The Use of Radiation Therapy for Advanced T2-T4 Non-Melanoma Skin Carcinoma

Presentation by Christina Forest

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Introduction

- Most common of all cancers (1,000,000+ new cases in U.S. per year)
  - 2500 deaths/year
- 80% BCC
- Head and neck most common site (80%)
- Usually present as T1 or T2, but advanced tumors are on the rise
- Treatment options:
  - Resection
  - Cryotherapy
  - Electrocautery
  - Moh’s surgery
  - Radiation

All have 90-95% cure rate
TNM Staging

• Primary tumor (T)
  – TX: cannot be assessed
  – T0: no evidence of primary tumor
  – Tis: CIS
  – T1: ≤ 2 cm with less than 2 high-risk features
  – T2: >2 cm OR any size with 2+ high-risk features
  – T3: Invasion of maxilla, mandible, orbit, or temporal bone
  – T4: Invasion of skeleton (axial or appendicular) or perineural invasion of skull base

High-risk features: >2 mm thickness, Clark level ≥ 4, perineural invasion, primary site ear or hair-bearing lip, poorly- or un-differentiated
TNM Staging, cont.

• Regional lymph nodes (N)
  – NX: cannot be assessed
  – N0: no regional lymph node metastases
  – N1: metastasis in a single ipsilateral lymph node, $\leq 3$ cm
  – N2: metastasis in a single ipsilateral node $> 3$ cm but $\leq 6$ cm, or in multiple ipsi, bilateral, or contra nodes, none $> 6$ cm
    • N2a: single ipsi between 3-6 cm
    • N2b: multiple ipsi, not $> 6$ cm
    • N2c: multiple contra or bilateral, not $>6$ cm
  – N3: node $> 6$ cm
Anatomic Stage/Prognostic Group

- Stage 0: TisN0M0
- Stage I: T1N0M0
- Stage II: T2N0M0
- Stage III: T3N0M0 or T1-T3 with N1
- Stage IV: any T with N2, N3, or M1, and any T4
Shortcomings of AJCC 7th Ed. Staging System

• Excludes other well-documented high-risk sites
• Does not address SCC that develops in scars or sites of chronic inflammation
• Groups SCC of vermillion lip with oral cavity, although most are caused by sun exposure.
• Potential overgrading of verrucous carcinomas
• More explicit discussion of histologic grading needed
• Modification with ‘I’ for immunosuppression not mandatory
• Some criteria not practical or economically feasible
My Research: The role of radiotherapy for locally advanced non-melanoma skin cancer

Purpose

To review outcomes of patients treated with RT for T2-T4 non melanoma skin cancer (NMSC)
Materials & Methods

- **Retrospective**
- **70 patients**
  - 42 (60%) treated definitively
  - 17 (24.3%) for recurrence
  - 11 (15.7%) post-op
- **Measured efficacy, treatment, & morbidity**
- **Lesion characteristics:**
  - 21 (30%) T4, 19 (27%) T3, 30 (43%) T2
  - 39 (56%) SCC, 29 (41%) BCC, 2 (3%) both
  - Bony erosion: 11
  - Nodal disease: 11
- **RT techniques:**
  - IMRT: 22 (31%)
  - 3D conformal: 9 (13%)
  - Electron: 37 (53%)
  - Electrons & IMRT: 1
  - 3D conformal & electrons: 1
- **Mean follow-up: 15.3 mos**
- **Prior treatment**
  - 4 (6%) pre-radiation or concurrent chemo
  - 28 (40%) prior surgery
    - Half complete resections
    - 8 received RT as adjuvant, and 20 due to failure of surgery
- **Number of courses of RT:**
  - One: 63 (90%)
  - Two: 5 (7%)
  - Three: 2 (3%)
- **Acute Complications:**
  - Local erythema: 100%
  - Dry desquamation: 33%
  - Moist desquamation: 20%
  - Conjunctivitis: 14%
  - Mucositis/esophagitis: 14%
  - Altered pigmentation: 4%
  - Tumor necrosis: 3%
  - Ear pain: 3%
  - Ulceration: 3%
  - Xerostomia: 3%
  - Dysphagia: 3%
  - Narrowed auditory canal: 1%
• **Long-term complications:**
  – Poor wound healing: 6%
  – Local fibrosis: 4%
  – Hearing loss: one
  – Scarring/contraction: one
  – Fistula formation: one

• **Salvage methods for failed RT:**
  – Surgery: 7 (44%)
  – Chemo: 2 (13%)
  – Surgery + RT: one
  – Chemo + RT: one
  – 6 attempts at salvage were successful (55%)
Results

• 54 (77.1%) required no further treatment & are recurrence-free
• 16 had residual tumor or recurred.
• 21 patients have died (30%)
  – 10: disease progression
  – 10: other illnesses

• Poorer control if:
  – Recurrent
  – SCC
  – Bony erosion
  – Nodal disease
Radiation Therapy

- No butt flaps (better cosmesis)
- Safe even for poor operative candidates
- Equivalent cure rates
Electronic Brachytherapy

• HDR EBT (High-dose rate electronic brachytherapy)
  – 40 Gy in 8 fractions twice weekly, with 48 hrs between fractions, to a depth of 3-7 mm

• Benefits:
  – Hypofractionated (convenient)
  – No radioactive isotope (minimal shielding needed)

• Effective:
  – Early outcomes (median follow-up 4 months): acceptable acute reactions & favorable cosmesis. No severe late reactions.
Works Cited


Thank you!