Pathology of the Salivary Glands
MHD Course
Tuesday, 1/2/2018- 9:00 am
Mohammed Atieh D.O., M.S.

Lecture Objectives

- Review and understand the function of the oral cavity and function/histology of normal salivary glands
- Know and understand the clinical and pathological features of the following entities:
  - Sialadenitis, Mumps salivary gland infection
- Know and understand the two most common benign and most common malignant neoplasms seen in the salivary glands, as well as the pathology and clinical features associated with them:
  - Pleomorphic Adenoma (benign)
  - Warthin Tumor (benign)
  - Mucoepidermoid Carcinoma (malignant)

“The Oral Cavity, Briefly”

- Represents the first part of the digestive “food” tube
  - Bound by the lips, hard palate, floor of mouth, cheeks, oropharynx
- The tongue is part of the oral cavity; the salivary glands are not
- Serves to initiate digestion via salivation, mastication and propulsion of the food bolus into the oropharynx
  - Salivary amylase, lingual lipase and lysozymes begin the digestive process while mastication increases the surface area for enzymes to act upon and eases/facilitates swallowing
- Once the food bolus is propelled into the oropharynx, it will then descend into the esophagus and be pushed toward the stomach via esophageal peristalsis
  - The epiglottis protects the airway during swallowing to avoid aspiration
“The Salivary Glands”

- Exocrine glands secreting saliva (enzymes and mucus)
  - Major:
    - Parotid: Largest, purely serous
      - Bilateral, anterior to the ear, deep lobes (divided by facial nerve)
      - Drains via Stensen duct through inner buccal mucosa
      - Only gland that can have intraparenchymal lymph nodes
    - Submandibular: Next largest, mixed, serous>mucinous
      - Bilateral, deep floor of mouth and lateral mandible
      - Drains via Wharton duct into sublingual caruncle, just lateral to frenulum
    - Sublingual: Smallest of major glands, mixed, mucinous>serous
      - Bilateral, anterior floor of mouth behind mandible
  - Minor:
    - Many collections of salivary tissue within the oral cavity
    - Mixed, serous or mucinous
    - Salivary Unit: acinus and draining duct system

Clinical-Pathological Entities of the Salivary Glands
Sialadenitis and Sialolithiasis

- Inflammation of the salivary glands
  - Most often affects the Parotid and Submandibular glands
  - Can be acute, chronic or recurrent
    - **Acute:**
      - Ascending bacterial infection (Staphylococcus aureus, Streptococcus Viridans), typically secondary to sialolithiasis (stone blocking main duct) and reduced saliva flow
      - Neutrophils, +/- necroinflammation/abscess formation
      - Typically unilateral when associated with sialolithiasis
    - **Chronic/Recurrent:**
      - Obstruction
      - Sclerosis (congenital or acquired (chewing on duct opening and scarring))
      - Chronic sialadenitis
      - Can be associated with mucus retention/mucocele formation (Submandibular)
      - Neoplasms
      - Sarcoidosis, sarcoidosis, TB, etc.
    - **Symptoms:**
      - Swelling and pain in affected gland
      - Fever (Acute)
      - Dry mouth
      - Fibrosis (hard salivary gland from recurrent inflammatory injury and fibrosis)

Mumps

- Mumps sialadenitis is the most common cause of acute, painful bilateral parotid swelling
  - Most commonly affects children
  - Paramyxovirus
  - +/- Orchitis (can lead to sterility), pancreatitis or aseptic meningitis
  - Elevated serum amylase when salivary gland or pancreas involved
  - Highly infectious
  - Supportive treatment
Benign: Pleomorphic Adenoma
(Benign Mixed Tumor)

- Most common benign salivary gland neoplasm
  - 60% of Parotid (angle of mandible), SM and minor salivary gland neoplasms
  - F>M (except for children/adolescents 5-15, then M>F)
  - Peak incidence in 4th/5th decades
  - Painless, slow growing, well-circumscribed mass, can become very large if neglected
  - Can transform to malignancy (Carcinoma ex-PA), 7-10% of people
  - Can result in facial nerve damage and associated deficits

- Neoplasm composed of glandular/ductal epithelial structures and myoepithelial cells with variable morphology (spindle, epithelioid, etc.) present within a mesenchymal stroma (can be myxoid, mucochondroid or hyalinized, etc.)

- Treatment is surgical excision
  - Recurrence rate of 20-65% if enucleated (likely as a result of incomplete resection due to microscopic disease left behind)
  - Superficial or total parotidectomy or SM gland resection is more definitive
Benign: Warthin Tumor (Papillary Cystadenoma Lymphomatosum)

- Biphasic tumor composed of bilayered oncocytic cells ("tram-track" appearance) forming cysts and papillary fronds within a dense lymph node-like stroma
- Second most common benign salivary gland tumor, most commonly involving the Parotid gland
- M:F, 6th to 7th decades
- Smoking likely an associated etiologic factor (tumor typically found in smokers)
- Asymptomatic and slow growing tumor
- Very low malignant transformation rate of epithelial component (1%; usually squamous cell carcinoma); malignant transformation of the lymphoid component is more common (low grade lymphoma)
- Bilateral in 10% of patients
- Cyst fluid often brown-colored, viscous (like used motor oil)
- Treatment is surgical excision from lumpectomy to parotidectomy
- 4-25% recurrence rate
Malignant: Mucoepidermoid Carcinoma

- Most common malignant salivary gland tumor in children and adults
- Usually involves the Parotid gland, but can occur in other major and minor salivary glands
- F>M (mean age 47)
- Usually painless, fixed, slowly growing mass (pain when nerve is involved)
- Neoplasm composed of mucus cells, intermediate cells and epidermoid (squamous) cells with variable cystic/solid components present
- Treatment is surgical excision with/without neck dissection (palliative radiotherapy in non-resectable cases)
- Local recurrence rate of 40%
- Distant spread or local lymph node involvement (15%)
- Prognosis depends on staging at diagnosis, site (SM gland with worse prognosis), grade of tumor and adequacy of surgical resection
- Overall 80% 5-year survival rate (most are low grade)