Adrenal incidentalomas are masses of the adrenal gland discovered inadvertently during diagnostic procedures, from which a significant percentage are pheochromocytomas and these tumors are rare. Here we report a case of a 15-year-old male dog whose main complaints were a soft cervical mass and mild generalized weakness. Blood cell count, routine biochemistry, arterial blood pressure and electrocardiogram were performed. Diagnostic imaging revealed a 3.5 cm mass next to the right adrenal gland. Surgery was performed and histopathology examination of the mass confirmed a malignant pheochromocytoma. The dog died 96 hours later after surgery. At necropsy, metastasis was found in cervical lymph node. Considering vague and episodic clinical signs, pheochromocytoma antemortem diagnosis is uncommon. The main aim of this case is to highlight this endocrinology disorder, increasing the awareness of clinicians to this difficult diagnostic condition.
sulated and firm. Curiously, no vascular invasion or thrombosis was detected in the caudal vena cava and surrounding blood vessels. Right adrenalectomy was done and the mass was sent for histopathology evaluation.

RESULTS

Microscopic analysis revealed the suprarenal invaded by neoplastic tissues composed of polyhedral eosinophilic cells with multiple hyperchromatic nuclei, low mitotic index, and granular cytoplasm separated by a fine fibrovascular stroma (Fig. 2 and 3). The definitive diagnosis of pheochromocytoma was established. Postoperative complications such as hypertension, cardiac arrhythmia, respiratory distress and hemorrhages were presented, causing death after 96 hours. At the necropsy, hemothorax, hemoperitoneum, lung congestion and an extensive subcutaneous hemorrhage were found. Kidneys presented a diffuse tubular necrosis, as well as glomerular and interstitial fibrosis. A massive necrosis with mild signs of calcification was found in the liver and also a pyogranulomatous inflammation in the peripancreatic adipose tissue. Right cervical lymph node was invaded by neoplastic tissue with the same characteristics as the one found in the adrenal gland (Fig. 4).

DISCUSSION

Due to the vague and episodic nature of clinical signs as well as the lack of a sensitive and specific screening test, ante mortem diagnosis of pheochromocytoma is generally uncommon. In this case, no blood pressure measurements abnormalities were found, which is explained by an episodic and random catecholamine secretion. Clinical signs are usually paroxysmal and not evident during dog examination (Herrera et al., 2008). Adrenalectomy is the treatment of choice for pheochromocytoma. However, this type of procedure has a high mortality rate (20-25%), even when performed by experienced surgeons (Herrera et al., 2008). Whenever a diagnosis of pheochromocytoma is done, treatment with phenoxybenzamine should be prior to adrenalectomy since it blocks the α-adrenergic response to circulating epinephrine and norepinephrine, decreasing dog mortality.
rates’ significantly (Herrera and Nelson, 2010). Nevertheless, life-threatening complications are common, namely metastasis or tumor-induced venous thrombosis. Abdominal ultrasound has been recently documented to be 100% sensitive and 96% specific in identifying the presence of tumor thrombus in the caudal vena cava, being considered a good screening tool for identifying vascular invasion or tumor thrombus in dogs (Davis et al., 2012).

Careful evaluation of these complications is important since 25% of dogs presenting adrenal tumors had vena cava thrombosis (Kyles et al., 2003), requiring venotomy to allow thrombus removal (Guillaumot et al., 2012). Additionally, it should be taken into account not to invade the adrenal capsule but rather remove the adrenal gland as a single piece in order to avoid neoplastic tissue dissemination.

Since cervical lymph node was already affected and no vascular invasion was detected, lymphatic metastatization might have occurred. Considering the fact that approximately 30% to 40% of affected dogs with pheochromocytoma present metastasis at necropsy, these tumors should always be considered malignant in dogs. Usual reported sites of metastasis include liver, lung, regional lymph nodes, bone, spleen and central nervous system (Barthez et al., 1997) and are more frequent in dogs with vein thrombosis and tumors with ≥ 5 cm in length (Massari et al., 2011). According to Massari et al. (2011) dogs with adrenal gland tumor with major axis length ≥ 5 cm, metastasis or vein thrombosis had a poorer prognosis. Despite this fact, a successful en bloc excision of neoplastic gland with invasion of caudal vena cava, without nephrectomy, has been recently described in a dog with vein thrombosis, allowing a 49-month survival (Guillaumot et al., 2012).

Pheochromocytoma is a rare condition receiving little attention in spite of its malignant character that usually acts as a silent killer. The main aim of this case study is to highlight this uncommon endocrinology disorder, increasing the awareness of the medical community to this difficult diagnostic condition.

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REFERENCES


