Squamous Cell Neoplasia and Precursor Lesions

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Agenda

• Squamo-proliferative lesions
  • Squamous dysplasia
  • Keratosis
  • Keratinizing dysplasia

• Pitfalls and Mimics
  • Lichen planus
  • Pseudoepitheliomatous hyperplasia

• Identifying superficial invasion
• Challenging biopsies: variants of SCC

Squamous Dysplasia

• Architectural features
  • Organization
  • Maturation
  • Mitotic activity
Abnormal Mitoses

Squamous Dysplasia

- Cytologic features
  - Hyperchromasia
  - Higher N:C ratio (basaloid)
  - Nuclear membrane irregularities

Abnormal Cytology
Severe dysplasia

Mild-moderate dysplasia

Moderate to severe dysplasia
Keratinizing Squamous Lesions

- Keratin = abnormal (nearly always)
  - Surface keratinization
  - Dyskeratosis
  - “Pink Cell” Change

Keratinizing Lesions

- Diagnostic terminology: “Keratosis”
- Clinical terminology: “Leukoplakia”
- Reaction to irritation
  - Denture rub
  - Bite lines
  - Tobacco
Diagnosing Keratosis

- Keratosis with dysplasia
  - If you can, grade the dysplasia
  - If you can't, consider “Keratinizing dysplasia”
  - Risk of carcinoma does not correlate with classical features of dysplasia
    - Early lesions may be reversible
    - Some lesions look much better than they behave

Keratosis without dysplasia
Keratosis with severe dysplasia

Inflammatory Atypia vs. Dysplasia

- Is there a reason for atypia or reactive patterns?
  - Inflammation
  - Ulceration or ulcer debris
  - Organisms
  - Metaplasia
  - Tangential sectioning
Lichenoid Inflammation

Hyperplastic Candidiasis

Neutrophils in the epithelium
Agenda

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Oral (Mucosal) Lichen Planus

- Clinical
  - 1-2% of the general population; 50-77% of lichen planus patients
  - Often asymptomatic and bilateral
- Demographics
  - Female to male = 2:1
  - Ages: 40 - 70
- Types
  - Reticular
  - Atrophic
  - Erosive
  - Others: plaque, papular, bullous

Huber MA. Clinics in Dermatology 28, 262, 2010

Courtesy of Dr. Sook-Bin Woo, 2010
Oral (Mucosal) Lichen Planus

- Histology
  - Hyperkeratosis
  - Saw-tooth rete
  - Vacuolar degeneration of the basal cells
  - Lichenoid chronic inflammation
  - Apoptosis of epithelial cells (civatte bodies)
  - Secondary fungal hyphae (after steroids)
Pseudoepitheliomatous hyperplasia

- Reactive pattern
  - Associated with granular cell tumor
  - Fungal infections
  - Trauma
- Histology
  - Down-ward finger-like proliferation
  - Can resemble carcinoma
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Superficial Invasion

- Nomenclature
  - Superficially invasive squamous cell carcinoma
  - Microinvasive squamous cell carcinoma
- Tumor has breached the basement membrane
  - Access to lymphatics
  - Potential to metastasize

Superficial Invasion: Definition

<table>
<thead>
<tr>
<th>Author</th>
<th>Description</th>
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<tbody>
<tr>
<td>Miller</td>
<td>12-50 cells present just below the basement membrane</td>
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<tr>
<td>Friedman</td>
<td>Scattered tongues or discrete foci of invasion through the basement membrane</td>
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<tr>
<td>Padovan</td>
<td>2 mm or less of invasion</td>
</tr>
<tr>
<td>Crissman</td>
<td>1-2 mm of invasion (no angiolymphatic invasion)</td>
</tr>
<tr>
<td>Barnes</td>
<td>0.5 mm of invasion, measured from basement membrane (no angiolymphatic invasion)</td>
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</tbody>
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Identifying Superficial Invasion

- Deep keratinization
  - Keratin pearls
  - Dyskeratosis
- Breach of basement membrane
  - Ragged borders
  - Single dropping off cells
  - Desmoplasia
  - Reaction around tumor cells
In situ Carcinoma

Superficial invasion

Superficial invasion
Superficial invasion

Suspicious for superficial invasion

"Atypical squamoproliferative lesion"
**Differential Diagnosis**

- Papillary keratosis
- Papillary squamous cell carcinoma
- Verrucous carcinoma

**Papillary Keratosis**

- Histology
  - Papillary architecture
  - Surface keratinization
  - Grade the dysplasia
- Differential diagnosis
  - Papillary squamous cell carcinoma

**Papillary Squamous Cell Carcinoma**

- Clinical
  - Elderly age group
  - Traditional risk factors
    - Alcohol & Tobacco
    - Papillomas are not precursors
- Gross appearance
  - Frond-like filiform papillae (papillary SCC)
  - Broad-based, cauliflower appearance (exophytic SCC)
Papillary Squamous Cell Carcinoma

- Histology
  - +/- fibrovascular cores
  - Cytologic and architectural atypia (dysplasia)
  - +/- surface keratinization
Verrucous Carcinoma

- Clinical
  - More common in elderly
  - Most common in oral cavity and larynx
  - Related to tobacco and poor oral hygiene
Verrucous Carcinoma

- Histology
  - Bulbous cauliflower like surface
  - Blunted club-shaped rete
  - Inflammatory infiltrates
  - Lack of cytologic atypia
  - Can have abundant keratin

Verrucous Carcinoma, Frozen

Verrucous Carcinoma
Verrucous Carcinoma

- Treatment
  - Excision with clear margins
  - Radiation
- Prognosis
  - Good
  - Extremely low risk of metastasis
Hybrid Carcinoma

- Verrucous carcinoma with component of invasive SCCA
- <20% of verrucous carcinoma
- Higher risk of recurrence
- Possible risk of metastasis
Summary

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  - Keratinizing dysplasia
- Pitfalls and Mimics
  - Lichen planus
  - Pseudoepitheliomatous hyperplasia
- Identifying superficial invasion
- Biopsies of challenging variants