ARROCase: Early-Stage Glottic Cancer

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Case

- 72yo male current smoker (60 pack-year smoking history) presents with hoarseness x 1 month, no other symptoms
- Referred to ENT
  - Indirect mirror laryngoscopy shows 5-6mm nodule in anterior right true vocal cord
  - Both vocal cords fully mobile
- EUA with biopsy shows moderately differentiated squamous cell carcinoma
- CT neck/chest unremarkable (no lymphadenopathy)
- Final Stage: T1aN0M0 glottic carcinoma
Treatment Options

Amenable to larynx-preserving (conservation) surgery (T1-T2 or select T3) or

Partial laryngectomy/endoscopic or open resection as indicated and neck dissection as indicated

NCCN Guidelines, Head and Neck Ver 2.2017
Surgery vs. RT

• Laser microsurgery and RT have similar oncologic and voice outcomes
• Partial laryngectomy has comparable outcomes to RT and laser microsurgery but inferior voice outcomes

RT alone outcomes: University of Florida

- 585 patients with T1-T2N0 glottic cancer treated between 1964-2006 with RT alone
- Median follow-up 12 years
- LC outcomes: T1a: 94%, T1b: 93%, T2a: 80%, T2b: 70%

Hypofractionated RT: Japanese RCT

• 180 patients with T1N0 glottic cancer randomized to 2Gy fractions (60-66Gy) vs. 2.25Gy fractions (56.25-63Gy)

• Hypofractionated RT had superior local control (92% vs. 77%, p = 0.004)

• No difference in cause-specific survival or toxicity

Yamazaki Int J Radiat Oncol Biol Phys. 2006 Jan 1;64(1):77-82
Hyperfractionated RT for T2N0 Glottic Cancer (RTOG 9512)

• 250 patients with T2N0 glottic cancer randomized to hyperfractionated RT (79.2Gy in 66 fractions BID) versus standard fractionation RT (70Gy in 35 fractions QD)
• 5yr LC 78% in HFX arm vs. 70% in SFX arm (p = 0.14)
• Hyperfractionated associated with higher rates of acute skin, mucosal, and laryngeal toxicity, but similar G3-4 late toxicity

Impact of Smoking and Treatment Complications

• Van der Voet et al. studied 352 T1N0 glottic patients treated from 1965-1992

• Patients who continued smoking had significantly higher rate of complications at 10 years (28% vs. 13%)

Field Design

• Opposed lateral field arrangement with anterior wedged pair
• Classically 5x5cm box, but can also use 6x6cm
  – Centered on true vocal cord
  – Top of thyroid notch to bottom of cricoid cartilage
  – Vertebral bodies posteriorly, flash at least 1cm anteriorly
• Adjust field size to patient anatomy to cover larynx
Field Design: Wedges

• Wedges should have the heel pointed anteriorly
• Some institutions adjust wedge angle based on location of tumor
  – Underwedge to give more dose to anterior larynx
  – Overwedge to give more dose to posterior larynx
• May be necessary to add bolus to ensure anterior commissure coverage
• Broad-shouldered men may require couch kick so that fields clear shoulders
Back to the patient

• T1aN0M0 glottic cancer
• Recommended hypofractionated RT (6300cGy in 225cGy fractions) based on Japanese RCT
Our Patient: Opposed Lateral Fields

- 6x6cm opposed lateral fields with wedged pair (heel pointed anteriorly)
Our Patient: Treatment Plan

• Verify adequate coverage of larynx
• Note the "underwedging" to give additional dose to anterior vocal cords (lesion location)
Summary

• For T1N0 glottic lesions, definitive RT and laser microsurgery have similar oncologic and voice outcomes

• RT alone given using opposed lateral fields with wedge pair (heel pointed anteriorly)

• Strongly consider hypofractionated RT for early-stage glottic cancer because of superior LC in Japanese RCT
References

2. NCCN Guidelines, Head and Neck Ver 2.2017