Actinic Keratosis & Squamous Cell Carcinoma

Case One: Skin Exam:

How would you describe this growth?

Well-circumscribed, 2cm, erythematous nodule with central ulceration and crust. The lesion is firm with palpation.

What is your differential diagnosis?

- Actinic keratosis
- Basal cell carcinoma
- Melanoma
- Seborrheic keratosis
- Squamous cell carcinoma
- Verruca vulgaris

Management:

- What is your next step in management?
  1. Liquid nitrogen cryotherapy
  2. Reassurance with close follow-up
  3. Shave biopsy
  4. Surgical excision
  5. Topical antibiotics

Answer: c

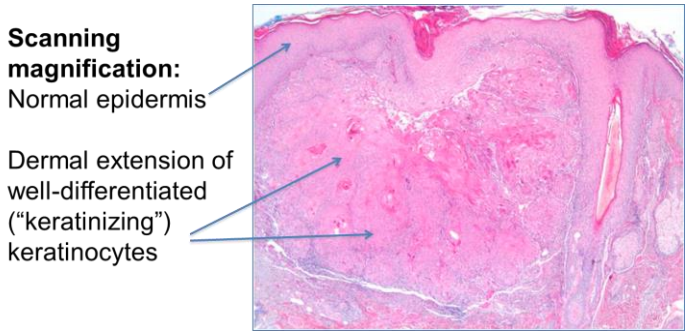
- What is your next step in management?
  a. Liquid nitrogen cryotherapy (Would not treat the lesion with cryotherapy without knowing the diagnosis. This is a suspicious lesion that warrants a biopsy)
  b. Reassurance with close follow-up (A history of a new growing lesion with concerning characteristics warrants a biopsy)

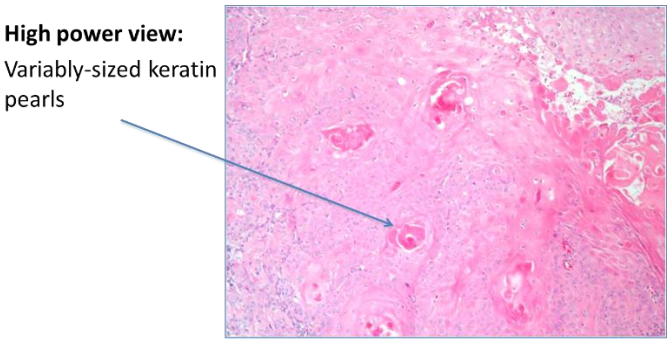
c. **Shave biopsy** (Before treating this lesion, you must establish a diagnosis)

d. Surgical excision (You must know the diagnosis before you can plan treatment with surgical excision and surgical margins)

e. Topical antibiotics (The lesion is not an infection)

Shave biopsy reveals…





Diagnosis:

- What is your diagnosis? Click on the correct answer.

- Actinic keratosis
- Basal cell carcinoma
- Melanoma
- Verruca vulgaris
- Seborrheic keratosis
- Squamous cell carcinoma

What is your diagnosis?

That was incorrect. Try again.

- Actinic keratosis
- Basal cell carcinoma
- Melanoma
- Verruca vulgaris
- Seborrheic keratosis
- Squamous cell carcinoma

Your diagnosis is correct!

- Actinic keratosis

- Basal cell carcinoma
- Melanoma
- Verruca vulgaris
- Seborrheic keratosis
- **Squamous cell carcinoma**

Squamous cell carcinoma (SCC)

- Most commonly occurs among people with **white/fair skin**
- Commonly located on the head, neck, forearms, and dorsal hands (**sun-exposed areas**)
- SCC has **increased** associated mortality compared to basal cell carcinoma, mostly due to a higher rate of metastasis

SCC: Etiology

- Cell of origin: **keratinocyte**
- Cumulative UV exposure
    - Cause genetic alterations, which accumulate and provide selective growth advantage
- SCC arising in *non* sun-exposed areas may be related to chemical carcinogen exposure (e.g. arsenic)

SCC: Clinical manifestations

- Various morphologies
    - Papule, plaque, or nodule
    - Pink, red, or skin-colored
    - Scale
    - Exophytic (grows outward)
    - Indurated (dermal thickening, lesion feels thick, firm)
    - May present as a cutaneous horn
- Friable – may bleed with minimal trauma and then crust
- Usually asymptomatic; may be pruritic

SCC *in situ*

- Also known as Bowen's disease
- Circumscribed pink-to-red patch or thin plaque with scaly or rough surface
- Keratinocyte atypia is confined to the epidermis and does ***not*** invade past the dermal-epidermal junction

Back to our case

- Our patient was diagnosed with invasive SCC. What is your next step in management?
  a. Liquid nitrogen cryotherapy
  b. Reassurance with close follow-up
  c. Shave biopsy
  d. Surgical removal
  e. Topical antibiotics

What is your next step in management?

Answer: d

a. Liquid nitrogen cryotherapy (Liquid nitrogen is used to treat pre- cancerous actinic keratoses. It is <u>NOT</u> the treatment for invasive squamous cell carcinoma.)
b. Reassurance with close follow-up (Squamous cell carcinoma is a malignant lesion with potential for metastases. You must treat it!)
c. Shave biopsy (You already know the diagnosis and there is no need for another biopsy.)
d. **Surgical removal** (The treatment of choice for squamous cell carcinoma is surgical excision. The specimen must be sent to pathology to document clear margins (complete excision).)
e. Topical antibiotics (The lesion is not an infection.)

Pathology reports for SCC:

- "Invasive squamous cell carcinoma"
  - Means there are SCC cells in the dermis
  - If there is no dermal involvement, it is squamous cell carcinoma *in situ*

    - Unrelated to metastatic potential
- "Atypical squamous proliferation"
    - Often used when biopsy is too superficial
    - If dermis cannot be seen in the biopsy, invasive SCC cannot be excluded

SCC: Treatment

- There are several medical and surgical treatment options
- Suspicion of SCC should prompt referral to a dermatologist for evaluation and discussion of specific treatment approaches
- **Surgical Treatment Options**
    - Surgical excision (standard of care for invasive SCCs)

Wide local excision

Mohs micrographic surgery

    - Curette and Desiccation (reserved for in situ SCC)
- **Non-surgical Treatment Options**
    - Radiation therapy for poor surgical candidates
    - 5-Fluorouracil cream, imiquimod cream, photodynamic therapy – typically reserved for in situ SCCs when excision is a suboptimal choice

SCC: Course & Prognosis

- For SCC arising in sun-exposed skin, the rate of metastasis to regional lymph nodes ~ 5%
- Higher rates of metastasis if:
    - Large (diameter > 2cm), deep (> 4mm), and recurrent tumors
    - Tumor involvement of bone, muscle, and nerve
    - Location on scalp, ears, nose, and lips
    - Tumor arising in scars, chronic ulcers, burns, sinus tracts, or on the genitalia
    - Immunosuppressed patients
    - Tumors caused by arsenic ingestion

Patient Follow-up:

- All patients treated for cutaneous SCC need surveillance for the early recognition and management of:
    - Treatment-related complications
    - Local or regional recurrences
    - Development of new skin cancers
- Patients with a history of SCC should have close follow-up
- Patients are often seen every 6 to 12 months

Case Two

Case Two: History

- A 66-year-old man with a history of SCC who presents to the dermatology clinic for his regularly scheduled follow-up visit. He reports that during a self skin exam, he noticed a few rough, red spots on the face. He asks if this could represent another cancer.

How would you describe the skin findings?

Rough, scaly, thin, red-pink plaques scattered on the forehead and right temple area

Diagnosis:

- **What is your diagnosis? Click on the correct answer.**
    - Actinic keratosis
    - Basal cell carcinoma
    - Melanoma
    - Seborrheic keratosis
    - Squamous cell carcinoma
    - Verruca vulgaris

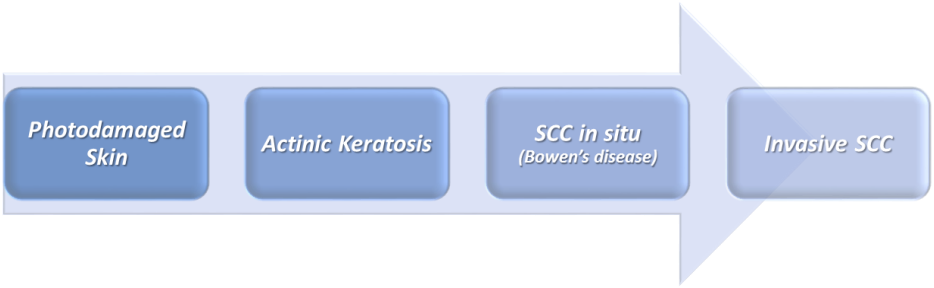
Your diagnosis is correct!

- **Actinic keratosis**
- Basal cell carcinoma
- Melanoma
- Seborrheic keratosis
- Squamous cell carcinoma
- Verruca vulgaris

Actinic Keratosis (AK)

- AKs are premalignant lesions; they have the potential of transforming into a skin cancer. Virtually all AKs that transform into cancer will become squamous cell carcinoma (SCC).
- Most AKs do not progress to invasive SCC
    - Risk of malignant transformation of an AK to SCC within one year is about 1 in 1000
    - Risk factors for malignant progression of AK to SCC include: persistence of the AK, history of skin cancer, and immunosuppression
- The keratinocyte is the cell of origin

AKs may be considered as part of a disease spectrum:



AK: Etiology

- Cumulative and prolonged **UV** exposure, resulting in:
    - UV-induced **p53** tumor suppressor gene mutations
- **Individual risk factors** can increase susceptibility:
    - Increasing age
    - Fair skin, light eyes/hair (skin types I,II)

- Immunosuppression
- Genetic syndromes, such as xeroderma pigmentosum and albinism

AK: Clinical manifestations

- May be symptomatic (tender)
- Located in sun-exposed areas
    - Head, neck, extensor forearms, and dorsal hands
- Typically on background of sun damaged skin
- Erythematous papule or thin plaque with a characteristic rough, gritty scale
- Often diagnosed by feel (like sandpaper)

* *The diagnosis of AKs should be made cautiously in lesions > 6mm since these may represent SCC in situ or a superficial BCC.*

AK: Actinic cheilitis

- Actinic cheilitis represents AKs on the lips, most often the lower lip
- Erythematous patch with rough gritty scale involving the lower lip

Persistent ulcerations or indurated areas should prompt a biopsy to rule out malignant transformation

AK: Treatment

- There are several topical and procedural treatment options for AKs. The best option is chosen after consideration of number, location, and thickness, among other patient factors.
- Therapies are considered local – treating the individual lesion, or field therapies – treating multiple AKs in one area
- Consultation with a dermatologist to guide therapy may be useful
- Localized Therapies
    - Liquid nitrogen cryotherapy
    - Curettage +/- electrocautery
    - Shave excision

- Field Therapies
    - Topical 5-fluorouracil or imiquimod creams
    - Photodynamic therapy

AK: Patient Education

- Patients with AKs are at increased risk of developing other non-melanoma and melanoma skin cancers.
    - Therefore, these patients should have regular skin exams every 6-12 months
    - Patients should be seen prior to their regularly scheduled follow-up if they notice a concerning lesion on a self-skin exam

Patient Education: Be Sun Smart®

- **Generously apply a broad-spectrum, water-resistant sunscreen** with a Sun Protection Factor (SPF) of 30 or more to all exposed skin.
    - "Broad-spectrum" provides protection from both UVA and UVB rays.
    - Reapply approximately every two hours, even on cloudy days, and after swimming or sweating.
- **Wear protective clothing**, such as a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses.
- **Seek shade.**
    - Remember that the sun's rays are strongest between 10 AM – 4PM.
    - If your shadow appears to be shorter than you are, seek shade.
- **Use extra caution near water, snow, and sand** because they reflect and intensify the damaging rays of the sun, which can increase your chances of a sunburn.
- **Get vitamin D safely** through a healthy diet that may include vitamin supplements. Don't *seek* the sun.
- **Avoid tanning beds**. Ultraviolet light from the sun and tanning beds can cause skin cancer and wrinkling. If you want to look tan, consider using a self-tanning product, but continue to use sunscreen with it.
- **Check your birthday suit on your birthday**. If you notice anything changing, growing, or bleeding on your skin, see a dermatologist.

How to perform a skin self-examination

Examine your body front and back in the mirror, then look at the right and left sides with your arms raised.

Look at the backs of your legs and feet, the spaces between your toes, and the soles of your feet.

Bend elbows and look carefully at forearms, upper underarms, and palms.

Examine the back of your neck and scalp with a hand mirror. Part hair for a closer look.

Take Home Points:

- Indurated erythematous lesions with keratin are SCC until proven otherwise.
- The diagnosis of SCC is established via shave biopsy.
- The treatment of SCC is surgical excision. Radiation therapy is a good choice in poor surgical candidates.
- Actinic keratoses are erythematous papules or thin plaques with scale. They feel rough on palpation but are not indurated.
- Actinic keratosis is a precancerous lesion that can evolve into squamous cell carcinoma.
- The treatment for actinic keratoses depends on the number of lesions and the patient's preference.