Diseases of the Tongue

Case B880-90 Hereford Cow with a low grade fever.

Describe the lesion: Numerous nodular foci surrounded by dense fibrous tissue are scattered throughout the tongue.

Morphologic diagnosis: Severe, locally extensive, chronic granulomatous glossitis

Etiology: Actinobacillus lignieresii (wooden tongue). Along with pyogranulomatous inflammation being present within the tongue, the oral cavity and regional lymph nodes can also be affected (and rarely, the skin, lungs or forestomachs). The bacteria is a part of the normal flora of cattle, sheep and ruminants, but if there is a lesion in the oral cavity (associated with abnormal tooth wear, rough feed, grass awns), the bacteria will be introduced to the submucosa.

Differentials include Staphylococcus sp. and Actinomyces bovis which causes pyogranulomatous mandibular or maxillary osteomyelitis (lumpy jaw). Sometimes, you may be able to appreciate sulfur granules grossly.
Case: E-2490-96 Foal

Describe the lesion: Large, well demarcated areas of the tongue are devoid of epithelium.

Cause:
This is epidermolysis bullosa which is a hereditary condition in which minor trauma can result in blister formation. Inherited defects of the basement membrane zone of epithelium (e.g. skin, tongue and oral cavity) results in incomplete cohesion of the overlying epidermis with the lamina propria (or dermis of the skin). It is relatively common in Belgian horses and is due to defective laminin 5 (an anchoring filament protein).

Epidermolysis bullosa in a calf (Medeiros et al. 2012. JVDI. 24:231)
**Diseases of the Oral Cavity**

*Case: E4219-90*

**Morphologic Diagnoses:** Palatoschisis (cleft palate) and mandibular brachygnathia

**Name two sequelae to this condition:** Aspiration pneumonia and inability to nurse properly (starvation)

The condition is usually genetic, but has also been associated with exposure of the dam to lupines (cows), *Veratrum californicum* (ewe), *Crotalaria* (sow), and steroids in primates.
Case: F-28268-00 Twelve year old, FS DSH cat.

Describe the lesion: Focal, bilaterally symmetric areas of ulceration, covered by brownish fibrino-suppurative exudates are present at the edges and the ventral surface of the tip of the tongue.

Morphologic Diagnosis: tongue: focal, bilaterally symmetrical, ulcerative and necrotizing glossitis and stomatitis

What other organ would you like to examine?
The kidneys! This cat had end-stage kidneys. This cat also had marked halitosis or a foul-smelling breath. This is an example of uremic glossitis/stomatitis.
Case A1832-90, 1 year old chickens.

Describe the lesions: Multifocal-coalescing tan-white plaques present on the roof of the mouth and extending to the pharynx and upper esophagus (fibrinosuppurative pseudomembrane).

Morphologic diagnosis: Acute, fibrinous stomatitis, pharyngitis and ingluvitis (inflammation of the crop)

Differentials: Bacterial infection (S. aureus and P. multocida cultured from the lesion), Trichomonas gallinae, Candida sp., Salmonella sp.

Pigeon with severe ingluvitis due to infection with T. gallinae
Case: B-2583-09 One and a half month old female, Charolais cross.

Describe the lesion: the hard and soft palate have numerous approximately 1cm in diameter, poorly defined erosions and ulcers.

Morphologic diagnosis: oral mucosa (hard and soft palate): erosive and ulcerative stomatitis multifocal and moderate, subacute-chronic

Differentials?
This was a case of bovine popular stomatitis (Parapoxvirus) which occurs often with a subsequent illness or immunosuppression. Differentials would be BVD (pestivirus), MCF (ovine herpesvirus 2) as well as vesicular diseases such as foot and mouth disease (picornavirus) or vesicular stomatitis (rhabdovirus) or blue tongue (orbivirus).
Diseases of Dentition and the Jaw

Case: G-9885-97, Ten year old, Angora goat in poor body condition.
Describe the changes: This goat has lost all the inferior incisors and has marked attrition of premolars and molars (abnormal tooth wear) likely explaining the poor body condition.

"The Horse - Its Treatment In Health And Disease",
by J. Wortley Axe
Case: X5312-85 Muskrat

Morphologic diagnosis: Severe malocclusion of the incisors

Case: X8518-95, Four year old, male rabbit
Morphologic diagnosis: Severe malocclusion of overgrown incisors

Overgrown incisors in a rabbit (not that 2 pairs of upper incisors is normal in a rabbit.)
Case: X-11817-89, 1 year old, female dwarf rabbit.
**Describe the lesion:** A very large caseous abscess present in the left mandible and submandibular areas.

**Morphologic diagnosis:** Abscessation and mandibular necrosis

**Potential etiology:** *Pasteurella multocida* is a common cause of abscessation and pneumonia in rabbits and was isolated in this case. *Staphylococcus aureus* would be a good differential. *Proteus, Pseudomona, Bacteroides, Fusobacterium necrophorum, Actinomyces* or *Streptococcus* sp. have also been isolated. Underlying causes are generally due to overgrown teeth, underlying dental disease or trauma from a bite wound.
Case: E-6033-94, Two year old Quarter Horse gelding

Describe the lesion: A large, moderately firm, non-movable, exophytic mass approximately 10cm in diameter is present in the left maxilla. The mass protrudes into the vestibule of the mouth and infiltrates and destroys the maxilla, alveolar bone and part of the hard palate.

Differentials:
Fibrosarcoma (which is what this is based on histology), Osteosarcoma, Chondrosarcoma, Acanthomatous Epulis (odontogenic tumor)

Mandibular mass in a horse with the same differentials. Notice the retained molar. This was an ameoloblastic fibro-odontoma (diagnosed histologically). (Knowles et al. JVDI. 2010: 22:987.)
Case: B25746-12, Newborn calf

Describe the lesion: There is marked fluctuant swelling of the rostral mandibular region, approximately 10cm x 15cm, which is expanding both the soft tissues of the gingival/lip region (with loose incisors) and also involves the adjacent mandibular bone. On cut surface, the mass consists of numerous variably sized, blood filled pockets separated by bands of white fibrous-like tissue.

Diagnosis: Vascular hamartoma of the rostral mandible/gingiva

This calf also had atresia coli, bilateral cryptorchidism, kidney fusion and dysplasia. Vascular hamartomas are rare non-neoplastic growth of mature cells and tissue that originate from the location it is found. This calf had multiple congenital anomalies including the hamartoma likely caused by an error in development.
Diseases of the Esophagus

Case: E14085-98 (1 month old, male Belgian foal)

Describe the lesion: A segment of esophagus is enlarged with necrosis of the mucosa and separation from the muscular layer. The muscular layer is markedly thickened with granulation tissue.

Morphologic Diagnosis: Esophagus: focal, chronic, necrotizing esophagitis. This foal also had aspiration pneumonia. This lesion is typical of a traumatic lesion to the esophagus such as from a stomach tube.

Chronic esophagitis
Case: B-7151-01, One and a half week old calf with a history of scours (diarrhea).

Describe the lesion: A small number of linear erosions are present on the mucosal surface of the esophagus. The rumenal mucosa also had locally extensive erosions. The abomasums was notably edematous with large hemorrhagic ulcers (1-5cm).

Morphologic diagnosis: Multifocal locally extensive (segmental) ulcerative esophagitis, rumenitis and abomasitis, subacute severe

Differentials? Bovine Viral Diarrhea, Malignant Catarrhal Fever, Rinderpest (unlikely as it has apparently been eradicated) In this case, numerous fungal hyphae were found in the lesions causing vasculitis and ischemic necrosis. Severe mycotic infection is thought to be secondary to antibiotic treatment.

Multifocal necrotizing abomasitis due to vascular ischemia from fungal induced vasculitis
Case: B8155-95, Yearling heifer.

Morphologic diagnosis: Impaction (of potato) in proximal esophagus (“choke”)

Can you think of possible sequelae to this? Impaction of the esophagus causes impaired eructation and subsequently bloat due to the accumulation of gas in the rumen. The distended rumen cuts off venous return and results in congestion and hemorrhage of the cranial portion of the body. Other complications to obstruction and impaction of the esophagus are pressure necrosis and lceration of the esophageal mucosa which can result in perforation and severe cellulitis and pleuritis.
Case B240-97 Four year old, female Chianina Angus cross.

**Describe the lesions:** Numerous, variably sized erosions (1mm-1.4cm) of the mucocutaneous junctions of the oral cavity (hard pad, tongue and buccal mucosa). Numerous linear erosions found throughout the esophagus.

**Morphologic Diagnosis:** Oral and esophageal ulcerations and erosions, moderate, multifocal, subacute-chronic

**Likely diagnosis:** Bovine Viral Diarrhea

This is also called mucosal disease, when an animal that has been persistently infected (its mother was exposed to BVD within the first 4 months of gestation) becomes exposed to a cytopathic virus. Differentials for this lesion are Rinderpest, Blue Tongue and Malignant Catarrhal Fever

**Diseases of the Rumen, Reticulum and Omasum**

**Case: B18030-12:** 4 year old, Holstein cow. CBC revealed a left shift with 2+ toxic change; B20625-95 4 year old polled Hereford cow;

**Describe the lesion:** Extending through multiple omasal laminae, are multiple, randomly distributed, variable sized, irregular, round and coalescing areas of necrosis surrounded by a thin rim of black-red discolouration. Multiple similar ulcers are present within the abomasum

**Morphologic Diagnosis:** ulcerative omasitis and abomasitis, multifocal, subacute, moderate to severe

Numerous fungal hyphae were found in these lesions. The pathogenesis relates to ischemic necrosis and ulceration of the mucosal surface from vasculitis induced by the fungi. This occurs secondary to antibiotic treatment which eliminates normal bacterial flora that prevent the spread of fungi encountered in the environment to the blood stream or secondary to rumenal inflammation due to a feed change, stress and anything that alters the rumen environment, allowing fungal organisms to cross the damaged mucosal barrier and enter the bloodstream.
Inflammatory Abomasal Diseases

Case: X33750-11: Thin bison bull; O12177-91 (lamb)

Describe the lesion: The mucosal surface of the abomasums is pale, but has irregularly roughened or “cobblestone” appearance. It looks like Moroccan leather.

Morphologic diagnosis: abomasums: moderate, generalized, chronic abomasitis with mucosal glandular hyperplasia

Suspected etiology:

This change of hyperplastic abomasal glandular mucosa is consistent with Ostertagia sp infection (larvae are encysted within the glands). Ostertagiosis is a common problem in cattle and sheep and has also been reported in wild ruminants. Type 1 disease occurs in calves and cattle when the adults emerge in the winter and spring. Type 2 disease occurs when thousands of L4 larvae emerge at once, often associated with a stressful event (such as calving). Infected animals generally exhibit decreased appetite, intermittent diarrhea and wasting. Decreased feed intake and protein loss into the GI tract are largely responsible for the weight loss. Environmental stresses (sudden changes in weather, breeding or re-grouping of animals, etc) often result in worsening of clinical disease.
Case: O4886-98: Female lamb found dead.

Describe the lesion: The abomasum is enlarged and its wall is markedly thickened. The serosal surface of the abomasums had multifocal to locally extensive hemorrhagic areas covered with fibrin strands. The abomasal folds were markedly thickened and the submucosa contained numerous coalescing emphysematous bullae. The mucosa has locally extensive areas of erosion and hemorrhage covered with delicate strands of fibrin.

Morphologic diagnosis: abomasum: erosive and emphysematous, marked, transmural, diffuse, acute abomasitis.

This lamb also had an associated fibrinous peritonitis. In this case, *Pasteurella (Manheimia) hemolytica* was cultured from the abomasum.
Diseases of the stomach

Case: P22682-04: 11 week old piglet.

Describe the lesion: The stomach is distended with dark brown-black fluid and there is deep ulceration of the entire esophageal portion of the stomach. (the intestine contained abundant “tarry” black content (melena)).

Morphologic Diagnosis: stomach: gastric ulceration (pars esophagea) with hemorrhage

Specific causes of gastric ulcers in pigs are unknown, but a number of factors have been attributed to increasing the acidity in the stomach such as the use of growth promoters, fine feed, hot weather, transportation, deprivation of food or water and mixing of pigs. Basically, anything that can decrease feed intake (such as another systemic illness) can also result in gastric ulcers.
Neoplasia

Case E15012-12: Ten year old mare with a history of decreased weight.

Describe the lesion: In the pyloric region of the stomach there is a 15cm in greatest dimension, polypoid, multinodular mass. Multifocal ulcers are seen in the glandular portion of the gastric mucosa, adjacent to the tumor. There are also several, variably sized, areas of capsular fibrosis on the diaphragmatic surface.

Morphologic Diagnosis: stomach: pyloric region: multifocal to coalescing ulcers and neoplasia

Differentials: This was a pedunculated leiomyoma, other possibilities: fibroma, gastrointestinal stromal tumor or fibropapilloma. Gastric leiomyomas are uncommon, benign smooth muscle tumors in horses. The location of being proximal to the pyloric sphincter may have impaired the gastric emptying process. There was also a pseudodiverticulum as an out pouching from the lumen of the esophagus and evidence of necrosis from a previous esophageal foreign body.
Case E4373-08. Female miniature horse with a history of colic. **Describe the lesion:** There is a 6cm in diameter, firm, well delineated mass within the wall of the fundic region of the stomach. This horse had colic due to verminous arteritis and multifocal intestinal hemorrhagic infarction. The mass in the stomach was a gastrointestinal stromal tumor or GIST. GIST is a term that encompasses a group of gastrointestinal mesenchymal tumors which are thought to originate from the Interstitial cells of Cajal that are part of the autonomic nervous system. Differentiation of these tumors from leiomyoma is by immunohistochemical staining for CKIT (CD117). This tumor was considered an incidental finding at necropsy.
Case C23298-99: Ten year old, female-spayed Newfoundland Dog with a 3 month history of weight loss and in appetence. **Describe the lesion:** There is an irregular solid thickening of the gastric mucosa and submucosa. **Give differentials:** Lymphosarcoma, Gastrointestinal stromal tumor, leiomyosarcoma, fibrosarcoma, carcinoid (neoplasms arising from endocrine cells within the gastrointestinal mucosa), gastric adenocarcinoma (what this was).

![Gastric carcinoma from a dog](http://quizlet.com/6206199/pathology-pictures-flash-cards/)

![Leiomyoma](http://quizlet.com/6206199/pathology-pictures-flash-cards/)
Case B7477-02

Describe the lesion: At the junction between the esophagus and reticulum is a multilobulated, white, papillomatous, raised, firm mass about 8cm in greatest diameter.

Morphologic Diagnosis: Esophageal papilloma (multiple)

What is a sequela of this condition? Secondary rumenal tympany (bloat) due to interference with eructation.

A fibropapilloma which is a papilloma associated with abundant fibrous connective tissue. Papillomas and fibropapillomas are both associated with bovine papillomavirus infection and are also referred to as warts. Did you know that equine sarcoids have recently been associated with bovine papillomaviruses types 1 and 2? The method of transmission is thought to be from insect vectors (face flies).
Case C194-96 Eleven year old, male, Irish Wolfhound.

Describe the lesion: A 1cm, firm, tan, nodule is present on the serosal surface of the stomach. Four areas of ulceration measuring up to 1cm in diameter are seen in the serosal surface of the stomach which on cut surfaces reveals tan, firm tissue. Give differentials: metastatic neoplasia (fibrosarcoma, peripheral nerve sheath tumor, lymphosarcoma), granulomatous inflammation. This was a metastatic sarcoma. Metastases were present in many organs.
Case X9606-08 Mature, female alpaca

Describe the lesion: Expanding and thickening the right lateral wall of the stomach (compartment 1) are multiple to coalescing, nodular, tan-white masses ranging from 0.5-2cm. An approximately 20 x 15cm poorly defined, irregularly shaped area of the stomach is affected. The corresponding mucosal surface is thickened, multifocally ulcerated and necrotic with a moth eaten appearance. There are focal adhesions of the mesentery to the serosal surface of the stomach. **Morphologic diagnosis:** Gastric neoplasia (differential would be a disseminated fungal infection). This was a squamous cell carcinoma with peritoneal and mesenteric seeding and metastasis to the liver, lymph node and diaphragm. This neoplasm usually originates from the squamous mucosal epithelium of the forestomach.