Pathology of the Alimentary System

Lecture 2
Stomatitides & oral tumors

Enrique Aburto
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2.1.2 Vesicular stomatitis (VS)

- **Rhabdovirus** (VSI & VSNJ in US)
- **Horses**, calves & pigs (no sheep or goats)
- Outbreaks in spring, summer & fall
- Insect vectors involved
- Milder than FMD, self-limiting
- Flu-like symptoms in humans

Extensive ulceration of the tongue secondary to broken vesicles; VS, horse.

http://horsetalk.co.nz/2012/08/04/first-case-vesicular-stomatitis-colorado-six-years/#axzz2gmLgZ
2.1.3 Swine vesicular disease (SVD)
- Enterovirus (Picornaviridae)
- Only swine (Europe & Asia)

2.1.4 Vesicular exanthema (VE)
- Calicivirus
- In US until eradicated in 1956
- VE serovars are variants of San Miguel sea lion virus
2.2 Erosive & Ulcerative Stomatitides

**Pathogenesis:**
- Epithelial necrosis & inflammation without vesiculation
- In squamous epithelium of mouth (may extend to esophagus & forestomachs)

**Erosion:** Discontinuity of a body surface due to partial loss of surface epithelium

**Ulcer:** Full-thickness epithelial loss revealing the underlying BM/connective tissue
Erosive & Ulcerative Stomatitides

Some specific diseases/conditions:

- BVD
- MCF
- Rinderpest
- Peste des petits ruminants
- Bluetongue
- Feline calicivirus & Felid herpesvirus 1
- Uremia, foreign bodies, feline eosinophilic granuloma complex, NSAD’s, vitamin C deficiency

Sharp discrete erosions & ulcers, MCF

*Pathologic Basis of Veterinary Disease, 4th ed., Mosby-Elsevier*
Pathogenesis of uremic stomatitis

- High blood & salivary urea → oral bacteria transforms urea into ammonia → caustic injury
- High BUN → vascular damage → thrombosis → ischemia → infarction

Uremic ulcers in dogs
2.3 Papular Stomatitides

**Papule:** Elevated dome-shaped or flat-topped lesion 1 cm or less across

- Parapoxviruses (Contagious ecthyma & Bovine papular stomatitis)
  - Epithelial degeneration, hyperplasia & inflammation → papule → ulceration & slow healing
- Mainly young animals
- Both are zoonotic (Orf & Milker’s nodule)
Contagious ecthyma (scabby mouth; top). Lesions in sites of trauma (lips, udder, teats, coronary bands, etc.)

Bovine papular stomatitis (bottom). Round, sharply demarcated ulcers, plaques and papules. Noah's arkive
Coin-shaped papules & ulcers in papular stomatitis, cow

Ballooning degeneration & intracytoplasmic inclusion bodies (arrows) in papular stomatitis, cow
2.4 Necrotizing (deep) Stomatitides

- Often secondary to erosions/ulcers & trauma
- Opportunistic bacteria penetrate mucosa and invade deeper tissues
- Results in chronic inflammation (abscess, granuloma or cellulitis)
2.4.1 Oral necrobacillosis

- Cattle (calf diptheria), sheep & pigs
- *Fusobacterium necrophorum* (Gram-negative, filamentous)
- Ulcers/erosions are often covered by yellow-grey pseudomembranes

Pathologic Basis of Veterinary Disease, 4th ed., Mosby-Elsevier
2.4.2 Actinobacillosis *(wooden tongue)*

- *Actinobacillus lignieresii* (Gram negative)
- **Cattle**, sheep, pigs & horses
- Granulomas with club colonies in oral soft tissues (tongue) & regional lymph nodes

Granulomatous glossitis. Loss of muscle of the tongue and its replacement by fibrous tissue during healing. Note the white fibrous tissue (*arrows*) and the focus of granulomatous inflammation (*).
2.4.3 Actinomycosis (lumpy jaw)

- *Actinomyces bovis* (Gram positive)

- Mandibular osteomyelitis (pyogranulomatous) with fistulae formation

- Club colonies

Pyogranulomatous stomatitis & mandibular osteomyelitis, lumpy jaw, bovines.
2.4.4 Noma

- Primates, humans & dogs
- Fusiform bacteria & spirochetes (anaerobic)
- Severe necrotizing gingivitis (gangrenous stomatitis)
- In debilitated individuals (malnutrition, underlying infections, immunodeficiency)

Noma. Ulcerative gingivitis in a primate (top). The necrotic tissue may slough to leave deep ulcers or perforation of the cheek to leave a gaping defect (as in the girl at the bottom)
2.5 Eosinophilic Stomatitides

- Syn: Oral eosinophilic granuloma / ulcer
- Cats, rarely young dogs (Siberian husky)
- Upper lip, gums, palate, tongue, pharynx
- Many eosinophils + flame figures + chronic inflammatory cells
- Immune-mediated?

Eosinophilic granuloma, Siberian Husky. Ulcerated masses underside the tongue and floor of the oral cavity.

Eosinophilic granuloma complex (cats)

- Eosinophilic ulcer (or granuloma)
- Linear (“collagenolytic”) granuloma (cutaneous)
- Eosinophilic plaque (cutaneous)
Feline eosinophilic granulomas

Eosinophilic granuloma, cats. Confluent granulomas in the tongue. Histo: Ulcerated skin (left) with fragmented collagen (arrows) is bordered by degranulated eosinophils.

Swollen and ulcerated upper lip. Histo: Fragmented collagen (arrows) is bordered by a row of macrophages (M), multinucleated giant cells (G), and degranulated eosinophils (E), somewhat resembling a flame (“flame figure”).
2.6 Lymphoplasmacytic Stomatitis

- Idiopathic, probably immune-mediated in cats

- Bacteria or calicivirus (FCV) in FIV / FeLV infected cats

- Forms include
  - Gingivitis-stomatitis-pharyngitis complex
  - Lymphoplasmacytic stomatitis

Lymphoplasmacytic stomatitis, red, inflamed gums, cat. Inflammatory cells are mostly lymphocytes & plasma cells (inset)
2.6 Chronic ulcerative paradental stomatitis (CUPS)

- **Syn**: Ulcerative stomatitis & lymphocytic-plasmacytic stomatitis
- Associated with dental plaque
- Older dogs

*CUPS* in a Greyhound. Note the areas of hyperemia and ulceration in the buccal mucosa (“kissing ulcers”). There is also periodontal disease.

http://www.toothvet.ca/PDFfiles/cups.pdf
3. Oral growths (hyperplasia & neoplasia)

- Common in dogs & cats
- Clinical signs
  - Discrete mass or masses, often ulcerated
  - Dysphagia, ptyalism, halitosis, facial swelling
- Benign & malignant forms
- Histopathology for diagnosis
Oral growths - benign

3.1 Gingival hyperplasia
- Simple overgrowth of gum tissue.
- Very common in adult brachycephalic dogs

Epulis
- “Gingival growth”
- Neoplasia of the periodontal ligament
3.2 Papilloma (wart)

- Papovavirus-induced benign tumor
- Young dogs, calves and foals
- Single or multiple (papillomatosis)
- Pedunculated, papilliform or cauliflower-like masses.
- May regress spontaneously (long–lasting immunity)
Papilloma. Neoplastic keratinocytes in the stratum spinosum showing some cytopathic effects such as expanded blue-gray cytoplasm and enlarged nuclei. There are smudgy intranuclear inclusion bodies that marginate the chromatin (arrows). Few prominent keratohyalin granules and epithelial cells with abundant clear cytoplasm, and condensed nucleus, are also seen.

Papilloma, dog. Note the papillary projections (arrows), often called fronds, composed of hyperkeratotic epidermis covering a collagenous core.


Papilloma, bovine. Note finger-like projections from the surface.

http://www.askjpc.org/wSCO/wsc_showconference.php?id=326
3.3 Squamous cell carcinoma

- Most common oral tumor in cats
- Locally invasive nodular mass, often ulcerated
- Poorer prognosis in cats, or if tonsillar in dogs

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3.4 Malignant melanoma

- Most common malignant oral tumor in dogs
- Risk factors: Small breeds, oral pigmentation
- Poor prognosis
3.5 Fibrosarcoma

- Less common than SCC & melanoma
- Better prognosis

Examples of oral fibrosarcomas: cat (left) and dog (right)