Cutaneous Malignancy (Nonmelanoma Skin Cancer)

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Overview

- Incidence and Epidemiology
- Normal Skin Histology
- Basal Cell Carcinoma
- Squamous Cell Carcinoma
- Treatment of Cutaneous Malignancy
- Rare Cutaneous Malignancies
- Conclusions
Incidence and Epidemiology

- 800,000 cases per year
- Incidence is increasing
- Mortality is decreasing
- Most occur in patients over 60 years

![Pie chart showing percentages of different skin cancers: Basal Cell 80%, Squamous Cell 15%, Melanoma 4%, Etc. 1%]
Incidence and Epidemiology - Etiology

- Ultraviolet light – Sun Exposure
  - Ionizing radiation causes mutation of tumor suppressor genes
  - UV B light: 280-320nm, UV A light 320-400nm
  - Amount of UV B radiation is inversely proportional to ozone
  - Amount of UV B exposure during childhood and adolescence is directly proportional to risk for BCCA
Etiology – Sun Exposure

- The following groups have the least melanin and are at greatest risk for BCCA:
  - fair complexion,
  - light hair,
  - blue/green eyes,
  - inability to tan,
  - history of multiple or severe sunburns,
  - Celtic ancestry
Etiology – Other Factors

- Arsenic
- Radiation Therapy
- Burns, Scars, Ulcers
- Immunosuppression
- Albinism
- Bazex's syndrome (basal cell carcinomas, follicular atrophoderma, hypotrichosis, and hypohidrosis or hyperhidrosis)
- Gorlin's syndrome (multiple basal cell carcinomas, pitting of the palms and the soles of the feet, mandibular cysts, spine and rib anomalies, calcification of the falx cerebri, and cataracts)
Normal Skin Histology
Normal Skin Histology

- Stratum Corneum
- Stratum Lucidum
- Stratum Granulosum
- Stratum Spinosum
- Stratum Basale
Basal Cell Carcinoma

- Slowly growing malignancy of the epidermis
- Rarely metastasizes (0.028-0.55%)
- Cells appear histologically similar to basal cells of epidermis
Basal Cell Carcinoma

- Clinical subtypes
  - Nodular
  - Superficial
  - Pigmented
  - Morpheaform
Basal Cell Carcinoma

- Nodular
  - Discrete, raised, circular
  - Central ulceration
  - Pink, waxy rolled borders
  - Relatively non-aggressive
Basal Cell Carcinoma

- Superficial
  - Threadlike, waxy border
  - Red, scaling patches
  - Spread by radial extension
  - Uncommon in Head and Neck
Basal Cell Carcinoma

- Pigmented
  - Resemble nevus or melanoma
  - Behave the same as nodular variant
Basal Cell Carcinoma

- Morpheaform
  - Macular, whitish, or yellowish plaque
  - Indistinct clinical margins
Basal Cell Carcinoma

- **Histology**
  - Large oval nuclei with little cytoplasm
  - Nuclei are uniform
  - Connective tissue stroma causes palisading
Basal Cell Carcinoma

- Histologic Subtypes
  - Solid
  - Cystic
  - Adenoid
  - Keratotic (Basosquamous)
Basal Cell Carcinoma

- Solid – no cellular differentiation
Basal Cell Carcinoma

- Cystic
  - Differentiation towards sebaceous glands
  - Cystic spaces within tumor lobules
Basal Cell Carcinoma

- Adenoid
  - Glandular pattern
  - Lacelike pattern
Basal Cell Carcinoma

- Keratotic (Basosquamous)
  - Basal cell CA with differentiation towards hair structures
  - Shows feature of both basal cell and squamous cell carcinomas
  - More aggressive clinically
  - Undifferentiated cells in combination with parakeratotic cells and horn cysts
Squamous Cell Carcinoma

- More aggressive in terms of local invasion and rate of metastasis than BCCA (2-5%)
- Often a progression from sun-damaged areas
  - Actinic Keratoses
  - Bowen’s disease
Squamous Cell Carcinoma

- **Actinic Keratosis**
  - Indicator of severe sun-damage
  - <1cm diameter, scaly
  - Face, scalp, hands, forearms
  - Progression to SCCA in 20%
  - Cryotherapy, Shave Excision, 5-FU, TCA
Squamous Cell Carcinoma

- Bowen’s disease
  - Carcinoma *in situ*
  - Well-circumscribed, erythematous scaly patch with irregular border
  - Common in people with chronic arsenic ingestion
Squamous Cell Carcinoma

- Clinically, SCCA presents as a crusting, erythematous, ulcerated lesion with a granular friable base.
Squamous Cell Carcinoma

- **Histology**
  - Irregular masses of epidermal cells proliferating into dermis
  - Keratinization in well-differentiated tumors
  - Range in degree of anaplasia
  - Subtypes of Verrucous, Adenoid squamous, and Spindle Pleomorphic
Squamous Cell Carcinoma

- Histopathology
Squamous Cell Carcinoma

- Verrucous
  - Minimal atypia
  - Individual cell keratinization
  - White, cauliflower lesions
  - Uncommon in Head and Neck
Squamous Cell Carcinoma

- Spindle-Pleomorphic
  - Anaplastic
  - Little keratinization
Squamous Cell Carcinoma

- Adenoid Squamous
  - Anaplasia
  - Acantholysis
  - Tubular and adenoid appearance
# Squamous Cell Carcinoma

## Histologic Grading of Cutaneous Squamous Cell Carcinoma

Googe, Paul B., *DermPath Update* Volume 1 Number 4 - December 31, 1995

<table>
<thead>
<tr>
<th>Broders</th>
<th>UTMCK</th>
<th>Microscopic Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>Well differentiated, moderately well differentiated</td>
<td>abundant keratinization, little nuclear anaplasia &lt; 25% undifferentiated cells</td>
</tr>
<tr>
<td>Grade 2</td>
<td>Moderately differentiated</td>
<td>50% keratinizing, nuclear anaplasia present &lt; 50% undifferentiated cells</td>
</tr>
<tr>
<td>Grade 3</td>
<td>Moderately to poorly differentiated</td>
<td>less than 25% keratinizing, nuclear anaplasia extensive &lt; 75% undifferentiated cells</td>
</tr>
<tr>
<td>Grade 4</td>
<td>Poorly differentiated</td>
<td>extensive nuclear anaplasia, little or no keratinization includes spindle cell and undifferentiated carcinomas &gt; 75% undifferentiated cells</td>
</tr>
</tbody>
</table>
# Squamous Cell Carcinoma

<table>
<thead>
<tr>
<th>Table 2: Indicators of Metastatic Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size &gt; 2cm</td>
</tr>
<tr>
<td>Poorly differentiated (Broders 3 or 4)</td>
</tr>
<tr>
<td>Thickness &gt; 2mm</td>
</tr>
<tr>
<td>Perineural invasion</td>
</tr>
<tr>
<td>Invasion of reticular dermis or subcutaneous tissue</td>
</tr>
<tr>
<td>Immunosuppression</td>
</tr>
<tr>
<td>Invasion of muscle, bone, or cartilage</td>
</tr>
<tr>
<td>Marjolin’s Ulcer</td>
</tr>
<tr>
<td>Anatomic site: Ear, lip</td>
</tr>
<tr>
<td>Locally recurrent</td>
</tr>
</tbody>
</table>
Management

- Initial evaluation involves
  - Assessment of location
  - Punch or excisional biopsy
  - Staging
Management - Staging

Table 21-1. TNM Staging of Basal Cell and Squamous Cell Carcinoma of the Skin (Excluding Eyelid, Vulva, and Penis)

| Primary Tumor (T) | | | 
|---|---|---|---|
| TX | Primary tumor cannot be assessed | | |
| T0 | No evidence of primary tumor | | |
| Tis | Carcinoma in situ | | |
| T1 | Tumor ≤ 2 cm in greatest dimension | | |
| T2 | Tumor > 2 cm in greatest dimension but not > 5 cm in greatest dimension | | |
| T3 | Tumor > 5 cm in greatest dimension | | |
| T4 | Tumor invades deep extradermal structures (eg, cartilage, skeletal muscle, or bone) | | |

| Regional Lymph Nodes (N) | | | 
|---|---|---|---|
| NX | Regional lymph nodes cannot be assessed | | |
| NO | No regional lymph node metastasis | | |
| N1 | Regional lymph node metastasis | | |

**Distant Metastasis (M)**

| MX | Presence of distant metastasis cannot be assessed | |
| M0 | No distant metastasis | |
| M1 | Distant metastasis | |

**Stage Grouping**

<table>
<thead>
<tr>
<th>Stage</th>
<th>T</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>Tis</td>
<td>NO</td>
<td>MO</td>
</tr>
<tr>
<td>Stage I</td>
<td>T1</td>
<td>NO</td>
<td>MO</td>
</tr>
<tr>
<td>Stage II</td>
<td>T2</td>
<td>NO</td>
<td>MO</td>
</tr>
<tr>
<td></td>
<td>T3</td>
<td>NO</td>
<td>MO</td>
</tr>
<tr>
<td>Stage III</td>
<td>T4</td>
<td>NO</td>
<td>MO</td>
</tr>
<tr>
<td></td>
<td>Any T</td>
<td>N1</td>
<td>MO</td>
</tr>
<tr>
<td>Stage IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>
Management - Curettage

- Curettes used to remove tumor by feel with small margin of normal tissue
- After several cycles, wound is treated topically
- Reserved for histologically and clinically favorable basal cell carcinomas.
- Not used for squamous cell lesions
Management - Cryosurgery

- Cryogen such as liquid Nitrogen to kill tumor cells
- Typical temperature of -50°C.
- Tissue-sparing, but leave open wound
- Hypopigmentation and scarring may result
- Limited to favorable small lesions with well-defined borders
Management – Radiation Therapy

- Used extensively in the past, now sparingly
- High cure rate (95%)
- Does not allow surgical staging
- Protracted treatment course, and expensive
- Radiodermatitis, delayed carcinogenesis
- Currently reserved for poor operative candidates, adjuvant in high risk malignancy
Photodynamic Therapy

- Photosensitizing drug (porphyrin, 5-ALA) applied topically, orally or parenterally and localizes into tumor cells
- Drug is activated by exposure to light (laser)
- Efficacy is low (45%)
- Side effects include local edema, erythema, blistering, ulceration
- Used as palliation
Management - Excisional Surgery

- Most often used by surgeons, esp for larger lesions
- Can be with cold steel or laser
- Can allow reconstruction in the same sitting
- Frozen sections decrease recurrence rate
- Can be time consuming and inconvenient
- If more than 1/3 of a cosmetic facial unit is excised, better cosmesis with removal of entire unit
Management – Excisional Surgery
Mohs Surgery - Indications

- Recurrent skin cancer
- Skin cancer in “high risk anatomic areas” and cosmetically important areas
- Histologically aggressive skin cancer
- Large skin cancers
- Skin cancer with ill-defined clinical margins
- Irradiated skin
- Dermatofibrosarcoma Protuberans
- Selected mucosal squamous cell cancers
Lymphatic Dissection

- No hard and fast rules governing lymphatic dissection in N0 Necks
- Elective Parotidectomy for deeply invasive tumors of the periauricular region
- Large SCCA (>2cm), recurrent SCCA, Marjolin’s ulcer, perineural invasion may require regional lymphadenectomy
- Sentinel Lymph Node Dissection may be useful
Lymphatic Dissection
Merkel’s Cell Carcinoma

- Tumor of presumed mechanoreceptor origin arising in dermis
- Poorly differentiated histology
- High rate of recurrence and lymph node metastasis requires excisional surgery with adjuvant radiation and treatment of lymphatic drainage in most cases
Merkel’s Cell Carcinoma

- solitary erythematous to deep purple plaque or nodule of up to several centimeters in size
Merkel’s Cell Carcinoma

- Histology - small, round, basophilic cells arranged in sheets, rests, or trabeculae
- Stains for cytokeratins 8, 18, 20
Other Rare Cutaneous Malignancies

- Dermatofibrosarcoma Protuberans
  - Arises in dermis, spreads deeply
  - Large indurated plaque with firm irregular flesh colored nodules
  - Mohs is treatment of choice

- Pilomatrix Carcinoma
  - Arises from Pilomatrixoma, a benign tumor of hair matrix origin
  - Aggressive wide local excision is treatment
Conclusions

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