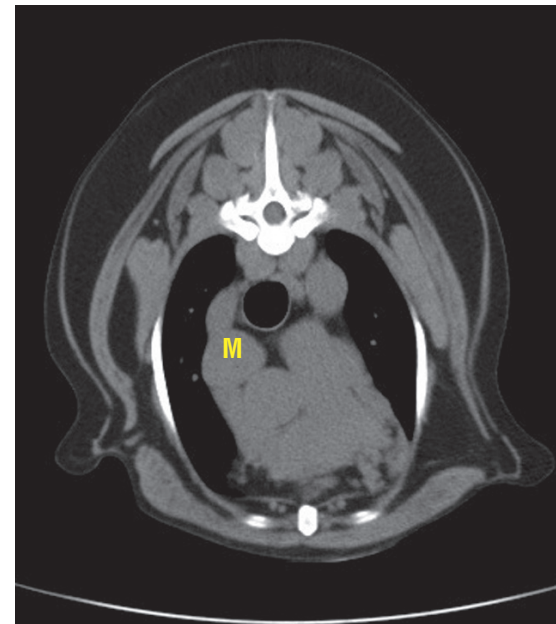


Figure 6: CT image showing mediastinal lymph node metastasis of anal sac adenocarcinoma marked 'M'.

use as wide a margins as possible whilst maintaining faecal continence (excision of greater than 50% of the anal sphincter can cause significant faecal incontinence). Consequently clean margins are rarely reported on histopathology. In very large masses neo-adjuvant chemotherapy can be used to attempt to shrink the mass to allow for surgical excision. Surgical excision of the primary mass alone is associated with survival times of 7.9 – 16.4 months (Bennett *et al.* 2003, Williams *et al.* 2003).