

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

CONTENTS AT A GLANCE

01. Dermatological Manifestations of HIV Infection

02. Dermatological Manifestations of HIV Infection

03. Inflammatory Dermatoses

04. Psoriasis (31.15)

05. Eosinophilic Folliculitis in HIV (Detailed Notes)

06. Drug Reactions in HIV

07. Infections in HIV

08. Other Viral Infections

09. Fungal Infections in HIV

10. Other Fungal Infections

11. Comprehensive Management of Fungal Infections

12. Protozoal Infections, Scabies, and Miscellaneous Infections

13. Neoplasms in HIV

14. Melanoma and Non-Melanoma Skin Cancer

15. Lymphoma

16. Other Neoplasms

17. Special Situations in HIV

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

19. IRIS / IRD / IRAD (Immune Reconstitution Inflammatory Syndrome)

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

Morbilloform 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