In cooperation with

An 8-year-old sexually intact male Vizsla was evaluated because of a 2-year history of a slowly growing mass in the right submandibular region. No other clinical signs were reported by the owner.

**Clinical Findings**

Physical examination revealed a soft nonmovable, right submandibular mass; palpation of the mass did not elicit signs of pain. The regional lymph node was not palpable. Results of a CBC, serum biochemical profile, and coagulation profile were unremarkable. To better determine the origin and extension of the mass, the dog underwent a CT scan that revealed a 10 × 8 × 7-cm soft tissue density mass in the right submandibular space, which apparently originated from the mandibular or parotid glands. The mass had an irregular shape and extended from the temporomandibular joint to the third vertebral body, laterally displacing the esophagus and trachea.

**Gross Findings**

The mass was surgically excised. Macroscopically, the lesion was a 10 × 8 × 7-cm, white-tan, well-demarcated mass surrounded by a thin fibrous capsule. In cut section, a lobular architecture with prominent interstitium (reminiscent of that of a salivary gland) was evident (**Figure 1**). No normal salivary gland tissue was grossly evident. The mass was submitted for cytologic and histologic examination.

Formulate differential diagnoses from the history, clinical findings, and **Figure 1**—then turn the page→
Cytologic Findings

Fine-needle aspirate samples of the mass were obtained for cytologic examination after surgical excision and before formalin fixation. In the preparations, 2 cellular populations intermixed with a moderate amount of lipid droplets were identified. Smear staining was adequate, with moderate cellularity and good cell preservation. Approximately 60% of the cellular population was composed of epithelial cell clusters, which occasionally formed acinar-like structures. The epithelial cells were round to cuboidal (maximum dimension, 30 to 35 µm), with indistinct cell margins, dark blue to clear foamy cytoplasm, and a single round nucleus with a small nucleolus. The remainder of the cellular population was composed of polygonal cells that were 50 to 80 µm (maximum dimension) and visible alone or in small groups. These cells had distinct cell margins and a large intracytoplasmic vacuole that displaced the nucleus to the cell periphery. The nuclear-to-cytoplasmic ratio was low, and the nucleus was hyperchromatic and flattened. These cells were interpreted as mature adipocytes. The cytologic features were suggestive of an epithelial glandular neoplasm (Figure 2).

Histopathologic Findings

Histologically, sections of the mass were comprised of salivary gland tissue in which the interlobular and intralobular septa were severely expanded by mature adipose tissue; the mature adipose tissue occupied 50% of the lesion and caused diffuse enlargement of the gland. Moreover, the adipose tissue surrounded and entrapped acini and excretory ducts (Figure 3). No nodule or mass displacing the glandular tissue was evident, and no distinct capsule defining the margins of the adipose tissue was present. The capsule that was apparent macroscopically represented the capsule of the salivary gland.

Morphologic Diagnosis and Case Summary

Morphologic diagnosis and case summary: lipomatosis of the mandibular salivary gland in a dog.

Comments

In dogs, lipomatosis (fatty or lipomatous infiltration) of the salivary gland is a rare condition characterized by fatty infiltration of the gland. The fat-containing mass can be differentiated from an adipose tissue neoplasm on the basis of the presence of normal salivary gland cells scattered throughout the adipose tissue. Lipomatosis develops as a progressive, slowly growing unilateral mass, sometimes with a thin capsule separating it from the normal gland.1
Lipomatosis of the salivary gland in humans is known as interstitial lipomatosis. Its main differential diagnoses include typical pleomorphic adenoma, lipomatous pleomorphic adenoma, lipoadenoma, lipoma, and lipomatous atrophy. Interstitial lipomatosis usually affects elderly patients and develops as an increase in salivary gland adipose tissue that begins with mature adipocytes in the septa and extends centripetally with replacement of intralobular parenchymal elements.

The primary differential diagnosis of canine salivary gland lipomatosis is sialolipoma, a tumor characterized by adipose tissue intermixed with occasional entrapped salivary gland structures. Sialolipomas are usually well-demarcated nodular lesions separated from the surrounding tissue by a fibrous capsule. In the case described in the present report, no discrete mass was evident within the salivary gland, and the unilateral lesion was composed of the salivary gland in which the septa were enlarged by adipose tissue expansion.

Primary salivary gland tumors are uncommon in domestic animals and most often affect older pets without any predilection for sex or breed. They are usually unilateral and may originate from any of the salivary glands; however, the parotid and mandibular glands are most commonly affected. The neoplasms are predominantly carcinomas or adenocarcinomas, and mesenchymal tumors are rare.

Lesions reported to cause swelling of the salivary glands in dogs include neoplasms, cysts, and lipomatosis. Such lesions have seldom been described in the veterinary medical literature, and data on the incidence of salivary gland lesions are controversial, ranging from 2% to 8%.

In human medicine, nonepithelial tumors of the salivary glands are uncommon, accounting for 5% of all salivary gland tumors, of which 20% are lipomas. Salivary gland tumors containing adipose tissue have a very wide spectrum of histologic appearance ranging from pure lipomatous neoplasms to mixed lipoelepithelial tumors specific to the salivary gland. Probably because of their rarity, these lesions are not included in the World Health Organization classification of head and neck tumors.

The treatment for lipomatosis of salivary glands in human and veterinary medicine is surgical excision, paying particular attention to functional preservation of the facial nerve. Microscopic infiltration might result in recurrence, and long-term follow-up of patients is important. Given the paucity of veterinary medical cases, assessment of a large number of dogs with follow-up information would be required to gain more insight into the biological behavior of lipomatous neoplasms of the salivary glands in this species. Lipomatosis should be considered among the differential diagnoses of unilateral progressive enlargement of a salivary gland in dogs.

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