

Dermatological Manifestations of HIV Infection

MEDMENTOR EDU

MEDICINE STUDY NOTES · DERMATOLOGY

DERMATOLOGICAL MANIFESTATIONS OF HIV INFECTION

Cutaneous Signs · Inflammatory Dermatoses · Infections · Drug Reactions · Neoplasms · IRIS

MBBS · NEET-PG · INI-CET · DNB · FMGE

Based on the supplied MedMentor EDU study notes

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SECTION 1 | Dermatological Manifestations of HIV Infection

1.1 Introduction to Dermatological Manifestations

Initial Signs

- Skin diseases may be the **first clue to HIV infection**
- Cutaneous findings reflect:
 - **Disease progression**
 - **Immune status**

Prognostic Indicators

- **Number and severity** of mucocutaneous lesions correlate with:
 - Risk of **AIDS progression**
 - **Overall survival**
- In resource-limited settings:
 - Skin signs act as **practical markers of immune status**

Challenges in Management

- Diagnosis is difficult due to:
 - **Atypical presentations**
 - **Coexisting multiple dermatoses**
- Additional issues:
 - **Drug reactions**
 - **Impaired wound healing**

Immune Mechanisms

- HIV affects:
 - **Immunopathophysiological mechanisms**
 - **Neurovascular regulation of skin**
- Leads to:
 - **Unusual / atypical presentations**
 - **Multiple conditions in a single lesion**

1.2 Key Features of Dermatological HIV Manifestations

Impact of CD4 T-cell Count

- Severity of skin disease:
 - **Directly correlates with declining CD4 count**

Diverse Manifestations

- **Non-specific**
 - Pruritus
- **Serious conditions**
 - Kaposi sarcoma
- Common associations:
 - **Drug reactions**
 - **Seborrhoeic dermatitis**
 - **Psoriasis**

Skin as an Immunological Organ

- HIV targets:
 - **Langerhans cells**
 - **Dermal dendritic cells**
- Results in:
 - Altered **cytokine expression**
 - Wide variation in clinical presentation

Role of cART (Combination Antiretroviral Therapy)

- Benefits:
 - **Reduces morbidity and infections**
- Limitations:
 - Causes:
 - **Lipodystrophy**

- Drug-related dermatoses
- May trigger:
 - **IRIS (Immune Reconstitution Inflammatory Syndrome)**
 - Exacerbation of existing conditions

1.3 General Observations

Increased Disease Severity

- Common dermatoses show:
 - **More severe and atypical forms**
- Examples:
 - **Herpes simplex**
 - **Seborrhoeic dermatitis**
 - **Molluscum contagiosum**

Indicator Conditions for HIV Testing

- Certain skin conditions should prompt testing:
 - **Herpes zoster (shingles)**
 - **Extensive warts**
 - **Recurrent fungal infections**
- “Opt-out testing” helps:
 - Reduce **late diagnosis**

Normalization of Testing

- Routine HIV testing:
 - Encouraged in clinical practice
 - Helps:
 - **Early detection**
 - **Reduced transmission**

Immune Dysregulation and Skin

- Skin changes reflect:
 - **Underlying immune dysfunction**
- Provides:
 - Important insight into:
 - **Systemic disease status**

SECTION 2 | Dermatological Manifestations of HIV Infection

2.1 Pruritus, Xerosis, and Ichthyosis

Commonality

Very common in HIV patients

Often:

- Idiopathic

Presentation

- Generalized pruritus
- Xerosis (dry skin)

Differential Diagnosis

Specific dermatoses:

- Scabies
- Tinea
- Atopic eczema

Systemic causes:

- Hepatic disease
- Renal disease
- Lymphoma

Complications

- Excoriations
- Eczematization
- Secondary bacterial infections

May lead to:

- Prurigo excoriée
- Prurigo nodularis

Mechanisms

- Uncertain etiology for HIV-related xerosis
- Possible peptidergic neuronal loss

Severe cases:

- Intractable pruritus with eosinophilia
- Due to hyperactivation of humoral immunity
- Associated with high viral load

Drug Reactions

- Common after cART
- Especially due to protease inhibitors

Management

- Conventional treatments: phototherapy
- Specific drugs:
 - Thalidomide
 - Raltegravir (RAL)

2.2 Pigmentary Disorders

Hyperpigmentation

Common in HIV-positive patients

Causes:

- Drugs:
 - Zidovudine
 - Hydroxyurea
 - Indinavir
- Opportunistic infections

Associated with:

- Late-stage HIV infection

Oral and Anal Pigmentation

- Indicative of low CD4 counts
- May signal need for cART in resource-limited settings

Hypopigmentation

Includes:

- Vitiligo
 - Spontaneous
 - Drug-induced (photosensitivity)

Also:

- Extensive hypopigmentation in untreated cases

Acanthosis Nigricans

- Associated with metabolic syndrome
- Due to insulin resistance from cART
- Especially protease inhibitors

Persistent Hyperpigmentation

Includes:

- Serpentine supravenuous hyperpigmentation

2.3 Coagulopathies

Thrombocytopenic Purpura

- HIV-associated
- May mimic Kaposi Sarcoma

Risk Factors for Thrombosis

- Smoking
- Hypertriglyceridemia

Associated conditions:

- Acquired protein S deficiency
- Antiphospholipid syndrome
- HIV-related renal disease

Cutaneous Manifestations

- Ulceration

- Infarcts due to venous and arterial thrombosis

Warfarin-induced Skin Necrosis

- Reported in some HIV-positive cases

SECTION 3 | Inflammatory Dermatoses

3.1 Common Conditions

Includes

- Seborrhoeic dermatitis
- Psoriasis
- Pruritic papular eruptions

Exacerbation

- Exacerbated by HIV-related immune dysregulation

3.2 Less Frequent Dermatoses

Includes

- Erythroderma
- Photosensitivity
- Granuloma annulare

3.3 Immune Dysfunction

Effects

- Leads to atypical presentations
- Overlapping skin conditions within the same lesion

3.4 Management Challenges

Requirements

- Thorough clinical evaluation
- Histological evaluation

Common Investigations

- Skin scrapings
- Swabs
- Biopsies

3.5 Erythroderma (31.14)

Definition

- Erythroderma in HIV can have several causes
- Should follow general dermatological diagnostic protocols

HIV-Specific Indicators

- In young Black patients, erythroderma may serve as an HIV infection marker

Associated Symptoms

- Ano-genital complications in homosexual men:
 - Balanoposthitis
 - Proctitis
 - Perianal abscesses

3.6 Seborrhoeic Dermatitis (31.14)

Prevalence

- Found in 20–85% of HIV patients
- Versus 1–3% of the general population

Etiology

- Likely caused by immune reaction to *Malassezia* yeast species

Severity

- Increased severity with CD4 counts $<100 \times 10^9/L$

Clinical Features

- Scaly, itchy patches
- Localized to seborrheic areas

May coexist with:

- Folliculitis
- Erythroderma

Diagnosis

- Histology may mimic psoriasis

Findings:

- Hyperkeratosis
- Acanthosis
- Keratinocyte necrosis

Management

- Topical:
 - Imidazoles
 - Steroids
 - Pimecrolimus
- Systemic:
 - Antifungals
 - cART may improve condition

3.7 Atopic Eczema (31.14)

General Features

- Common in HIV-positive children
- May worsen with disease progression

Immune Dysregulation

- Reduced IgE synthesis

- Altered responses to fungal antigens

Management

- Combined:
 - Antimicrobial treatment
 - Anti-inflammatory treatment

SECTION 4 | Psoriasis (31.15)

HIV-Associated Exacerbations

- Severe cases:
 - Erythrodermic psoriasis
 - Pustular psoriasis
- May be worsened by:
 - Immunosuppression
 - Infections

Treatment

- Systemic agents:
 - Retinoids (etretinate, acitretin)
 - With phototherapy
- Caution:
 - Methotrexate
 - Ciclosporin

(due to immunosuppression risks)

- cART:
 - May improve psoriasis
 - Improves overall immune status

4.1 Eosinophilic Folliculitis (31.16)

Clinical Presentation

- Pruritic
- Erythematous perifollicular papules

Distribution:

- Face
- Trunk
- Often sterile
- No bacterial growth

Pathophysiology

- Driven by Th2 cytokines:
 - IL-4
 - IL-5

Treatment

- Most effective:
 - Phototherapy
- Other options:
 - Topical tacrolimus
 - Oral antihistamines
 - Systemic antibiotics

4.2 Pruritic Papular Eruption (31.16)

Prevalence

- Common in:
 - Africa
 - Asia
- Prevalence:
 - 10–60%

Immune Dysfunction

- Histology suggests:
 - Th2-driven response

Management

- cART initiation
- Phototherapy
- Oral antihistamines

4.3 Granuloma Annulare (31.17)

Clinical Types

- Localized
- Generalized
- Atypical:
 - Oral
 - Perforating

Association with cART

- Variable responses
- Some linked to specific antiretroviral therapies

Diagnosis

- Cultures:
 - Typically negative for infectious agents

4.4 Porphyria Cutanea Tarda (31.17)

SECTION 5 | Eosinophilic Folliculitis in HIV (Detailed Notes)

5.1 Definition

- Eosinophilic folliculitis (EF) is a chronic, inflammatory condition
- Commonly seen in HIV-positive patients
- Characterized by:
 - Pruritic
 - Perifollicular papules

5.2 Epidemiology

Prevalence

- Frequently observed in advanced HIV infection

- Especially when:
 - CD4 counts <200 cells/?L

Geographic Variation

- More prevalent in:
 - Sub-Saharan Africa
 - Southeast Asia

5.3 Clinical Features

Primary Lesions

- Intensely pruritic
- Erythematous papules
- Centered around hair follicles

Distribution

- Face
- Upper chest
- Back
- Extensor surfaces of arms

May involve:

- Scalp

Rarely involves:

- Lower body

Secondary Changes

- Excoriations
- Crusting

May lead to:

- Hyperpigmentation
- Scarring after healing

Chronicity

- Lesions often recur
- Especially without immune restoration

5.4 Pathophysiology

Immune Dysfunction

- Th2 cytokine dominance

Key cytokines:

- IL-4
- IL-5

Effects:

- Eosinophil recruitment
- Activation

Microbial Hypotheses

- Follicular inflammation possibly triggered by:
 - Fungal
 - Viral
 - Bacterial organisms
- Cultures:
 - Typically sterile

HIV-Specific Factors

- Immune dysregulation increases susceptibility to eosinophilic conditions

5.5 Diagnosis

Clinical Diagnosis

- Based on:
 - Characteristic lesions
 - Typical distribution
 - HIV-positive status

Histopathology

- Perifollicular eosinophilic infiltrates
- Dermal eosinophils

May show:

- Follicular rupture
- Granulomatous changes

Microbial Studies

- Cultures usually negative
- No bacterial or fungal pathogens

Differential Diagnosis

- Scabies
- Seborrhoeic dermatitis
- Atopic eczema
- Other folliculitis types

5.6 Treatment

First-Line Therapy

Phototherapy (UVB or PUVA):

- Most effective
- Reduces symptoms and recurrence

cART (Combination Antiretroviral Therapy):

- Improves immune function
- Reduces flare-ups

Symptomatic Relief

Topical Treatments:

- Topical steroids
- Tacrolimus
- Pimecrolimus

Systemic Therapies:

- Oral antihistamines

- Short-term systemic steroids (severe flares)

Additional Options

- Itraconazole
- Isotretinoin (off-label)
- Antibiotics (e.g., tetracyclines, empirical use)

Experimental Therapies

- Anti-IL-5 monoclonal antibodies:
 - Mepolizumab (under investigation)

5.7 Prognosis

- Improves with effective cART
- As CD4 count increases

Without immune restoration:

- Persistent
- Recurrent disease

5.8 Complications

Physical

- Excoriations
- Secondary infections
- Scarring

Psychological

- Severe pruritus
- Reduced quality of life

5.9 Key Points

- EF is a hallmark of advanced HIV infection
- Immune restoration via cART is essential

- Phototherapy is the cornerstone of symptomatic treatment

SECTION 6 | Drug Reactions in HIV

6.1 Introduction

- Drug reactions are a frequent challenge in managing HIV patients
- Due to:
 - Complex immunological interactions
- Adverse reactions linked to:
 - Immunological dysregulation in HIV
 - Altered cytokine levels
 - Immune hypersensitivity

6.2 Types of Drug Reactions

Morbilliform Toxic Erythema

- Common reaction
- Widespread erythematous rash

Associated features:

- Fever
- Arthralgia
- Eosinophilia

Drugs:

- Co-trimoxazole
- Dapsone
- Rifampicin

Erythema Multiforme, SJS, TEN

- Severe hypersensitivity syndromes
- Potentially life-threatening

Triggers:

- Abacavir

- Nevirapine
- Sulfonamides

Genetic links:

- HLA-B*5701 ? Abacavir
- HLA-C04:01 ? Nevirapine

Fixed Drug Eruptions

- Well-demarcated lesions
- Recur at same site on re-exposure

Drugs:

- Pentamidine
- Foscarnet

Photosensitivity Reactions

- Caused by:
 - Saquinavir
 - Efavirenz
- Results in:
 - Increased UV sensitivity

DRESS (Drug Rash with Eosinophilia and Systemic Symptoms)

- Severe reaction

Features:

- Fever
- Rash
- Multi-organ involvement

Drugs:

- Nevirapine
- Lamivudine

Lipodystrophy and Metabolic Effects

- Due to long-term therapy

Drugs:

- Protease inhibitors (ritonavir)
- NRTIs (stavudine)

Manifestations:

- Lipohypertrophy
- Lipoatrophy

6.3 Mechanisms of Drug Reactions

Immune Dysregulation

- Decreased Th1 cytokines
- Increased Th2 cytokines
- Elevated IgE

? Predisposes to hypersensitivity

Other Mechanisms

- Immune complex formation
- Autoreactive T-cells
- Reactivation of latent viruses:
 - Epstein–Barr virus
 - Cytomegalovirus

6.4 Management

Preventive Strategies

- Genetic screening:
 - HLA-B*5701 before abacavir
- Avoid/dose adjust high-risk drugs
- Especially in patients with prior reactions

Acute Treatment

- Antihistamines
- Topical steroids
- Systemic corticosteroids (severe cases)
- IVIG:

- For SJS/TEN

Switching Therapy

- Replace offending drug
- Use alternatives with lower hypersensitivity risk

Immune Recovery

- Effective cART:
 - Reduces incidence
 - Reduces severity
 - Restores immune balance

6.5 Drugs Frequently Implicated

Antiretrovirals

NRTIs:

- Abacavir ? Hypersensitivity
- Lamivudine ? Anaphylaxis
- Stavudine ? Lipodystrophy

NNRTIs:

- Nevirapine ? SJS, DRESS
- Efavirenz ? Photosensitivity

PIs:

- Ritonavir ? Urticaria, granulomas
- Indinavir ? Erythroderma

Other Medications

- Sulfonamides
- Dapsone
- Rifampicin
- Antituberculosis drugs

? Frequently cause hypersensitivity

6.6 Additional Cutaneous Reactions (Non-ARV Drugs)

Common Skin Reactions

- Morbilliform rash
- Erythema multiforme
- SJS
- TEN
- DRESS

Other Manifestations

- Erythroderma
- Anaphylaxis
- Urticaria
- Angio-oedema
- Xerosis
- Cheilitis
- Lichenoid reactions
- Psoriasis
- Photodermatoses

Specific Reactions

- Purpura
- Oro-genital ulceration
- Vasculitis

Fixed drug eruptions:

- Pentamidine ? Injection site ulcers
- Foscarnet ? Penile ulceration

Less Common Effects

- Palmar/plantar keratoderma (glucan)
- Flagellate erythema (bleomycin)
- Eosinophilic folliculitis (foscarnet)
- Acrocyanosis (butyl nitrite)

6.7 Serious Dermatological Side Effects of ARVs

Severe Skin Reactions

- SJS
- TEN
- DRESS

Genetic Predispositions

- Abacavir ? HLA-B*5701
- Nevirapine ? Genetic markers + CD4 thresholds

Other Adverse Effects

- Photosensitivity (efavirenz)
- Lipodystrophy (PIs, older NRTIs)
- IRIS:
 - Inflammatory flare of underlying conditions

SECTION 7 | Infections in HIV

7.1 Bacterial Infections

Impetigo

Appearance:

- Superficial infection
- Honey-colored crusts over erythematous base

Pathogens:

- *Staphylococcus aureus* (including MRSA)
- *Streptococcus pyogenes*

Risk Factors in HIV:

- Skin barrier disruption
- Pruritus
- Eczema
- Other co-existing conditions

Management:

- Topical mupirocin (localized)
- Oral antibiotics:
 - Cephalexin
 - Doxycycline (extensive cases)

Ecthyma**Features:**

- Deeper form of impetigo
- Punched-out ulcers
- Overlying crust

Complications:

- Deeper tissue involvement
- Secondary bacterial spread

Treatment:

- Oral antibiotics (Staphylococcus + Streptococcus coverage)

Cellulitis**Symptoms:**

- Warm
- Tender
- Swollen skin
- Indistinct borders

Complications in HIV:

- Increased risk of bacteremia

Management:

- Empirical antibiotics:
 - Clindamycin
 - Vancomycin

(cover streptococci + MRSA)

Necrotizing Fasciitis**Presentation:**

- Rapidly spreading infection
- Severe pain
- Crepitus
- Systemic toxicity

Pathogens:

- Polymicrobial
- Anaerobes
- Group A Streptococcus

Management:

- Urgent surgical debridement
- Broad-spectrum antibiotics:
 - Piperacillin–tazobactam
 - Clindamycin

Folliculitis

Clinical Features:

- Pustules centered on hair follicles
- Often pruritic

Management:

- Topical antiseptics/antibiotics (clindamycin)
- Oral antibiotics (recurrent cases)

7.2 Other Bacterial Infections

Mycobacterium Avium Complex (MAC)

Symptoms:

- Fever
- Weight loss
- Lymphadenopathy
- Papular/nodular skin lesions

Diagnosis:

- Skin biopsy (acid-fast stain)
- Blood cultures

Treatment:

- Clarithromycin / Azithromycin
- Ethambutol

Bacillary Angiomatosis**Features:**

- Vascular nodular lesions
- Resemble Kaposi sarcoma
- Painful, bleed easily

Pathogens:

- *Bartonella henselae*
- *Bartonella quintana*

Diagnosis:

- Biopsy (Warthin–Starry stain)
- PCR

Treatment:

- Doxycycline
- Erythromycin (?3 months)

Syphilis**Primary:**

- Chancre (painless ulcer)

Secondary:

- Maculopapular rash
- Palms and soles

Tertiary:

- Gummas
- Neurosyphilis

Diagnosis:

- RPR
- VDRL

- FTA-ABS

Treatment:

- Benzathine penicillin G (IM)

7.3 Viral Infections

Herpes Simplex Virus (HSV)

Primary Infection:

- Painful vesicles ? ulcers
- Fever
- Lymphadenopathy

Reactivation:

- Frequent and severe in advanced HIV
- Chronic ulceration

Diagnosis:

- Tzanck smear
- PCR

Treatment:

- Acyclovir
- Valacyclovir
- Famciclovir
- IV acyclovir (severe)

Varicella-Zoster Virus (VZV)

Shingles:

- Painful vesicular rash
- Single dermatome
- May be multidermatomal

Disseminated Disease:

- Diffuse rash
- Organ involvement
- Life-threatening

Diagnosis:

- Clinical
- PCR
- DFA

Treatment:

- Oral antivirals (mild)
- IV acyclovir (severe)
- Pain control

Cytomegalovirus (CMV)**Skin Manifestations:**

- Rare
- Purpura
- Ulcers
- Maculopapular rash

Other Features:

- Retinitis
- Esophagitis
- Colitis

Diagnosis:

- PCR
- Biopsy (owl's eye inclusions)

Treatment:

- Ganciclovir
- Valganciclovir

Human Papillomavirus (HPV)**Clinical Features:**

- Warts (skin/mucosa)
- Anogenital region common

Oncogenic types:

- HPV-16

- HPV-18

Management:

- Imiquimod
- Podophyllotoxin
- Cryotherapy / surgery

Molluscum Contagiosum**Features:**

- Dome-shaped papules
- Central umbilication

Extensive Disease:

- Advanced HIV
- Face, neck, genitals

Treatment:

- Curettage
- Cryotherapy
- Topical agents

Epstein–Barr Virus (EBV)**Oral Hairy Leukoplakia:**

- White corrugated plaques
- Lateral tongue
- Cannot be scraped off

Diagnosis:

- Clinical
- EBV PCR

Treatment:

- Improves with cART
- No specific antiviral

7.4 Management Principles for Infections

Early Diagnosis

- Prompt recognition of skin + systemic features
- Prevents complications

Role of cART

- Immune restoration
- Reduces infection frequency
- Reduces severity

Preventive Strategies

- Vaccination:
 - HPV
 - VZV
- Prophylaxis:
 - Opportunistic infections
 - Low CD4 counts

Holistic Approach

- Manage co-morbidities
- Maintain nutrition
- Patient education:
 - Hygiene
 - Drug adherence

SECTION 8 | Other Viral Infections

8.1 Molluscum Contagiosum

Cause

- Molluscum contagiosum virus (MCV)
- Poxvirus with 4 strains:
 - MCV1–4
- HIV-associated cases:
 - Predominantly MCV2

Clinical Presentation

- Papular or nodular lesions
- Larger and more numerous in immunocompromised patients
- Umbilication:
 - May be absent

Distribution:

- Face
- Neck
- Genital region (extensive lesions possible)

Differential Diagnosis

- Warts
- Sebaceous hyperplasia
- Syringomas
- Cryptococcosis
- Basal cell carcinoma

Diagnosis

- Skin biopsy

Findings:

- Eosinophilic cytoplasmic inclusion bodies

Management

- May resolve with immune reconstitution (cART)

Treatment options:

- Imiquimod
- Cidofovir (topical/systemic)
- Electron beam therapy
- Cryotherapy

8.2 Parvovirus B19

Clinical Manifestations

- Cutaneous vasculitis
- Papular-purpuric gloves and socks syndrome

Systemic:

- Anemia (especially in immunosuppressed patients)

Management

- Symptomatic treatment (skin lesions)

Systemic management:

- Blood transfusion
- IVIG

8.3 Human Herpesvirus 7 (HHV-7)

Clinical Features

- Often asymptomatic

May cause:

- Roseola infantum (similar to HHV-6)
- Pityriasis rosea
- Possible trigger for lichen planus

Reactivation in Immunosuppression

- Fever
- Rash
- Encephalitis
- Hepatitis

Diagnosis:

- Quantitative PCR
- Differentiates reactivation vs latent infection

Management

- No specific antiviral therapy
- Improves with immune restoration

8.4 Cytomegalovirus (CMV)

Epidemiology

- Common worldwide
- Lifelong latent infection
- Reactivation risk:
 - Increased in immunosuppressed patients

Clinical Presentation

- Congenital infection:
 - Severe systemic disease
 - Neurological deficits

Cutaneous:

- Purpura
- "Blueberry muffin" lesions (neonates)
- Rare vesicles

Management

- Ganciclovir
- Valganciclovir

Prevention:

- CMV-negative blood products

8.5 Human Herpesvirus 8 (HHV-8)

Associated Conditions

- Kaposi Sarcoma
- Primary effusion lymphoma
- Multicentric Castleman disease

Transmission

- Saliva
- Sexual contact
- Transplantation

Management

- Antivirals:
 - Valacyclovir
 - Famciclovir
- Treatment of associated diseases depends on severity/type

8.6 Other Considerations

Papular-Purpuric Gloves and Socks Syndrome

- Associated with Parvovirus B19

Features:

- Painful
- Erythematous/purpuric lesions
- Hands and feet

Viral Exanthems

- Maculopapular rashes

Causes:

- Echovirus
- Measles
- Human parvovirus

SECTION 9 | Fungal Infections in HIV

9.1 Candidosis

Pathophysiology

- Most common organism:
 - *Candida albicans*
- Other species:
 - *C. glabrata*
 - *C. tropicalis*
- Predisposing factors:

- Immunosuppression
- Low CD4 counts
- Disruption of mucosal barriers

Clinical Presentations

Oral Candidosis:

- Pseudomembranous ? white plaques
- Erythematous ? red patches
- Hyperplastic ? chronic thickened lesions

Esophageal Candidosis:

- Odynophagia
- Retrosternal discomfort

Vulvovaginal Candidosis:

- Itching
- Discharge
- Erythema

Chronic Mucocutaneous Candidosis:

- Persistent
- Extensive lesions in advanced HIV

Complications

- Recurrent infections ? marker of advanced disease
- Risk of systemic dissemination (severe immunosuppression)

Management

- **Topical:**
 - Nystatin
 - Clotrimazole
- **Systemic:**
 - Fluconazole (severe/esophageal)
- **Refractory cases:**
 - Itraconazole
 - Amphotericin B

9.2 Dermatophytosis

Pathogenesis

- Dermatophytes infect:
 - Skin
 - Nails
 - Hair
- Facilitated by:
 - Immune dysfunction in HIV

Clinical Variants

Tinea Pedis:

- Moccasin type ? diffuse scaling
- Interdigital ? maceration, fissures

Tinea Corporis:

- Annular plaques
- Scaling
- Central clearing

Onychomycosis:

- Subungual hyperkeratosis
- Nail thickening
- Onycholysis

Diagnosis

- KOH microscopy
- Fungal culture
- Biopsy (resistant cases)

Treatment

- **Topical:**
 - Azoles
 - Allylamines
- **Systemic:**
 - Terbinafine

- Itraconazole

9.3 Histoplasmosis

Pathogenesis

- Caused by *Histoplasma capsulatum*
- Infection via inhalation of spores

Source:

- Bird droppings
- Bat droppings
- Dissemination in HIV:
 - CD4 <150 cells/?L

Clinical Features

Skin Lesions:

- Papules
- Plaques
- Nodules
- Ulcers (may mimic Kaposi sarcoma)

Systemic:

- Fever
- Weight loss
- Hepatosplenomegaly
- Lymphadenopathy

Pulmonary:

- Diffuse interstitial pneumonia

Diagnosis

- Blood cultures
- Fungal stains
- Histopathology
- Antigen detection:
 - Urine
 - Serum

Management

- Amphotericin B (severe)
- Followed by itraconazole
- Maintenance:
 - Itraconazole (prevent relapse)

9.4 Cryptococcosis

Pathophysiology

- Caused by:
 - *Cryptococcus neoformans*
 - *Cryptococcus gattii*
- Transmission:
 - Inhalation
- Dissemination:
 - Bloodstream ? skin, CNS, organs

Cutaneous Manifestations

- Papules resembling molluscum contagiosum
- Necrotic ulcers
- Subcutaneous nodules

Systemic Manifestations

Meningitis:

- Chronic headache
- Fever
- Altered mental status

Pulmonary:

- Cough
- Chest pain

Diagnosis

- India ink staining
- Cryptococcal antigen (CSF, blood)
- Skin biopsy (mucicarmine stain)

Treatment

- Induction:
 - Liposomal amphotericin B
 - Flucytosine
- Maintenance:
 - Fluconazole

SECTION 10 | Other Fungal Infections

10.1 Penicilliosis

Pathogen

- *Talaromyces marneffe*
- Formerly *Penicillium marneffe*

Geography

- Southeast Asia

Clinical Features

- Fever
- Skin papules with central necrosis
- Lymphadenopathy

Diagnosis

- Biopsy
- Culture

Findings:

- Characteristic yeast forms

Treatment

- Amphotericin B (induction)
- Itraconazole (maintenance)

10.2 Sporotrichosis

Pathogen

- *Sporothrix schenckii*

Clinical Features

- Nodular lesions
- Ulcerative lesions
- Spread along lymphatic channels

Treatment

- Oral itraconazole
- Amphotericin B (severe cases)

10.3 Blastomycosis

Pathogen

- *Blastomyces dermatitidis*

Manifestations

- Verrucous plaques
- Ulcers
- Systemic symptoms

Treatment

- Itraconazole
- Amphotericin B

10.4 Coccidioidomycosis

Pathogen

- *Coccidioides immitis*

Geography

- Southwestern United States

Clinical Features

- Pulmonary symptoms
- Skin lesions
- Disseminated disease

Treatment

- Amphotericin B (disseminated disease)
- Fluconazole (maintenance)

10.5 Paracoccidioidomycosis

Pathogen

- *Paracoccidioides brasiliensis*

Geography

- South and Central America

Clinical Features

- Ulcerative mucosal lesions
- Systemic involvement

Treatment

- Itraconazole
- Amphotericin B (severe cases)

SECTION 11 | Comprehensive Management of Fungal Infections

11.1 General Principles

- Early recognition of skin lesions
- Prevents systemic dissemination
- Continue antifungal therapy:

- Until immune restoration

11.2 Role of cART

- Immune reconstitution
- Reduces recurrence
- Reduces severity

11.3 Prophylaxis

- Fluconazole
- Itraconazole

Indicated in:

- Patients with low CD4 counts
- High risk of opportunistic fungal infections

11.4 Monitoring

- Regular follow-up
- Detect relapse
- Detect complications

SECTION 12 | Protozoal Infections, Scabies, and Miscellaneous Infections

12.1 Protozoal Infections

Pneumocystis jiroveci

Clinical Manifestations:

- Pneumocystis pneumonia (PCP):
 - Fever
 - Dry cough
 - Progressive dyspnea

- Rare cutaneous lesions:
 - Papules
 - Plaques
 - Nodules (may mimic Kaposi sarcoma)

Diagnosis:

- PCR (respiratory samples)
- Skin biopsy (cutaneous lesions)

Management:

- TMP-SMX (first-line)
- Add corticosteroids:
 - Severe respiratory distress
 - Hypoxemia

Cryptosporidiosis and Microsporidiosis

Cutaneous Features:

- Rare
- Nodules
- Ulcers
- Nonspecific lesions

Diagnosis:

- Stool microscopy
- PCR
- Biopsy (organisms in epithelial cells)

Management:

- Cryptosporidiosis ? Nitazoxanide
- Microsporidiosis ? Albendazole

Leishmaniasis

Cutaneous Manifestations:

- Localized ulcers with raised borders
- Diffuse nodules

Visceral Disease:

- Fever

- Splenomegaly
- Skin involvement

Diagnosis:

- Biopsy (amastigotes)
- PCR
- Culture

Management:

- Liposomal amphotericin B (visceral)
- Miltefosine / Sodium stibogluconate (cutaneous)

Chagas Disease (Trypanosomiasis)

Clinical Features:

- Reactivation in HIV:
 - Painful cutaneous ulcers
 - Systemic involvement (myocarditis)

Diagnosis:

- Serology
- Identification of *Trypanosoma cruzi*

Management:

- Benznidazole
- Nifurtimox

12.2 Scabies

Crusted (Norwegian) Scabies

Presentation:

- Hyperkeratotic crusted plaques
- Common sites:
 - Hands
 - Feet
 - Scalp
 - Atypical areas
- Pruritus:

- May be absent

Complications:

- Secondary bacterial infection
- Sepsis
- Highly contagious ? outbreaks

Management:

- Oral ivermectin (multiple doses)
- Topical permethrin
- Hygiene measures
- Treat close contacts

Localized Scabies

- Common in:
 - Genital
 - Intertriginous areas

Treatment:

- Benzyl benzoate
- Sulfur ointment

Histopathology

- Mites
- Eggs
- Fecal pellets in epidermis
- Surrounding inflammatory infiltrate

12.3 Miscellaneous Infections

Demodicosis**Features:**

- Folliculitis-like lesions
- Papules
- Pustules
- May mimic rosacea

Severe:

- Indurated plaques
- Nodules

Diagnosis:

- Skin scraping
- Demodex mites on microscopy

Management:

- Ivermectin (oral/topical)
- Permethrin
- Metronidazole

Cutaneous Larva Migrans

Presentation:

- Intensely pruritic
- Serpiginous tracks

Cause:

- Nematode larvae (*Ancylostoma braziliense*)

Complications:

- Secondary infection

Management:

- Albendazole
- Ivermectin

Botryomycosis

Clinical Features:

- Chronic granulomatous infection
- Nodules
- Ulcers
- Draining sinuses
- Mimics fungal mycetoma

Pathogen:

- *Staphylococcus aureus*

Diagnosis:

- Biopsy
- Granules with bacterial colonies
- Eosinophilic material

Treatment:

- Prolonged antibiotics
 - Doxycycline
 - Clindamycin

Tick-Borne Infections

- Ehrlichiosis
- Rickettsial infections

Features:

- Fever
- Eschar
- Petechial rash

Treatment:

- Doxycycline

Protothecosis**Features:**

- Rare algal infection (*Prototheca*)
- Verrucous lesions
- Ulcerative lesions

Management:

- Amphotericin B
- Surgical excision (localized disease)

Management Strategies**1. Early Detection:**

- High suspicion for atypical presentations, particularly in immunocompromised patients.

2. Targeted Treatment:

- Antiparasitic and antibacterial agents tailored to the pathogen.

3. Prevention:

- Hygiene, environmental decontamination, and prompt treatment of co-infections.

4. Role of Immune Recovery:

- Effective cART reduces susceptibility to and recurrence of these infections.

SECTION 13 | Neoplasms in HIV

13.1 Kaposi Sarcoma (KS)

13.2 Pathogenesis

- Caused by chronic infection with HHV-8

Mechanisms

- **Angiogenesis:**
 - Mediated by VEGF
 - Cytokines (e.g., IL-6)
- **Immunosuppression:**
 - HIV promotes HHV-8 replication
 - Enhances oncogenesis
- Tumor origin:
 - Endothelial cells
 - Fibroblasts ? spindle cells

13.3 Clinical Subtypes

Classic KS

- Elderly
- Mediterranean males
- Slow progression

Endemic KS

- Sub-Saharan Africa
- Not related to HIV

AIDS-related KS

- Aggressive
- Multisystem involvement
- Hallmark of advanced HIV

Iatrogenic KS

- Post-transplant
- Immunosuppressed patients

13.4 Histological Features

- Spindle cells
- Slit-like vascular spaces
- Extravasated RBCs

Immunohistochemistry

- HHV-8 LANA positive

13.5 Advanced Disease Manifestations

Visceral Involvement

Gastrointestinal KS:

- Abdominal pain
- Bleeding
- Obstruction

Pulmonary KS:

- Diffuse infiltrates
- Pleural effusion
- Hypoxemia

Lymphatic Obstruction

- Severe lymphedema
- Limb swelling
- Functional impairment

13.6 Management

Localized Lesions

- Intralesional vinblastine
- Cryotherapy
- Oral lesions:
 - Laser therapy

Systemic Therapy

- Liposomal anthracyclines (doxorubicin)
- Paclitaxel

Emerging Therapies

- Immunomodulators
- Anti-angiogenic agents:
 - Bevacizumab (anti-VEGF)

13.7 Prognostic Indicators

Favorable

- Early-stage disease
- Good response to cART

Poor

- Extensive visceral involvement
- Concurrent opportunistic infections

SECTION 14 | Melanoma and Non-Melanoma Skin Cancer

14.1 Melanoma in HIV

Features

- Occurs at younger age
- More aggressive course in HIV
- Common sites:
 - Sun-exposed areas
 - Mucosal sites

Diagnostic Tools

- Dermoscopy:
 - Irregular pigmentation
 - Asymmetry
- Sentinel lymph node biopsy:
 - For staging

14.2 Squamous Cell Carcinoma (SCC)

HPV-Associated Lesions

- Anogenital SCC:
 - High-risk HPV
- Precursor lesions:
 - Condyloma acuminata
 - Intraepithelial neoplasia

Aggressive Subtypes

- Higher metastasis rates in HIV

Treatment

- Mohs surgery (facial lesions)
- Radiotherapy:
 - Advanced/unresectable disease

14.3 Basal Cell Carcinoma (BCC)

Clinical Patterns

Nodular:

- Pearly papules
- Telangiectasia

Superficial:

- Erythematous plaques
- Scaling

Therapy

- Topical imiquimod (superficial)
- Targeted therapy:
 - Vismodegib (advanced BCC)

14.4 Prevention

- Regular dermatologic surveillance
- Especially with:
 - HPV history
 - Sun exposure
- Sunscreen use
- Limiting UV exposure

SECTION 15 | Lymphoma

15.1 Non-Hodgkin Lymphoma (NHL)

EBV-Driven Tumors

- Burkitt lymphoma
- Primary CNS lymphoma

Clinical Features

- Rapidly growing masses
- Night sweats
- Systemic symptoms

CNS Involvement

- Focal neurological deficits
- Seizures
- Altered mental status

Cutaneous NHL

- Rare
- Violaceous nodules
- Plaques

15.2 Hodgkin Lymphoma

Features

- Increased risk in HIV
- EBV-associated

Diagnosis

- Reed–Sternberg cells

Prognosis

- Better with:
 - cART
 - Early-stage disease

15.3 Cutaneous T-Cell Lymphoma (CTCL)

Types

Mycosis Fungoides:

- Patches
- Plaques
- Erythroderma

Sézary Syndrome:

- Aggressive
- Erythroderma
- Circulating malignant T-cells

Management

- Topical corticosteroids
- Phototherapy
- Systemic chemotherapy

Therapeutic Advances

- Rituximab (CD20+ B-cell lymphomas)
- Immune checkpoint inhibitors

SECTION 16 | Other Neoplasms

16.1 Actinic Keratosis

- Premalignant lesion
- Sun-exposed areas
- Precursor to SCC

Treatment:

- Cryotherapy
- 5-fluorouracil
- Photodynamic therapy

16.2 Merkel Cell Carcinoma

- Aggressive neuroendocrine tumor
- Merkel cell polyomavirus

Features:

- Rapidly growing
- Painless nodules

Treatment:

- Excision
- Radiotherapy
- Immunotherapy (avelumab)

16.3 Sebaceous Carcinoma

- Rare
- Periocular nodules

Management:

- Wide excision
- Lymph node evaluation

16.4 Leiomyosarcomas

- Smooth muscle origin
- Associated with EBV in HIV

Features:

- Aggressive tumors

Management:

- Wide surgical excision

16.5 Pseudolymphomas

- Benign lymphoid proliferation
- Mimics lymphoma

Diagnosis:

- Histology
- Exclusion of malignancy

General Guidelines for Managing Neoplasms in HIV

1. Screening and Early Detection:

- Annual dermatologic evaluations for high-risk individuals.

- Targeted screening for HPV-associated neoplasms and lymphomas.

2. Role of cART:

- Immune restoration improves tumor control and reduces recurrence.
- Essential for reducing the incidence of AIDS-related cancers.

3. Supportive Care:

- Psychosocial support for managing the stigma and stress associated with cancer.
- Nutritional and pain management support for advanced disease.

4. Research Frontiers:

- Novel immunotherapies and targeted therapies hold promise for better outcomes in HIV-associated cancers.

SECTION 17 | Special Situations in HIV

17.1 Hair and Nails

Hair Abnormalities

Alopecia:

- Common
- Patchy or diffuse

Types:

- Alopecia areata
- Alopecia universalis

(associated with autoimmune activity)

Eyelash Trichomegaly:

- Marked elongation of eyelashes
- Seen in advanced HIV

Telogen Effluvium:

- Diffuse hair shedding
- Associated with:
 - Systemic illness

- Nutritional deficiency

Nail Changes

Clubbing:

- Seen in up to 36%
- Correlates with advanced disease

Color Changes:

- Grey nails
- Distal banding

Association:

- CD4 <200
- Yellow nail syndrome:
 - Associated with pulmonary disease

Structural Alterations:

- Beau's lines (transverse ridging)
- Longitudinal ridging
- Onycholysis

Onychomycosis:

- Pathogens:
 - *Trichophyton rubrum*
 - Candida species

Management

- Treat underlying condition
- Antifungals:
 - Topical
 - Systemic

17.2 Oro-Pharynx

Oral Manifestations

Early HIV:

- Transient erythema
- Ulcers
- Candidiasis (seroconversion phase)

Chronic Disease:

- Xerostomia
- Oral hyperpigmentation

? Suggests low CD4 counts

Mouth Ulceration

Causes:

- Malignancy:
 - Kaposi sarcoma
 - Lymphoma
- Infections:
 - HSV
 - CMV
 - Fungal
- Drug-induced

Candidiasis

Oral Thrush:

- White plaques
- Scrape off easily
- Erythematous base

Angular Cheilitis:

- Cracks
- Fissures at mouth corners

Management

- Antifungals:
 - Topical
 - Systemic (fluconazole)

Salivary Gland Involvement

- Enlarged glands

- Firm, non-tender

(Common in children)

Supportive Care

- Hydration
- Salivary stimulants
- Severe aphthous ulcers:
 - Thalidomide
 - Corticosteroids

17.3 Women

Sexual and Reproductive Health

STIs:

- Increased co-infections:
 - Chlamydia
 - Gonorrhea

HPV Infection:

- Increased prevalence
- Risk of:
 - Cervical dysplasia
 - Carcinoma

Pregnancy and Vertical Transmission

- cART reduces transmission:
 - <2%
- Complications:
 - Preterm delivery
 - Low birth weight

Dermatological Concerns

Vaginal Candidiasis:

- Persistent
- Recurrent

? Requires systemic antifungals

Genital Warts:

- Extensive
- Treatment-resistant
- Due to HPV

Management

- Regular screening:
 - Pap smear
 - Colposcopy
- HPV vaccination
- Appropriate antifungal and antiviral therapy

Children

1. Dermatological Manifestations:

- **Common Conditions:**
 - Widespread dermatitis (e.g., napkin dermatitis, seborrheic-like eruptions).
 - Pruritic papular eruptions and drug reactions.
- **Infectious Complications:**
 - High rates of bacterial skin infections (e.g., cellulitis, folliculitis).
 - Fungal infections, including candidiasis (75%) and dermatophytosis.
 - Viral infections, such as HSV and varicella-zoster, often severe.

2. Unique Presentations:

- **Epidermodysplasia Verruciformis-Like Lesions:**
 - HPV-related disfiguring and stigmatizing warts.
- **Kaposi Sarcoma:**
 - Rare but increasing in incidence, often with systemic involvement.

3. Management:

- Emphasis on infection control and nutritional support.
- Early initiation of cART for immune restoration.
- Treat fungal and bacterial infections promptly to prevent complications.

Key Considerations Across Special Situations

1. Importance of cART:

- Effective immune restoration mitigates many dermatological and systemic complications.

2. Screening and Prevention:

- Regular monitoring for secondary infections, malignancies, and immune-related conditions.

3. Multidisciplinary Approach:

- Collaboration between dermatologists, infectious disease specialists, and other healthcare providers ensures comprehensive care.

SECTION 18 | Haemophilia, Intravenous Drug Use, and IRIS / IRD / IRAD in HIV

18.1 Haemophilia

Prevalence of Skin Conditions

Increased Prevalence:

- Atopic eczema
- Seborrhoeic dermatitis
- Candidosis
- Dermatophyte infections
- Folliculitis
- Occur more commonly in HIV-positive haemophiliacs
- Often present earlier than in other HIV groups

Comparative Risk

- Earlier skin manifestations than:
 - Men who have sex with men (MSM)

Clinical Considerations

- Early dermatological signs ? marker of disease progression

Management

- Antiretroviral therapy (cART)
- Treatment of secondary skin infections

18.2 Intravenous Drug Use

Common Dermatological Issues

Injection Site Complications:

- Severe ecthyma
- Abscess formation

Contributing factors:

- Malnutrition
- Liver disease

Skin Infections

- Oral candidosis
- Seborrhoeic dermatitis

Less common:

- Kaposi sarcoma
- Oral hairy leukoplakia

Emerging Concerns

- MRSA infections
- Increased genital warts in HIV-positive drug users

Associated Infections

- Tuberculous lymphadenitis

Management

- Treat primary infections
- Nutritional support
- Harm reduction strategies

18.3 IRIS / IRD / IRAD

Definitions

IRIS (Immune Reconstitution Inflammatory Syndrome):

- Exaggerated inflammatory response after starting cART

IRD (Immune Reconstitution Disease):

- Clinical manifestations of immune recovery

IRAD (Immune Reconstitution Associated Disease):

- Broad term including IRIS and related conditions

Pathogenesis

- Rapid immune recovery
- Restoration of pathogen-specific immune responses

? Leads to:

- Inflammatory reaction against:
 - Existing infections
 - Subclinical infections

Clinical Features

- Worsening of known infections
- Unmasking of occult infections

Common associations:

- Tuberculosis
- Cryptococcosis
- CMV
- Kaposi sarcoma

Cutaneous Manifestations

- Exacerbation of skin lesions
- New inflammatory dermatoses

Risk Factors

- Low baseline CD4 count
- High viral load
- Rapid immune recovery after cART

Management

- Continue cART (usually)

- Treat underlying infection

Severe cases:

- Corticosteroids

Clinical Importance

- Indicates immune recovery
- Requires differentiation from:
 - Drug reactions
 - Disease progression

SECTION 19 | IRIS / IRD / IRAD (Immune Reconstitution Inflammatory Syndrome)

19.1 Definition

- Occurs after initiation of cART
- Due to immune restoration

? Leads to:

- Inflammatory response against:
 - Previously undetected infections
 - Partially treated infections

19.2 Prevalence

- ~50% of IRIS / IRD / IRAD cases:
 - Have dermatological manifestations

19.3 Dermatological Manifestations

Human Herpesviruses

- HSV-1, HSV-2:
 - Chronic oro-nasal lesions
 - Ano-genital ulcers

- Varicella-zoster virus:
 - Reactivation (shingles)
- Cytomegalovirus:
 - Multifocal cutaneous ulcerations

Other Viral Infections

- HPV:
 - Warts
 - Condyloma overgrowth
- Molluscum contagiosum:
 - Flare-ups

Mycobacterial Infections

- Tuberculosis reactivation
- Atypical mycobacteria:
 - Abscesses
 - Skin nodules

Fungal Infections

- Cryptococcosis:
 - Skin lesions
 - Nodules (immune reconstitution form)

19.4 Mechanisms

Immune Restoration

- Activation of cytokine-mediated pathways

Effects

- Unmasking of latent infections
- Worsening of subclinical disease

19.5 Management

General Principles

- Aggressive treatment of underlying infection

Anti-inflammatory Therapy

- Corticosteroids
- Other anti-inflammatory agents (severe cases)

cART

- Continue therapy
- Unless severe complications occur

19.6 Special Considerations in Pediatrics

- High incidence of IRIS
- Associated with:
 - Significant mortality

Clinical Approach

- Early recognition
- Prompt intervention
- Improves outcomes

Multifactorial Etiology

- Viral hepatitis
- Alcohol
- Sunlight
- Familial predisposition

Treatment

- N-acetylcysteine:
 - Effective in management