



HIV Dermatology

Basic Dermatology Curriculum

Module Instructions

- The following module contains a number of blue, underlined terms which are hyperlinked to the [dermatology glossary](#), an illustrated interactive guide to clinical dermatology and dermatopathology.
- We encourage the learner to read all the hyperlinked information.

Goals and Objectives

- The purpose of this module is to help medical students develop a clinical approach to the evaluation and initial management of HIV-positive patients presenting with skin disease.
- By completing this module, the learner will be able to:
 - Identify and describe the morphology of the dermatologic conditions presented in this module
 - Discuss the relationship between the level of immune suppression and the skin diseases seen in HIV positive individuals
 - Discuss the importance of highly active antiretroviral therapy in the treatment of skin conditions in patients living with HIV/AIDS

Introduction to HIV Dermatology

- 80-90% of patients with HIV have dermatologic disease
- HIV-infected individuals have a defect in cell-mediated immunity which predisposes them to certain infections (bacterial, fungal, mycobacterial, viral), many of which have skin findings
- HIV-positive patients are also at increased risk for neoplasms, inflammatory dermatoses, and drug reactions
- Dermatologic disease common to the general population (e.g., [seborrheic dermatitis](#)) often has an increased prevalence or severity in HIV-positive individuals

HIV Dermatology (cont.)

- Skin lesions may be the first sign of HIV infection
 - Ask about risk factors for HIV infection when a patient < 50 yrs-old presents with [herpes zoster](#) (shingles)
 - Suspicion for HIV infection should be raised when a patient presents with multiple skin diseases (e.g., severe seborrheic dermatitis and thrush)
- Some skin diseases are so characteristic of the immunosuppression of HIV-infection that their presence warrants HIV testing
 - Oral hairy leukoplakia, bacillary angiomatosis, and Kaposi sarcoma
- Typically, antiretroviral therapy improves skin conditions that result from immunodeficiency

Skin Disease and CD4 Counts

- Various skin manifestations of HIV infection can be correlated with levels of immune suppression
- Skin disease associated with any CD4 Cell Count:
 - Herpes simplex virus
 - Varicella zoster virus
 - Staphylococcus aureus
 - Syphilis
 - Scabies
 - Drug Reactions
 - Lymphoma
- More commonly associated with CD4 counts < 500
 - Human papillomavirus

Skin Disease and CD4 Counts

- More commonly associated with CD4 counts < 200
 - Infection: Epstein-Barr virus (oral hairy leukoplakia), Candida, Bacillary angiomatosis , Molluscum contagiosum, Histoplasmosis, Coccidiomycosis
 - Inflammatory: Psoriasis, Seborrheic dermatitis, Acquired ichthyosis, Atopic dermatitis, Xerosis
 - Neoplasm: Kaposi sarcoma
 - Other: Eosinophilic folliculitis
- More commonly associated with CD4 counts < 50
 - Cryptococcosis
 - Pruritic papular eruption (insect bite hypersensitivity)

Case One

Mr. Edward Mitchel

Case One: History

- HPI: Mr. Mitchel is a 53-year-old man who presents to dermatology clinic with a new rash on his chest, elbows, and knees. Rash does not itch or burn, but does cause him some emotional stress.
- PMH: no major illnesses or hospitalizations
- Medications: none
- Allergies: none
- Family history: mother with psoriasis
- Social history: currently staying with a friend until he can find more stable housing
- Health-related behaviors: no tobacco or alcohol use. Daily IV drug use x 5 years.

Case One: Skin Exam

- Multiple well-circumscribed erythematous plaques with overlying scale on the trunk and extremities (not shown)



Case One, Question 1

- What is your next step(s) in evaluating this patient?
 - a. Admit him to the hospital
 - b. Look inside his mouth
 - c. Order a chemistry panel
 - d. Order an HIV test

Case One, Question 1

Answer: b & d

- What is your next step(s) in evaluating this patient?
 - a. Admit him to the hospital (not necessary)
 - b. Look inside his mouth** (inspection of the oral mucosa is part of the total body skin exam)
 - c. Order a chemistry panel (not necessary)
 - d. Order an HIV test** (intravenous drug use is a risk factor for HIV)

Diagnosis: Psoriasis & Thrush

- Many HIV-related mucocutaneous changes occur in the mouth
 - Upon further exam, Mr. Mitchel had evidence of oral candidiasis
- Mr. Mitchel was diagnosed with plaque [psoriasis](#) and thrush
- The results of his HIV test came back positive
- He was provided with resources and counseling for his diagnosis of HIV

HIV and Psoriasis

- Psoriasis is a common disease in the general population and in patients with HIV
- When patients have pre-existing psoriasis, the severity of their psoriasis may worsen in the course of their HIV infection
- Psoriatic arthritis is more common and severe in HIV-positive individuals

Refer to the module on Psoriasis for more information

HIV and Psoriasis

- Similar to the general population, HIV-positive individuals with psoriasis can have multiple coexisting patterns at the same time or over time
 - Plaque Psoriasis
 - Inverse Psoriasis*
 - Pustular psoriasis
 - Erythrodermic psoriasis*
 - Guttate psoriasis⁺
- * More commonly seen in HIV-positive individuals
- + Test for syphilis when HIV-positive patients present with guttate lesions because the lesions of syphilis may mimic guttate psoriasis

Treatment for Psoriasis in HIV

- Similar to all patients with psoriasis, the general approach to treating HIV-associated psoriasis is to tailor therapy according to the patient's disease severity and preference:
 - Mild to moderate disease: topical treatment (steroids, retinoids, vitamin D analogs)
 - Moderate to severe disease: phototherapy, oral retinoids, or both may be used as second-line treatment
 - Refractory, severe disease: refer to a HIV specialist and dermatologist for consideration for immunotherapy

Treatment for Psoriasis in HIV

- The institution of HAART therapy in HIV-positive patients with psoriasis will improve their skin disease
- Many effective medications for psoriasis and psoriatic arthritis are immunosuppressive and can lead to severe complications → use cautiously and monitor for side effects
- Low threshold to refer a patient with HIV and co-existing psoriasis to an HIV specialist and dermatologist

Case Two

Mr. Donald Conrad

Case Two: History

- HPI: Mr. Conrad is a 38-year-old, HIV-positive man (unknown last CD4 count, not on HAART) who presents with “bumps” behind his ear as well as white spots on his tongue and mouth
- PMH: HIV diagnosed 5 years ago, no hospitalizations
- Medications: none
- Allergies: none
- Family history: no history of major illnesses or cancers
- Social history: lives downtown with his girlfriend
- Health-related behaviors: no tobacco, alcohol, or drug use
- ROS: new odynophagia

Case Two: Skin Exam



- Multiple discrete, dome-shaped, solid, skin-colored papules with central umbilication.
- Some appear smooth while others appear verrucous.

Case Two: Skin Exam

- Multiple white papules on the palate and posterior pharynx coalescing into plaques
- Removal with dry gauze pads leaves an erythematous mucosal surface



Case Two, Question 1

- What is the patient's likely diagnosis(es)?
 - a. Basal cell carcinoma
 - b. Molluscum contagiosum
 - c. Oral candidiasis
 - d. Verruca vulgaris

Case Two, Question 1

Answer: b & c

- What is the patient's likely diagnosis(es)?
 - a. Basal cell carcinoma
 - b. Molluscum contagiosum**
 - c. Oral candidiasis**
 - d. Verruca vulgaris

Molluscum Contagiosum and HIV

- Molluscum contagiosum (MC) is a benign, usually asymptomatic viral infection of the skin
- Caused by a DNA poxvirus
- Spread through direct skin to skin and sexual contact
- Lesions are commonly found on the face and genitals
- Usually presents as firm, skin-colored, dome-shaped papules with central umbilication
- In HIV-positive patients, lesions may be more numerous, more verrucous, larger and much less likely to spontaneously resolve

MC Evaluation and Treatment

- Diagnosis is often made clinically
 - Diagnosis can also be made by extracting the contents of the lesion and examining microscopically after staining
 - May also use a skin biopsy if diagnosis is unclear
- The institution of HAART therapy in HIV-positive patients frequently leads to the resolution of molluscum, so adequate treatment of HIV disease should first be verified and monitored

Refer to the module on Molluscum Contagiosum for more information regarding treatment

Oral Candidiasis

- Candida is a normal inhabitant of the human oropharynx and GI tract
- Oral candidiasis (thrush) is the most common fungal disease of HIV-positive patients
 - Lesions most characteristically appear as white plaques on the tongue or buccal mucosa that can be scraped off with a tongue blade (or dry gauze), producing bleeding or red macular atrophic patches

Oral Candidiasis

- HIV-infected patients can have all of the following patterns of oral candidiasis:
 - Pseudomembranous (thrush): as described above
 - Erythematous (atrophic): smooth, red atrophic patches
 - Hyperplastic (leukoplakia): white plaques that cannot be wiped off but regress with prolonged anticandidal therapy
 - Angular cheilitis: erythema and erosion at the corners of the mouth

Candidal Infection and HIV

- Oropharyngeal candidiasis may coexist with candidal esophagitis, which is the most common cause of odynophagia and dysphagia in HIV-infected patients
- Patients may also exhibit chronic and refractory vaginal candidiasis, paronychia and onychodystrophy, and candidal intertrigo
- Culture or microscopic visualization of pseudohyphae and yeast forms can be used to confirm the diagnosis of mucocutaneous candidiasis

Case Two, Question 1

- Which of the following is the best treatment option for Mr. Conrad?
 - a. Clotrimazole troches
 - b. Nystatin suspension
 - c. Oral cephalexin
 - d. Oral fluconazole

Case Two, Question 1

Answer: d

- Which of the following is the best treatment option for Mr. Conrad?
 - a. Clotrimazole troches (used to treat oropharyngeal candidiasis)
 - b. Nystatin suspension (used to treat oropharyngeal candidiasis)
 - c. Oral cephalexin (a cephalosporin antibiotic will not help treat candidiasis)
 - d. Oral fluconazole** (patient likely has oropharyngeal + esophageal candidiasis, which requires systemic treatment)

Mucocutaneous Candidiasis Treatment

- Oral candidiasis generally responds to local application of nystatin or clotrimazole
 - However, some patients may require oral medications or intravenous medications
- Systemic agents are recommended for the treatment of esophageal candidiasis
 - If no improvement within 72 hours, endoscopy may be necessary
- The presence of oral candidiasis in a patient without known risk factors for thrush should raise suspicion for HIV infection
 - Risk factors include the use of steroids inhalers, oral antibiotics, systemic steroids, and other forms of immunosuppression

Case Three

Mr. Daniel Lawson

Case Three: History

- HPI: Mr. Lawson is a 55-year-old man who was admitted to the hospital for altered mental status and rash with numerous crusted lesions all over his body, with minimal pruritus. 2/2 blood cultures drawn in the emergency room were positive for *S. aureus*.
- PMH: Diagnosed with HIV 9 years ago, last CD4 count of 36 checked 2 months ago. Dementia x 2 years (thought to be HIV-related).

Case Three: History

- Medications: none, stopped HAART last year with plans to restart them now that he his living with his brother
- Allergies: none
- Family history: noncontributory
- Social history: lives with his brother who has been itching but has not noticed any lesions
- Health-related behaviors: reports a healthy diet, no tobacco, alcohol or drug use

Case Three: Skin Exam



- Large hyperkeratotic plaques with deep fissures most severe on his buttock and feet. Scale is poorly adherent and falls off in large pieces.

Case Three, Question 1

- What is the most likely diagnosis?
 - a. Atopic dermatitis (widespread)
 - b. Crusted scabies
 - c. Herpes simplex (disseminated)
 - d. Psoriasis

Case Three, Question 1

Answer: b

- What is the most likely diagnosis?
 - a. Atopic dermatitis (widespread)
 - b. Crusted scabies**
 - c. Herpes simplex (disseminated)
 - d. Psoriasis

Scabies and HIV

- Scabies is an infestation of the skin that results in an eruption of pruritic papules and burrows from the mite *sarcoptes scabiei*
- Immune suppressed or neurologically impaired individuals are at increased risk of developing **crusted scabies** (hyperkeratotic scabies, formerly called Norwegian scabies)
 - Presents with thick, scaling, white-gray plaques with minimal pruritus that are often localized to the scalp, face, back, buttocks, and feet
 - Immunocompetent contact of persons with crusted scabies develop typical scabies
 - Fissures provide an entry for bacteria leading to increase risk for sepsis and death

Scabies Evaluation and Treatment

- Microscopic examination of the scale reveals numerous mites, eggs, or feces
- In non-crusted scabies, treat the infected individual and contacts with topical 5% permethrin cream
- Crusted scabies is far more difficult to treat as there is an incredibly large number of mites
- Patients should be monitored for secondary bacterial infection as it can result in fatal sepsis

See the module on Infestations and Bites for more information

Treatment of Crusted Scabies

- Typically combination therapy is used in in crusted scabies
 - Multiple doses of oral Ivermectin 200mcg/kg/dose depending on severity of infection
 - Topical permethrin 5% (or benzoyl benzoate 25%) 1-2x weekly, frequently more than two treatments is required
- Given the high mite burden, patients with crusted scabies should be isolated and strict barrier nursing procedures instituted to avoid outbreaks in health-care facilities

Case Four

Mr. Steve Rios

Case Four: History

- HPI: Mr. Rios is a 48-year-old man who presents to his primary care provider with purple spots on his body. They do not cause him pain or pruritus
- PMH: HIV+ for 12 years, last CD4 count 164
- Medications: none (stopped taking HIV medications 6 months ago)
- Allergies: none
- Family history: noncontributory
- Social history: lives with two roommates in a house, works as a server at a restaurant
- Health-related behaviors: no alcohol, tobacco or drug use
- ROS: overall tired, depression without suicidal ideation

Case Four: Skin Exam



- Scattered purple macules, plaques, and nodules of varying sizes and shapes, mainly found on the trunk and face

Case Four, Question 1

- What is the most likely diagnosis?
 - a. Angiosarcoma
 - b. Bacillary angiomatosis
 - c. Kaposi sarcoma
 - d. Urticaria

Case Four, Question 1

Answer: c

- What is the most likely diagnosis?
 - a. Angiosarcoma (angiosarcoma of the skin presents as singular or multifocal "bruise"-like patches on the skin, most frequently on the head and neck)
 - b. Bacillary angiomatosis (skin lesions appear as small red papules that may enlarge to become nodules)
 - c. Kaposi sarcoma**
 - d. Urticaria (pruritic, elevated papules and plaques, often with erythematous, sharply-defined borders and pale centers)

Kaposi Sarcoma (KS)

- Kaposi sarcoma is a vascular neoplastic condition linked to the infection with human herpesvirus 8 (HHV-8)
- There are four different types of KS:
 - Classic: primarily affects men of Mediterranean and Jewish origin
 - Endemic: several types described in sub-Saharan Africa before the AIDS epidemic, typically not associated with immune deficiency
 - Epidemic: AIDS-associated type, is characterized by more aggressive and widespread mucocutaneous lesions
 - Iatrogenic: associated with immunosuppressive drug therapy, typically seen in solid transplant patients
- May present as red or brown-violaceous macules, patches, plaques or nodules

Kaposi Sarcoma

- The skin is most commonly affected, but mucous membranes, gastrointestinal tract, lymph nodes, and lungs may all be involved
 - Oral lesions are classically found on the hard palate
 - ✓ Remember to look inside the patient's mouth
 - Cutaneous lesions occur most commonly on the trunk, the extremities, and the face (as opposed to classic KS, which mainly affects the feet and legs)
- Diagnosis is confirmed with a skin biopsy (taken from the center of a firm lesion)
- Depending on the patient's symptoms, other diagnostic procedures such as chest radiograph or stool occult blood test may be needed to assess for associated internal lesions

Kaposi Sarcoma: Treatment

- Every patient with HIV should be evaluated for treatment with HAART
 - Use of HAART has led to a marked decline in the prevalence of AIDS-related KS
 - Patients receiving HAART present with less aggressive KS and have significantly decreased morbidity and mortality
- Referral to a dermatologist, HIV specialist, or oncologist is frequently required in managing KS in the setting of HIV

Kaposi Sarcoma: Treatment

- Treatment will vary depending on extent of KS, immune status and associated systemic illnesses
 - Local treatment options include cryotherapy, radiation therapy, intralesional chemotherapy, or topical retinoid
 - Systemic chemotherapy is used for symptomatic systemic disease and widespread or rapidly progressive cutaneous involvement

HIV and Skin Cancer

- Fair skinned, HIV-positive individuals commonly develop basal cell carcinoma (BCC) or squamous cell carcinoma (SCC) of the skin
- BCC is substantially more common than SCC in HIV-infected individuals, in contrast to organ transplant recipients, in whom SCC is more frequent
- HIV-infected individuals are also more prone to developing HPV-associated genital insitu and invasive SCCs (rectal, cervical, penile cancer)
- Melanoma in the setting of HIV disease tends to be more aggressive

HIV-Associated Lipodystrophy



HIV-Associated Lipodystrophy

- HIV-associated lipodystrophy syndrome refers to a clustering of findings usually associated with the use of antiretroviral therapy
- Characterized by an abnormal distribution of body fat that is often accompanied by metabolic abnormalities such as insulin resistance and dyslipidemia

HIV-Associated Lipodystrophy

- The abnormal distribution of adipose tissue can include lipoatrophy, lipohypertrophy, or both
 - Lipoatrophy = loss of subcutaneous fat that is most evident in the face, extremities, or buttocks.
 - Lipohypertrophy most commonly involves the abdomen, where the fat is visceral, and the neck, dorsocervical region (buffalo hump), breasts, and/or trunk

Lipoatrophy



- Facial lipoatrophy is characterized by loss of fat throughout the face leading to temporal wasting and changes in the contour of the cheeks and orbits.

Lipodystrophy

- Potential complications of lipodystrophy syndrome include both psychological and medical aspects
- Association between specific antiretroviral exposure and morphological change is strongest for lipoatrophy
- Management of HIV-associated lipodystrophy includes both medical and surgical approaches

Lipodystrophy: Treatment

- Lipoatrophy
 - Changing antiretroviral regimen may benefit
 - Surgical approaches to facial lipoatrophy include the use of fillers and injectable medical devices
 - Insurance may pay for injectables in this setting
- Lipohypertrophy
 - Surgical procedures, including liposuction
 - Weight loss through diet and exercise

Take Home Points

- A high percentage of HIV-positive patients have dermatologic disease
- Skin lesions may be the 1st sign of HIV infection
- Dermatologic disease common to the general population may have an increased prevalence or severity in HIV positive individuals
- Various skin manifestations of HIV infection can be correlated with levels of immune suppression
- HIV-associated psoriasis may be refractory to conventional therapy
- The lesions of molluscum contagiosum are often more numerous, more verrucous, larger and much less likely to spontaneously resolve in HIV-positive patients
- Oral candidiasis is the most common fungal disease in HIV-positive individuals

Take Home Points

- Oropharyngeal candidiasis may be treated with topical antifungals
- Esophageal candidiasis requires systemic treatment
- HIV-positive patients are at increased risk for crusted scabies, which is far more difficult to treat, requiring both topical and oral therapy
- Kaposi sarcoma most often affects the skin, but mucous membranes, gastrointestinal tract, lymph nodes and lungs may be involved
- HIV-positive individuals are at an increased risk for skin cancers
- Institution of HAART often results in the improvement of HIV-associated skin disease
- HIV-associated lipodystrophy is characterized by an abnormal distribution of body fat that is often accompanied by metabolic abnormalities such as insulin resistance and dyslipidemia

Acknowledgements

- This module was developed by the American Academy of Dermatology Medical Student Core Curriculum Workgroup from 2008-2012.
- Primary authors: Sarah D. Cipriano, MD, MPH; Eric Meinhardt, MD; Timothy G. Berger, MD, FAAD; Kieron Leslie, MD, FRCP.
- Peer reviewers: Peter A. Lio, MD, FAAD; Daniela Kroshinsky, MD, FAAD.
- Revisions and editing: Sarah D. Cipriano, MD, MPH; John Trinidad. Last revised September, 2011

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