Disclosures

• NONE
OVERVIEW

• Traditional Head and Neck Cancer Risk Factors
• The emerging epidemic
• Staging Changes
• Why Vaccinate?
• Screening?
• Evaluation and management of oropharyngeal cancer

Head and Neck Cancer

• Cancers of the oral cavity, pharynx, larynx, sinuses, neck, thyroid, and salivary glands
• 90 % squamous cell carcinoma except thyroid and salivary gland
• Epidemiology
Head and Neck Cancer

*Incidence Over Time*

- **Year**  | 2010  | 2012  | 2014  | 2016  | 2018
- **OC/OP** | 36,540 | 40,250 | 42,440 | 48,330 | 51,540
- **Larynx** | 12,720 | 12,360 | 12,630 | 13,430 | 13,150
- **Sinus +** | 5,370  | 5,660  | 5,710  | 6,000  | 6,110
- **Subtotal** | 54,630 | 58,270 | 60,780 | 67,760 | 70,800
- **Thyroid** | 44,670 | 56,460 | 62,980 | 64,300 | 53,990
- **Total**   | 99,300 | 114,730 | 123,760 | 131,060 | 124,790

**Risk Factors**

- Male Sex  2:1 ratio
- **TOBACCO** especially smoking 80-90%
- Alcohol especially with tobacco and at high doses alone
- Viral EBV, HPV, HIV
- Diet low fruits and vegetable, low fiber
- Industrial exposures
- Age
Something Changed

- Different demographic
- Better prognosis
- Increasing incidence

Human Papilloma Virus

- Tonsil and Base of Tongue
- Results in overexpression of p16
- Incidence increasing 5% per year
Head and Neck Cancer

*Incidences Over Time*

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HPV in HNSCC

- HPV in 70+% or more of Oropharyngeal SCC (Tonsil and Base of Tongue)
- Clinically
  - Younger
  - Males twice as common
  - Less tobacco and alcohol exposure but is associated with marijuana
  - Better prognosis
7th Edition Oropharyngeal Staging of HPV-associated CA

Over 70% of HPV associated OPC presented as Stage IVa

HPV in HNSCC

• 53 yo white male executive with less than 10 pack year history of smoking with painless lumps in both sides of his neck
• TNM as of December 31, 2017 was T1N2cM0
• Stage IVa
What does it mean to have stage IV cancer?

Ingmar Bergman, The Seventh Seal

Mark Gilbert, Portraits of Care

•Head and Neck Cancers—Major Changes in the American Joint Committee on Cancer Eighth Edition Cancer Staging Manual

• William M. Lydiatt, MD; Snehal G. Patel, MD; Brian O’Sullivan, MD; Margaret S. Brandwein, MD; John A. Ridge, MD, PhD; Jocelyn C. Migliacci, MA; Ashley M. Loomis, MPH; Jatin P. Shah, MD.
Evolution of Staging of HPV associated OPC

• Most presented as stage III or IV previously
• HPV OPC recognized as a new disease entity
• January 1, 2018 8th Edition of AJCC staging manual implemented
• Majority of patients are now stage I

Overview of HPV OPC Staging 2018

• T category is unchanged
• N category is significantly different
• Stage grouping is different
• Only M1 disease is stage IV
• Tobacco use (Smoking) ultimately was not incorporated
• T2N2M0
• 7th Ed. Stage IVa
• 8th Ed. Stage II

Clinical TNM Stage Grouping 8th Ed. p16+ Oropharyngeal Cancer

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M1 is designated Stage IV
Why Vaccinate?

HPV infections

- 75% of women and 80% of men have been exposed
- 10-15% of these infections are of the high risk types (16, 18, 31, 33, 35, 45, 51, 52, 56, 58, 59 and 68)
- Sexually transmitted virus including oral sex
- OPC is more and more caused by HPV
Who’s at risk?

- Greater than 5 lifetime sexual partners (But...)
- Smokers (But...)
- Marijuana users (But...)


Screening for OP Cancer

- OPC is still relatively rare
- PAP?
- No good screening tests currently exist
PREVENTION

Tonsillectomy?

• Tonsillectomy may slightly lower risk of development but not recommended as would need to do approximately 10,000 tonsillectomies to prevent one cancer
• Mortality is 1 in 15,000

PREVENTION

HPV Vaccination

- No evidence yet for prevention of Tonsil and BOT cancer
- Vaccination for prevention of high grade cervical dysplasia and anogenital disease
  - Quadriivalent and nonavaliant vaccine (16, 18, 6, 11) FDA approved as safe and effective for use in females ages 9-26
  - Equally effective in boys in reducing infection risk
  - Other strains of HPV are not blocked
Evaluation of Neck Lumps

• Differential Diagnosis
  • Congenital
  • Infectious
  • Neoplastic
  • Traumatic

History

• Age
• Previous or family history
• Pain or no pain
• Incidental or causing symptoms
• Growth rate
• Who noticed it?
Presenting Signs and Symptoms

- **Hoarseness** or voice change that doesn’t resolve in 2-3 weeks
- **Otalgia** especially with swallowing
- **Unilateral** enlarged tonsil
- **Painless** lump in neck

Physical Examination

- Location, location, location
- Round versus oval, hard versus soft, fixed versus mobile, moves with swallowing
- Careful Head and neck examination (mouth, teeth, pharynx, larynx, skin, etc)
- Associated signs (cranial nerves, other adenopathy, general health of patient)
Head and Neck Metastases

- **Location**
  - Higher in the lateral neck likely from oral cavity or oropharynx
  - Posterior neck likely skin or nasopharynx
  - Inferior neck thyroid, larynx or pharynx

- **Findings**
  - Hard mass
  - Single or multiple
  - May or may not be moveable

**Imaging Studies**

- **Computed tomography (CT)**
  - Bone detail
  - Nodal definition

- **Magnetic resonance imaging (MRI)**
  - Excellent soft tissue definition
  - Nodal definition

- **Positron emission tomography (PET)**
  - Evolving role in evaluation of head and neck malignancies

- **Ultrasound**
  - Helpful in obtaining a biopsy and characterizing number of abnormal nodes although doesn’t give depth like CT or MRI
Branchial Cleft Cyst (thin walled)

- **Location**
  - Lateral upper neck most common
  - May also occur around the ear or low in the neck around the thyroid

- **Findings**
  - Firm but not hard
  - May be infected and tender
  - Typically limited mobility of the mass

Inflammation

**Infectious**
- Viral
  - HIV
- Bacterial
  - Abscess
- Mycobacterial
  - Primarily Atypical
- Fungal
  - Histoplasmosis

**Inflammatory**
- Rheumatoid
Reactive Lymph Nodes

- **Location**
  - Anywhere in the neck but especially upper jugular and spinal accessory nodes

- **Findings**
  - Oval
  - Firm
  - May be tender
  - May be multiple

Ultrasound Findings

- Oval node
- Fatty hilum
- Longer than wide 2:1 ideally
HPV Positive SCC Neck

Enlarged Tonsil with painless cystic neck mass

Treatment Algorithm

- Biopsy if suspicious
- If obvious, referral is appropriate
- Surgical oncology is usual entry into system
- Patient will get biopsy, possibly scans (CT), metastatic survey, physical exam
- Dental oncology evaluation
- Consultations (cardiology, etc.)
- Presentation at multi-disciplinary board
p16 Expression

- Optimal cut-off for p16 overexpression is $\geq +2/+3$ nuclear staining intensity with $\geq 70\%$ distribution
  - (a) Diffuse, robust nuclear and cytoplasmic overexpression is seen
  - (b) Rarer positive pattern of p16 overexpression limited to nuclei
  - (c) Nonspecific cytoplasmic p16 expression associated with limited staining distribution, staining pattern excluded from p16+ chapter

Treatment Decision Tree

- Tumor factors-stage
- Health care factors
- Patient factors
Tumor Factors

• Whether the cancer can be removed transorally
  • Teeth, Tongue, Trismus,
• Whether the neck can be treated surgically
• Cure potential
• Long term outcomes from treatment

Health Care Factors

• Number of patients treated in the Center
• Availability of all options of therapy (Transoral, radiation, chemotherapy)
• Insurance
It is a person that has the disease and they define how to best be treated

Patient Factors

- Patient wishes
- Medical condition
- Occupation
- Distance from treatment facilities
- Mental status of patient
Tumor Board

• Physicians from multiple specialties
• Dental Oncologists
• Speech and Language Pathologists
• Nurses from research and clinical side
• Students and residents
• Physically look at pathology and radiology
• Arrive at a consensus opinion

HNC Treatment Options

• Surgery
• Radiation Therapy
• Chemotherapy
• Best Supportive Care

• Treatment is in evolution with both TOS and radiation being very successful
• Cure rate of stage I is 90%
• Long term side effects are now a major concern
NCDB

Surgery

- Potentially curative
- Gets the cancer out
- Function preservation or restoration possible
- Can be disfiguring and painful
- Depends on the specific site as to the above
Side Effects of Surgery

- Short Term tends to improve over time
  - Pain – often not as severe as anticipate
  - Dysfunction of swallowing, muscle function and speech
  - Disfigurement

- Long Term tends to be stable over time
  - Dysfunction of swallowing, muscle function or speech
  - Disfigurement
  - Pain

Radiation Therapy

- Potentially curative
- Can be function preserving
- Continued advancements made (IMRT)
- Requires specialized equipment
- Daily treatment takes 15 minutes or so
- 6-7 weeks of therapy
Radiation

- Mask is made to hold the head in exact position and fixed to table
- Can be disfiguring and result in lack of function
- Very Long Term Complications
  - Dysphagia with feeding tube dependence
  - Aspiration
  - Trismus
  - Osteoradionecrosis
  - Second primary cancers

Chemotherapy Added to Radiation (Platinin-based concomitant)

- Primary
  - De-esculation studies now in progress
  - Adds toxicity for sure
  - Unclear at this time about the extent of benefit
- Adjuvant
  - ECS (perhaps not in HPV OPC)
  - Positive margins
Targeted therapy

- The more genetically complex the tumor the less likely it will respond to chemotherapy
- Cetuximab EGFR
  - Tumors that express EGFR are slowed
- PD-1 inhibitors?
  - PD-1 and PDL-1 are checkpoint for the immune system to decrease risk of autoimmune disease and self recognition
Wisdom is not a product of schooling but of the lifelong attempt to acquire it.

Albert Einstein

Knowledge is knowing a tomato is a fruit. Wisdom is knowing not to put a tomato in a fruit salad.

Miles Kington