Neoplasms of the Nose and Paranasal Sinuses

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Grand Rounds Presentation
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Sinonasal Neoplasms

- 3% of aerodigestive malignancies
- 1% of all malignancies
- 2 to 1 males
- Sixth to seventh decades
- Symptomatology difficult
Sinonasal Neoplasms

- Nasal cavity (benign = malignant)
  - Benign - inverting papilloma
  - Malignant - SCCA
- Sinuses (malignant)
  - SCCA
  - Maxillary most common
Epidemiology

- Occupational exposure in >40%
  - nickel workers - SCCA
  - hardwood dust & leather tanning - adenoca
- Viral - HPV
- Cigarettes & alcohol
Presentation

- Similar sx to common problems
- 6 to 8 month delay in diagnosis
- Cranial neuropathies & proptosis

\[\text{RARE}\]
Presentation

- **Oral - 30%**
  - tooth pain, trismus, palatal fullness, erosion

- **Nasal - 50%**
  - obstruction, epistaxis, discharge, erosion

- **Ocular - 25%**
  - diplopia, proptosis, tearing, pain, fullness

- **Facial**
  - V2 numbness, asymmetry, pain

- **Auditory - CHL**
Advanced Disease

- Classic Triad
  - facial asymmetry
  - tumor bulge in oral cavity
  - nasal mass

- All three - 40-60%
- One - 90%
Diagnosis

- Physical exam
- Nasal endoscopy
- Biopsy
- Radiography
Computed Tomography

*Bone erosion*
- orbit, cribiform plate,
- fovea, post max sinus wall,
- PTPF, sphenoid, post wall
- of frontal sinus

*85% accuracy*

*? Tumor vs. inflammation vs. secretions*
MRI

- Superior to CT
  - multiplanar
  - no ionizing radiation
- Inflammatory tissue & secretions - intense T2
- Tumor - intermediate T1 & T2
- 94% accuracy
- 98% accuracy with
gadolinium
Schneiderian Papillomas

- Fungiform (50%) - septum
- Cylindrical (3%) - lateral nasal wall
- Inverting (47%) - lateral nasal wall
  - recurs, locally destructive, malignant potential
  - men, 6th-7th decades, unilateral
  - SCCA - 2-13%
  - Recurrence - 0-80%
## Inverting Papilloma

<table>
<thead>
<tr>
<th>Authors</th>
<th>Lateral rhinotomy–medial maxillectomy</th>
<th>Conservation resection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benninger et al. (1991)</td>
<td>0% (0/20)</td>
<td>36% (5/14)</td>
</tr>
<tr>
<td>Myers et al. (1990)</td>
<td>5% (1/22)</td>
<td>0% (0/4)</td>
</tr>
<tr>
<td>Pelusa and Fortier (1992)</td>
<td>7% (1/14)</td>
<td>77% (37/48)</td>
</tr>
<tr>
<td>Outzen et al. (1991)</td>
<td>7% (3/44)</td>
<td>27% (3/11)</td>
</tr>
<tr>
<td>Lawson et al. (1989)</td>
<td>9% (7/77)</td>
<td>10% (1/10)</td>
</tr>
<tr>
<td>Segal et al. (1986)</td>
<td>10% (1/10)</td>
<td>70% (10/14)</td>
</tr>
<tr>
<td>Kristensen et al. (1985)</td>
<td>12% (7/57)</td>
<td>38% (8/21)</td>
</tr>
<tr>
<td>Phillips et al. (1990)</td>
<td>13% (9/72)</td>
<td>44% (4/9)</td>
</tr>
<tr>
<td>Smith and Guilane (1987)</td>
<td>27% (3/11)</td>
<td>57% (4/7)</td>
</tr>
<tr>
<td>Dolgin et al. (1992)</td>
<td>29% (4/14)</td>
<td>44% (4/9)</td>
</tr>
<tr>
<td>Weissler et al. (1986)</td>
<td>29% (37/126)</td>
<td>67% (103/153)</td>
</tr>
<tr>
<td>Bielamowicz et al. (1993)</td>
<td>30% (60/20)</td>
<td>74% (17/23)</td>
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<tr>
<td><strong>Averages</strong></td>
<td>16% (79/487)</td>
<td>60% (209/350)</td>
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</tbody>
</table>
Osteomas

- Benign, slow-growing
- 15 to 40 years
- Frontal > ethmoid > maxillary
- Local excision
Fibrous Dysplasia

- Normal bone replaced by collagen, fibroblasts, and osteoid material
- < 20 years
- ground-glass appearance
- treatment?
- **No** irradiation
Neurogenic tumors

- Schwannomas
  - surface of nerve fibers
  - no malignant degeneration
  - along trigeminal & ANS

- Neurofibromas
  - within nerve fibers
  - von Recklinghausen’s disease
  - malignant degeneration in 15%

- Complete excision
SCCA

- Most common - 80%
- Max > nasal cavity > ethmoids
- Males
- Sixth decade
- 90% have eroded walls of sinuses
Adenoid Cystic Carcinoma

- Palate > major salivary glands > sinuses
- Resistant to tx
- Multiple recurrences, distant mets
- Perineural spread
- Long-term followup necessary
Mucoepidermoid Carcinoma
- rare, widespread local invasion

Adenocarcinoma
- 2nd most common, 5-20%
- ethmoids
- occupational exposures
Hemangiopericytoma

- Uncommon
- pericytes of Zimmerman
- 80% of sinonasal tumors in ethmoids
- resembles nasal polyps
- average in 55 yo
- excision, XRT for (+) margins
Melanoma

- 1% originate in sinonasal cavity
- 5th-8th decades
- anterior septum
- maxillary antrum
- polypoid mass,
- pigmentation?
- 5 yr = 38%
- 10 yr = 17%
Olfactory Neuroblastoma

- Neural crest origin
- No urinary VMA or HVA
- Bimodal distribution at 20 and 50
- Locally aggressive
- Rosettes are hallmark
- Kadish staging
- Local recurrence 50-75%
- Metastasis 20-30%
Osteogenic Sarcoma
- most common primary bone tumor
- only 5% in H & N, mandible most involved
- sunray appearance

Fibrosarcoma
- rarely seen in sinuses
Chondrosarcoma
- 3rd-5th decades
- histologic dx difficult
- slow erosion of skull base, (+) margins

Rhabdomyosarcoma
- most common in children
- 35-45% in H&N, 8% in sinuses
- embryonal, alveolar, pleomorphic
- triple tx
- Lymphoma
  - bimodal presentation
  - NHL
  - irradiation +/- chemo

- Extramedullary plasmacytoma
  - 40% in paranasal sinuses/nose
  - "benign"
  - must r/o myeloma
  - excision or irradiation
Metastatic tumors

- Renal cell carcinoma
- Lungs
- Breasts
- Urogenital tract
- Gastrointestinal tract
- Palliation necessary
Ohngren’s Line

- Suprastructure
- Infrastructure
### AJCC - Maxillary sinus carcinoma

<table>
<thead>
<tr>
<th>TX</th>
<th>Primary tumor cannot be assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>T0</td>
<td>No evidence of primary tumor</td>
</tr>
<tr>
<td>Tis</td>
<td>Carcinoma in situ</td>
</tr>
<tr>
<td>T1</td>
<td>Tumor limited to the antral mucosa with no erosion or destruction of bone</td>
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<tr>
<td>T2</td>
<td>Tumor with erosion or destruction of the infrastructure, including the hard palate and/or the middle nasal meatus</td>
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<tr>
<td>T3</td>
<td>Tumor invades any of the following: skin of cheek, posterior wall of maxillary sinus, floor or medial wall of orbit, anterior ethmoid sinus</td>
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<tr>
<td>T4</td>
<td>Tumor invades orbital contents and/or any of the following: cribriform plate, posterior ethmoid or sphenoid sinuses, nasopharynx, soft palate, pterygomaxillary or temporal fossae, or base of skull</td>
</tr>
</tbody>
</table>
Treatment

- T3 and T4
- 60% local recurrence
  - Surgery
  - Irradiation
  - Chemotherapy
Surgical resection

- Unresectability (Sisson)
  - extension to frontal lobes
  - invasion of prevertebral fascia
  - bilateral optic nerve involvement
  - cavernous sinus extension
Surgical resection

- Endoscopic excision
- WLE
- Medial maxillectomy
- Total maxillectomy
- Radical maxillectomy +/- exenteration
- Craniofacial resection
Orbital Preservation

- *Harrison* - proptosis, limitation of EOM, bony erosion of orbit = exenteration
- *Conley* - save eye whenever possible
- *Sisson* - preoperative XRT, decreased exenterations without change in survival
- *Stern* - nonfunctional eye without inf/med support = exenteration
Orbital preservation

- UVA - McCary & Levine
  - 50 Gy preop XRT to orbit
  - periorbital bx
  - resect (+) periorbita
  - functional eye
Pterygopalatine Fossa

- 10-20% involvement
- Som - PTPF invasion = unresectable lesion
- Craniofacial resection (MCF)
- Postop XRT
Neck Dissection

- Retropharyngeal and jugulodigastric nodes
- 10% (+) necks
- neck dissection
  - palpable nodes
  - radiographic evidence of disease
- 40% cervical mets at 4 yrs
Radiation therapy

- Primary tx only for palliation
- 10-15% improved 5 year survival
- XRT = 23% vs. Surgery + XRT = 44%
- Preoperative vs. postoperative
- Protection of CNS and globe
  - XRT 12-20% unilateral visual loss, 0-8% bilateral visual loss
  - Surgery 10-20% useless globes, 2X with XRT
Chemotherapy

- Palliation, unresectable disease
- (++) margins, perineural spread, surgical refusal, ECS
- Intraarterial chemotherapy
  - Robbins - 86% response of T4 lesions
  - Lee - 91% satisfactory response