Head and Neck Cancer

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Outline
• H&N cancer at a glance
  - Epidemiology
  - Rule of 80
  - Locations
• Nasopharyngeal cancer
• Oropharyngeal cancer
• Oral cavity cancer
• Laryngeal cancer
  - Anatomy
  - Surgical airways
• Conclusions

Epidemiology
• ~3-7% of all cancers
  - Benign
    - Inflammatory lymphadenopathy
    - Lipomas
    - Sebaceous cysts
    - Hemangiomas
  - Congenital
    - Branchial cleft cysts
    - Lymphangiomas
    - Thyroglossal duct cysts
    - Dermoids
    - Teratomas
  - Malignant
    - Lymphomas
    - Neuroendocrine
    - Skin cancers
      • Melanoma
      • BCC
      • SCC
    - Thyroid
    - Sarcomas

Rule of 80
• Applies to neck masses
• Applies to adults

General Patient Presentation
• Neck mass
• Weight loss
• Painful swallowing
• Difficulty swallowing
• Hemoptysis
• Voice changes
• Shortness of breath
**General Workup**

- Thorough H&N examination
  - Skin
  - Ears
  - Nasal cavity
  - Oral cavity/oropharynx
  - Nasopharynx, hypopharynx, and larynx
  - Neck
- Flexible fiberoptic examination

**Mucosal SCC Locations**

- Nasopharynx
- Oropharynx
- Oral cavity
- Larynx
- Trachea
- Esophagus
- Nasal cavity
- Sinus

**Imaging Options**

- CT with contrast
- PET scan
- MRI with gadolinium
- Ultrasound

**Tissue Diagnosis**

- No treatment plans can be made without tissue
- Options
  - Direct biopsy
    - In office
    - Direct laryngoscopy in OR
  - FNA
    - 80-90% accurate

**Most Relevant Causative Agents**

- Smoking
- Drinking
  - Additive effect
- HPV
  - Base of tongue and tonsillar cancers
  - Rising in incidence
  - Younger, non-smoking patients

**Staging of H&N Cancer**

- TNM staging
  - Tumor size
  - Nodal status
  - Metastasis
- NCCN staging
  - I—T1N0M0
  - II—T2N0M0
  - III—T1N0M0 or TanyN1M0
  - IV—T4, N2+, or M1
Importance of Correct Staging

- Guides treatment options
  - Unimodality
    - T1N0
    - T2N0-1
  - Multimodality
    - Any T, N2+
- Allows for accurate patient counseling
  - Treatment planning
  - Outcomes

Treatment Options

- Stage I and II disease
  - Surgical resection
  - Primary radiation therapy
  - The decision between the two depends on:
    - Predicted outcome
    - Morbidity of treatment
  - Cure rate ~90% (stage I), ~75-80% (stage II)

Stage III and IV disease

- Multimodality therapy
  - Chemoradiation therapy +/- surgical salvage
  - Surgery + post-operative radiation
    - Rarely additional post-operative chemotherapy
  - The decision between the two depends on:
    - Predicted outcome
    - Morbidity of treatment
  - Cure rate ~20-70% (+HPV status=better responses to treatment)

Surgery

- Goal #1: remove the primary tumor
  - Ideally removed en bloc
  - Want 1cm margins
- Goal #2: address the neck
  - Known nodal disease
  - High risk of occult metastasis

Surgery—Neck Nodes

- Different locations of tumors will metastasize to predictable nodal basins
  - Oral cavity: Ia/Ib then II-IV
  - Oropharynx: II-IV
  - Nasopharynx: II-IV and V
  - Larynx: II-IV
  - Thyroid: VI then II-V

Radiation Therapy

- External beam (often IMRT)
- Given in daily fractions
  - # of fractions depends on the goal
  - Administered 5 days a week, for 6 weeks in most patients
  - Most patients receive 66-70 Gy
    - There are some research protocols looking at giving lower dose XRT for certain diagnoses
  - Causes breaks in DNA
    - Mitotic cell death in rapidly dividing cells
**Radiation Therapy—IMRT**
- Achieved with 9 beams directing radiation
- Each target and noninvolved structure are given Importance Factor or weight
- Weights used to plan therapy using varied beam intensities

*Harrison LB, Sessions RB, Hong WK. Head and Neck Cancer. LWW. Philadelphia, PA 2009.*

**Chemotherapy**
- Typically administered concurrently with XRT
- Various agents are used
  - Cisplatin/carboplatin
  - 5-FU
  - Erbitux
- Occasionally used for induction
  - Bulky tumors
  - Shrink the tumor bulk prior to concurrent

**Changing Gears**
- Focus on:
  - Nasopharyngeal carcinoma
  - Oral cavity
  - Oropharynx
  - Larynx
- Practical information
  - Surgical procedures
  - Post-operative care/expectations
  - Nutrition considerations

**Nasopharyngeal Carcinoma**
- WHO classification
  - I: keratinizing SCC, NOT related to EBV
    - Worst prognosis
  - II: keratinizing undifferentiated
  - III: undifferentiated, related to EBV infection
    - Best prognosis
- Presenting symptoms
  - Neck mass
  - Unilateral serous effusion/otitis media*
- Staging different
  - Based on spread beyond the nasopharynx
- Treatment
  - Surgery not typically part of the treatment
    - Difficulty with access
    - Difficulty clearing margins
  - Radiation + / - chemotherapy
  - Rarely require inpatient treatment

**Oral Cavity Carcinoma**
- Includes Alveolar Ridge, Floor of Mouth, Oral tongue, Buccal mucosa
- Treatment:
  - Typically surgery first
  - Radiation post-op if needed
  - Extent of surgery depends on tissue involved
  - Reconstruction plan depends on functional deficit from surgical resection
Oral Cavity Carcinoma—Tongue

- Partial glossectomy, hemiglossectomy, total glossectomy
  - Truly only need a sliver of native tongue to achieve adequate speech and swallow
- Depth of invasion is the MOST important factor, not size
  - 4mm of depth equates to ~30% risk of occult metastasis to the neck

Oral Cavity Carcinoma—Floor of Mouth

- Floor of the mouth is the barrier between the oral cavity (dirty) and the neck (sterile)
- Bigger tumors require neck dissection
  - Creates a connection between the mouth and the neck that needs to be filled

Oral Cavity Carcinoma—Floor of Mouth

- Some tumors involve the mandibular bone requiring marginal or segmental resections
- All of these resections frequently leave large tissue defects that require a Free Flap Reconstruction

Oral Cavity Carcinoma—Floor of Mouth

- Practical information
  - All patients will have a trach
    - Temporary, typically 5-7 days
    - Prevent airway obstruction from flap edema
  - All patients will have feeding tube
    - Often nasal
    - Frequently start to eat orally after 7-10 days
    - Some patients require longer tube feeding
- General post-op course
  - Home in 7-10 days, unless otherwise debilitated
  - May need home health
  - Physical therapy starting immediately upon transfer to the floor

Oropharyngeal Carcinoma

- Causes
  - Older patients think smoking +/- drinking
  - Younger, non-smoking patients think HPV
- Includes: tonsil, soft palate, base of tongue, lateral and posterior pharyngeal walls
Oropharyngeal Carcinoma

- Treatment
  - Frequently chemoradiation
  - HPV positive patients respond more favorably
  - Some tumors amenable to TORS (transoral robotic surgery)

- TORS patients frequently require inpatient stay for a few days
  - Typically start a liquid diet post-op
  - Can have temporary dysphagia depending on extent of resection
  - Similar to extended tonsillectomy

Larynx Carcinoma

- Subcategories of the larynx
  - Supraglottis (epiglottis, aryepiglottic folds, false vocal folds)
  - Glottis
  - Subglottis (very rare to have primary cancer)

- Function of larynx
  - Plays a role in staging
  - Plays a role in determining surgery vs radiation

  - Try very hard to Preserve the larynx
    - Voicing
    - Swallowing
    - Airway protection

- Radiation/chemoradiation
  - Tumors swell before they shrink
  - Patients sometimes need temporary trachs
  - Will have persistent hoarseness after treatment
  - Will have persistent glottic edema after treatment

- Surgery
  - Partial laryngectomies very rare
    - COPD
    - Aspiration
  - Total laryngectomy
Larynx Carcinoma

- Hospital stay typically 5-10 days
- Will have trach tube in for 1-10 days
  - Sometimes nothing
  - Sometimes lary tube
- Will be tube fed for 7-14 days
  - Pharyngeal closure needs time to heal before swallowing

Tracheostomy vs. Laryngectomy

- Fundamentally Different!!!!
- Trach
  - Airway remains connected to mouth/nose
- Laryngectomy
  - NO connection to mouth or nose

Tracheostomy vs. Laryngectomy

- Trach
  - Temporary or permanent
  - Can speak around the trach
- Laryngectomy
  - Permanent
  - Other methods of speech

Post-laryngectomy Speech

- 4 Options
  - Writing
  - Electrolarynx
  - Transesophageal prosthesis
  - True esophageal speech

Ultimate Goals

- Provide the highest cure rate
- All patients discussed at a Multidisciplinary Tumor Board
- Cause the least morbidity
- Rehabilitate to as close to pre-treatment functional levels as possible
  - Speech
  - Swallow
  - Cosmetics
  - Comprehensive Head & Neck Cancer Rehab Program

Conclusions

- H&N cancer accounts for 3-7% of all cancer
- 80% of neoplastic disease is malignant
  - Various etiologies
  - Most common is SCC
- Staged by TNM scale (size, nodal status, mets)
  - Minor variabilities to this by location
- Treated with surgery, radiation, chemotherapy
- Ultimate goal is cure with minimal functional morbidity

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