Malignant tumors of larynx

Faeze Dehsara M.D

Associate prof .BUMS

Rouhani hospital

Introduction

- Squamous cell carcinoma accounts for 85% to 95% of laryngeal tumors.
- Tobacco and alcohol are the tow most importat risk factors for development of laryngeal SCC.
- In the united states laryngeal SCC occurs in the glottic more frequently than in the supraglottis.(subglottic scc is rare)

Clinical presentation

- The symptoms of laryngeal scc depend on the site from with the primary tumor originates:
- Glottic SCC
- ✓ The cadrdinal symptom is dysphonia(patient usually come to medical attention with earlier stages).

In advanced stages patients come to medical attention with dypnea and stridor.

- Supraglottic tumors
- ✓ May cause dysphonia wich often manifests as an alteration in vocal resonance and they may also cause dysphagia,otalgia,stridor,dyspnea,and hemoptysis.
- ✓ Metastatic cervical adenopathy w/o obvious laryngopharyngeal symptoms may be seen initially.

- Scc of subglottis often is seen with advanced stage disease,and dyspnea and stridor are the most common symptoms.
- ✓ Because onset is usually gradual and insidious,may be misdiagnosed as asthma or some other pulmonary disease.

Diagnosis and Evaluation

- A clinical diagnosis of SCC can usually be made on the basis of the appearance of the larynx examination.
- On examination of larynx, SCC may appear as an ulcerative,exophitic,sessile,or polypoid lesion.

History and physical examination

- Symptoms that suggest impending airway obstruction such as stridor and dyspnea should be elicited.
- Exposure to risk factors for laryngeal cancer (tobacco and alcohol),medications,and medical comorbidities such as CVD ,pulmonary or renal disease that may change our treatment plan.
- A complete examination of head and neck should be performed.

- Indirect laryngoscopy
- Flexible fibroptic laryngoscopy
- Laryngeal videostroboscopy

- Biopsy (transoral in office through the flexible laryngoscopy or or in operating theater under DLB).
- The base of tongue and the laryngeal skeleton are palpated to assess the extralryngeal spread and the neck is palpated to assess nodal status.

Imaging

- A critical part of the evaluation of laryngeal malignancy.
- Staging of laryngeal SCC
- Correctly stage the neck and find distant metastasis.
- Is performed before operative endoscopy and biopsy.(cause of edema and distortion)
- **CT scan**
- **MRI**
- **PET-FDG**

✓ The lungs are the most site of hematogen metastases and second primary tumors.

CXR or chest CT (to exclude pulmonary lesions)

Operative endoscopic examination

- All patients should undergo an endoscopic examination under GA :

1. Direct laryngoscopy for larynx examination in greater detail, palpate the larynx, and biopsy
2. Assessment the invasion of adjucent site in oropharynx or hypopharynx with direct pharyngoscopy and palpation of the tongue base.
3. Neck palpation under GA to assess nodal status
4. Esophacoscopy excludes SPTs

Treatment of SCC

- The goals are:

1. Cure the patient
2. Preserve the function of larynx
3. Minimize the morbidity of treatment

- The most important information required are:

✓ The histologic diagnosis of tumor
✓ The site of origin of tumor
✓ The stage of disease

Primary Tumor (T)	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
TIS	Carcinoma in situ
Supraglottis	
T1	Tumor limited to one subsite of supraglottis with normal vocal cord mobility
T2	Tumor invades mucosa of more than one adjacent subsite of supraglottis or glottis or region outside the supraglottis (e.g., mucosa of base of tongue, vallecula, and medial wall of piriform sinus) without fixation of the larynx
T3	Tumor limited to larynx with vocal cord fixation and/or invades any of the following: postcricoid area, preepiglottic space, paraglottic space, and/or inner cortex of thyroid cartilage
T4a	Moderately advanced local disease
	Tumor invades through the outer cortex of the thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of neck including deep extrinsic muscle of the tongue, strap muscles, thyroid, or esophagus)
T4b	Very advanced local disease
	Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures
Glottis	
T1	Tumor limited to the vocal cord(s) with normal mobility; may involve anterior or posterior commissure
T1a	Tumor limited to one vocal cord
T1b	Tumor involves both vocal cords
T2	Tumor extends to supraglottis and/or subglottis and/or with impaired vocal cord mobility
T3	Tumor limited to the larynx with vocal cord fixation and/or invasion of paraglottic space and/or inner cortex of the thyroid cartilage
T4a	Moderately advanced local disease
	Tumor invades through the outer cortex of the thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, cricoid cartilage, soft tissues of neck including deep extrinsic muscle of the tongue, strap muscles, thyroid, or esophagus)
T4b	Very advanced local disease
	Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures
Subglottis	
T1	Tumor limited to the subglottis
T2	Tumor extends to vocal cord(s) with normal or impaired mobility
T3	Tumor limited to larynx with vocal cord fixation and/or invasion of paraglottic space and/or inner cortex of the thyroid cartilage
T4a	Moderately advanced local disease
	Tumor invades cricoid or thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of neck including deep extrinsic muscles of the tongue, strap muscles, thyroid, or esophagus)
T4b	Very advanced local disease
	Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures
Regional Lymph Nodes (N)	
cNX	Regional lymph nodes cannot be assessed
cN0	No regional lymph node metastasis

cN1	Metastasis in a single ipsilateral lymph node, ≤3 cm in greatest dimension
cN2	Metastasis in a single ipsilateral lymph node, >3 cm but not >6 cm in greatest dimension, or in multiple ipsilateral lymph nodes, none >6 cm and ENE(−); or metastasis in multiple ipsilateral lymph nodes, none larger than 6 cm and ENE(−); or bilateral or contralateral lymph nodes, none >6 cm and ENE(−)
cN2a	Metastasis in a single ipsilateral lymph node, >3 cm but not >6 cm and ENE(−)
cN2b	Metastasis in multiple ipsilateral lymph nodes, none >6 cm and ENE(−)
cN2c	Metastasis in bilateral or contralateral lymph nodes, none >6 cm and ENE(−)
cN3	Metastasis in a lymph node >6 cm and ENE(−); or metastasis in any lymph node(s) with clinically overt ENE(+)
cN3a	Metastasis in a lymph node, >6 cm and ENE(−)
cN3b	Metastasis in any lymph node(s) with clinically overt ENE(+)
pNX	Regional lymph nodes cannot be assessed
pN0	No regional lymph node metastasis
pN1	Metastasis in a single ipsilateral lymph node, ≤3 cm and ENE(−)
pN2	Metastasis in a single ipsilateral lymph node, ≤3 cm and ENE(+); or >3 cm but not >6 cm and ENE(−); or multiple ipsilateral nodes, ≤6 cm and ENE(−); or bilateral or contralateral lymph node(s) ≤6 cm and ENE(−)
pN2a	Metastasis in a single ipsilateral lymph node, ≤3 cm and ENE(+)
pN2b	Metastasis in multiple ipsilateral lymph nodes, none >6 cm and ENE(−)
pN2c	Metastasis in bilateral or contralateral lymph nodes, none >6 cm in greatest dimension and ENE(−)
pN3	Metastasis in a lymph node >6 cm in greatest dimension and ENE(−); or metastasis in a single ipsilateral node, >3 cm and ENE(+); or multiple ipsilateral, contralateral or bilateral lymph nodes any with ENE(+); or a single contralateral node of any size and ENE (+)
pN3a	Metastasis in a lymph node, >6 cm in greatest dimension and ENE(−)
pN3b	Metastasis in a single ipsilateral node >3 cm and ENE(+); or multiple ipsilateral, contralateral or bilateral lymph nodes any with ENE(+); or a single contralateral node of any size and ENE(+)

Note: nodal sizes are all for the greatest dimension of the lymph node.

From Amin MB, Edge S et al, eds: *AJCC Cancer staging manual*, ed 8. New York: Springer; 2017:149–162.

Treatment of Glottic SCC

Early glottis scc(S I/II):

- Treated with RT or surgery(open/TLM) w/o elective N.D
- The tumor control rate with RT will be lower.
- Following surgical excision repeat surgery or RT may be used to treat residual or recurrent tumor although a second course of radiation for a recurrence or second tumor can not be offered.
- **Open**

✓ cordectomy

✓ VHL

✓ extended VHL

- 5-years local control rate is 90-98% with 93-98% laryngeal preservation rate

TLM

- Tis-T2 tumors
- 5-years local control rate is 80-94% with >94% laryngeal preservation rate
- In the hands of experienced surgeons local control and laryngeal preservation rates is equal to open teqnique.
- Advantages:

✓ Avoids a tracheostomy

✓ Shorter hospital stay

✓ Reduced cost

✓ Lower post op dysphagia and aspiration

- **Advanced glottis scc (S III/IV):**
- **T3 glottic tumors:**

✓ Traditionally were treated with **total laryngectomy** as single-modality therapy

✓ **Primary RT**

Local control rate for T3 tumor → 50% (lower than surgery)

Return of V.C mobility following RT predicts good response.

Tumor volume may predict the response to RT (poor results in larger tumors)

✓ **TLM**

- ✓ **VHL**
- ✓ **Open partial laryngectomy**
- ✓ **Near total laryngectomy**

- **Total laryngectomy** or **CRT** for bulky T3 tumors or tumors that not suitable for conservative surgery

- **T4 glottic tumors** is not considered amenable to conservative laryngeal resection
- ✓ **Total laryngectomy usually with post op RT or CRT**
- ✓ **Primary CRT** in low volume disease with limited cartilage destruction to preserve the larynx.
- ✓ **NTL** in limited subglottic extension and no interarytenoid involvement.
- ✓ **TLM**
- **Primary RT** for T4 glottic carcinoma has poor local control rates
- ✓ In patients unable or unwilling to undergo concurrent CRT or total laryngectomy, primary RT may provide a chance of lacal control.
- ✓ Cetuximab can increased the effectiveness of RT with an acceptable risk of increased toxicity.

- Complacations of RT :

✓ Local tissue destruction , scarring and persistent edema
✓ Restricted airway
✓ Poor voice
✓ Dysphagia
✓ Aspiration
✓ Close f/u is required

- **Persistent edema more than 6 month after RT predicts recurrent disease and close f/u with endoscopy and imaging is vital**
  - Deep biopsies is required
  - Currently PET is of great help in diagnosing recurrence in the larynx that has undergone RT.

Treatment of the neck in glottic scc

- The incidence of nodal metastasis is lower than supraglottic or subglottic scc
- In II - IV, VI
  - ✓ N0 → END (II-IV) in transglottic T3 and T4
  - ✓ N+ → unilateral comprehensive N.D (I-V) for all T stages

Treatment of supraglottic SCC

- Single modality treatment in early stage(I,II) and combined modality in advanced stage(III,IV)

Early cancer (T1-T2), SGPL(open/TLM) or RT are two most frequently used treatment.

- **OSGL**

✓ T1, T2 tumor

✓ T3 tumor with PES and no trasglottic spread and no V.C impairment.

OSGL contraindictions are:

✓ Poor general health(almost all patient will experience some postop aspiration,because of this having good pulmonary function is important to tolerate expected aspiration)

✓ Glottic involvement /V.C impairment or fixation

✓ Thyriod or cricoid cartilage invasion

✓ Involvement of base of tongue (within 1cm of circumvallate papilla) or deep mussle of tongue

- Functional and oncologic outcomes of OSGL:
- Pharyngeal swallowing disruptin in the early post op period
- Tracheostomy (permanent in 24%)
- Median duration until normal oral feeding was 16 days and decannulation was 17 days.
- ✓ Intractable aspiration → total laryngectomy(>65y)
- ✓ Local control is 80%-100% and 5-years survival is 90%.
- ✓ Adjuant RT was given in 30% for positive surgical margins or adverse pathologic finding in L.Ns

- The indication for **TLM** is similar to those for OSGL
- TLM contraindications:
  - ✓ Incomplete tumor exposure
  - ✓ Involvement the great vessels of the neck
  - ✓ Extensive tongue base involvement
- **The local control rate of TLM is similar to OSGL and the functional morbidity is much less.**
- The role of adjuant RT in TLM is unclear (failure to control residul tumor and partially successful in treating positive microscopic margin after TLM)

- **Primary RT**
- ✓ Tumors are not amenable to partial laryngectomy
- ✓ Who are medically unfit for surgery or prefer to avoid surgery
- **In general,surgical excision has a higher local control rate for early supraglottic tumors than RT.**

Advanced primary supraglottic tumors(T3 ,T4)

- Traditionally treated with **total laryngectomy,bilateral N.D and post op RT**.
- **CRT** is the standard nonsurgical organ preservation protocol for advanced laryngeal cancers in T2,T3 and T4a w/o gross cartilage distruction.
- **SCL-CHP**(resect both TVC,FVC,paraglottic space,entire thyroid cartilage and epiglottis and apposing hyoid bone and base of tongue to the cricoid cartilage) is used for:

1. T2 with TVC or ant.commissure involvement(not amenable to OSGL)
2. T3 Transglottic or supraglottic tumors with TVC fixation or PES invasion.
3. T4 with limited invasion of thyroid cartilage

- Contraindications to SCL:
  - ✓ Poor general health and pulmonary function
  - ✓ C.A joint and cricoid cartilage invasion
  - ✓ Involvement of post.com
  - ✓ Extension to subglottis
  - ✓ Invasion of hyoid bone
  - ✓ Outer pericondrium of thyroid cartilage invasion or extrelaryngeal spread
- Oncologic results are excellent
- Recurrent disease or intractable aspiration after SCL → total laryngectomy
- **The major disadvantages of SCPL is poor voice quality**

Treatment of the neck in supraglottic scc:

- Elective N.D is indicated in all tumors exept T1N0 lesions
- ✓ N0,N1 → bilateral N.D (II-IV)
- ✓ N2-N3 → unilateral comprehensive ND(I-V)
- Adjuant RT is indicated for:
- ✓ Multiple involved nodes
- ✓ Extracapsular spread
- ✓ Soft tissue extention of tumor

Subglottic SCC

- The treatment usually requires total laryngectomy + N.D + ipsilateral thyroidectomy + paratracheal node dissection.
- ✓ Distal tracheal spraed may occur (wich requires a low tracheal resection and manubrial removal)
- ✓ Post.extension in to the cervical esophagus
- Adjuant RT or concurrent CRT is used in nodal metastasis or extralaryngeal invasion.
- Survival is poor

Thank you for your attention