Dermatophytosis / Dermatophytie - Clinical Reference Guide

1. Dermatophytosis Diagnostic Approach

Clinical Diagnosis

- **Primary assessment**: Based on characteristic clinical presentation (annular lesions with raised scaly borders, central clearing)
- **Confirmation required**: Laboratory testing essential before treatment initiation

Laboratory Methods

Direct Microscopy (KOH Preparation)

- **Specimen collection**: Scrape from active lesion edge using sterile curette/scalpel
- **Pre-collection**: Clean site with 70% alcohol to remove contaminants
- **Procedure**: Add 10-20% KOH solution to visualize fungal hyphae and spores
- **Sensitivity**: 60-90% (variable by specimen quality)
- **Limitations**: Cannot identify species; requires expertise

Fungal Culture

- **Gold standard**: Sabouraud's dextrose agar with antibiotics and cycloheximide
- **Duration**: 3-6 weeks incubation at 25-30°C
- **Purpose**: Species identification, guides treatment selection
- **Sensitivity**: Lower than microscopy (35% false-negative rate)
- **Limitations**: Slow results; affected by prior antifungal treatment

Molecular Methods (PCR)

- **Indications**: Rapid diagnosis needed; culture-negative cases; treatment failure
- **Real-time PCR**: Detects and quantifies fungal DNA within 24-72 hours
- **Advantages**: High sensitivity/specificity; species identification; fungal load quantification
- **Target genes**: ITS region, CHS I gene, topoisomerase II
- **Limitation**: More expensive; not universally available

MALDI-TOF Mass Spectrometry

- **Use**: Rapid species identification from cultures (not direct specimens)

- **Accuracy**: 85-100% (database-dependent)
- **Limitation**: Requires adequate reference library; culture still needed

Specimen Collection Guidelines

- **Skin**: Scales from advancing lesion edge
- **Nails**: Debris from nail bed near infection site
- **Hair**: Pluck infected hairs with forceps (include roots)
- **Timing**: Before systemic treatment or ≥15 days after topical, ≥3 months after oral antifungals

2. Tinea Infection Clinical Evaluation

History Taking

- **Duration and progression** of lesions
- **Prior treatments** and response
- **Contact history**: Animals (zoophilic), other infected persons, soil exposure
- **Risk factors**: Diabetes, immunosuppression, occlusive footwear, communal facilities
- **Associated symptoms**: Pruritus, burning, pain

Physical Examination

Tinea Corporis

- **Lesions**: Annular plaques with raised scaly borders, central clearing
- **Distribution**: Asymmetrical, non-flexural areas
- **Variants**:
    - Kerion (pustular inflammatory mass)
    - Tinea incognita (atypical due to steroid use)
    - Majocchi granuloma (follicular involvement)

Tinea Faciei

- **Presentation**: Similar to corporis but often misdiagnosed
- **Features**: May lack typical ring shape; sun-aggravated
- **Distribution**: Usually unilateral/asymmetric

Tinea Pedis

- **Interdigital**: White maceration between toes (most common)
- **Moccasin type**: Dry scaly hyperkeratosis of soles/heels
- **Vesiculobullous**: Acute inflammatory with vesicles/pustules
- **Associated findings**: Check for tinea unguium (nails), tinea manuum

Tinea Cruris

- **Location**: Medial thighs, inguinal folds (spares scrotum/penis)
- **Appearance**: Bilateral erythematous plaques with well-demarcated borders

Differential Diagnosis

- **Eczema/Dermatitis**: Nummular eczema, contact dermatitis, seborrheic dermatitis
- **Psoriasis**: Especially inverse or plaque psoriasis
- **Pityriasis rosea**: Herald patch may mimic tinea
- **Other infections**: Erythrasma (bacterial), candidiasis
- **Inflammatory conditions**: Granuloma annulare, lupus erythematosus

Complications Assessment

- **Secondary bacterial infection**: Pustules, increased pain, lymphangitis
- **Dermatophytid reaction**: Allergic vesicular eruption at distant sites
- **Chronic dermatophytosis**: Multiple body sites, treatment-resistant

3. Dermatophytosis Treatment Guidelines

General Principles

- **Confirm diagnosis** before initiating systemic therapy
- **Identify source**: Treat infected household members/pets; address environmental factors
- **Duration**: Continue until clinical and mycological cure achieved

Topical Antifungals

Indications

- Localized tinea corporis/faciei/cruris (1-2 lesions)
- Tinea pedis (mild to moderate)
- Adjunct to systemic therapy

Agents and Application

- **Allylamines**: Terbinafine 1% cream, naftifine, butenafine (once or twice daily)
- **Azoles**: Clotrimazole, miconazole, ketoconazole, econazole (twice daily)
- **Others**: Ciclopirox, tolnaftate
- **Duration**: 2-4 weeks; apply to lesion + 2 cm beyond border
- **Efficacy**: Allylamines slightly superior to azoles; both superior to placebo

Systemic Antifungals

Indications

- Extensive/severe disease
- Hair follicle involvement (tinea capitis, Majocchi granuloma)
- Nail involvement (tinea unguium)
- Failed topical therapy
- Immunocompromised patients

First-Line Agents

Terbinafine

- **Dosing**: Adults 250 mg daily; Children: weight-based (see pediatric guidelines)
- **Duration**: Tinea corporis/pedis 2-4 weeks; tinea capitis 4-6 weeks
- **Advantages**: Fungicidal; shorter treatment course
- **Monitoring**: Baseline and periodic liver function tests

Itraconazole

- **Dosing**: Adults 200 mg daily; pulse therapy options available
- **Duration**: 2-4 weeks continuous or pulse regimen
- **Advantages**: Broad spectrum
- **Interactions**: Multiple drug interactions (CYP3A4 inhibitor)
- **Monitoring**: Liver function; check drug interactions

Fluconazole

- **Dosing**: 150-300 mg once weekly for 2-6 weeks
- **Advantages**: Convenient weekly dosing
- **Use**: Alternative when terbinafine/itraconazole contraindicated

Griseofulvin

- **Status**: Less commonly used; longer treatment required (6-12 weeks)
- **Indications**: May be preferred for M. canis infections
- **Dosing**: 500-1000 mg daily (with fatty meal for absorption)

Adjunctive Measures

- **Hygiene**: Keep affected areas clean and dry
- **Footwear**: Avoid occlusive shoes; use antifungal powders
- **Prevention**: Avoid barefoot walking in communal areas; separate towels/clothing
- **Topical corticosteroids**: May use short-term for severe inflammation (with antifungal)

Treatment Resistance

- **Emerging issue**: Terbinafine resistance (especially T. rubrum)
- **Management**: Culture with susceptibility testing; consider alternative agents; prolonged therapy

4. Tinea Corporis/Faciei/Pedis Protocol

TINEA CORPORIS

Localized Disease (1-2 lesions)

1. **Confirm diagnosis**: KOH microscopy ± culture
2. **Topical therapy**:
    a. Terbinafine 1% cream once daily OR
    b. Azole cream (clotrimazole, miconazole) twice daily
3. **Duration**: 2-4 weeks (continue 1-2 weeks after clearing)
4. **Follow-up**: Reassess at 4 weeks if no improvement

Extensive/Severe Disease

1. **Systemic therapy**:
    a. Terbinafine 250 mg daily × 2-4 weeks OR
    b. Itraconazole 200 mg daily × 2 weeks OR
    c. Fluconazole 150-300 mg weekly × 2-4 weeks
2. **Baseline labs**: Liver function tests (if systemic therapy prolonged)
3. **Follow-up**: Clinical assessment at 2-4 weeks

Special Variants

- **Majocchi granuloma**: Requires systemic therapy (terbinafine or itraconazole 4-6 weeks)
- **Tinea incognita**: Stop topical corticosteroids; initiate antifungal therapy

TINEA FACIEI

Management

1. **Diagnosis**: High index of suspicion; confirm with microscopy/culture
2. **Treatment**:
    a. Topical antifungal (terbinafine or azole) × 2-4 weeks for localized
    b. Systemic therapy often preferred (due to cosmetic concerns, rapid cure):
        i. Terbinafine 250 mg daily × 2 weeks OR
        ii. Itraconazole 200 mg daily × 1-2 weeks
3. **Identify source**: Check pets if M. canis suspected

TINEA PEDIS

Interdigital Type

1. **Topical therapy**:
    a. Terbinafine 1% cream once daily × 2 weeks OR
    b. Azole cream twice daily × 4 weeks
2. **Adjunct**: Keep feet dry; antifungal powder in shoes

Moccasin/Hyperkeratotic Type

1. **Preferred**: Systemic therapy due to thick stratum corneum
    a. Terbinafine 250 mg daily × 4 weeks OR
    b. Itraconazole 200 mg daily × 4 weeks
2. **Topical adjunct**: May add topical therapy
3. **Keratolytic**: Consider urea cream to reduce hyperkeratosis

Vesiculobullous Type

1. **Acute phase**: Short-term topical corticosteroid (3-5 days) + antifungal
2. **Antifungal**:
    a. Systemic therapy often needed
    b. Terbinafine 250 mg daily × 2-4 weeks
3. **Dermatophytid reaction**: Treat primary infection; reaction resolves with cure

General Measures for Tinea Pedis

- Examine nails for onychomycosis (treat if present)
- Check hands for tinea manuum
- Preventive strategies:
    - Dry feet thoroughly (especially between toes)
    - Wear breathable footwear
    - Change socks daily
    - Antifungal powder for prevention

TINEA CRURIS

Treatment

1. **Topical therapy** (usually sufficient):
    a. Terbinafine 1% cream once daily × 2 weeks OR
    b. Azole cream twice daily × 2-4 weeks
2. **Systemic therapy** (if extensive or failed topical):
    a. Terbinafine 250 mg daily × 2 weeks OR
    b. Itraconazole 200 mg daily × 2 weeks
3. **Adjunct measures**:

a. Keep groin area dry
b. Avoid tight clothing
c. Treat concurrent tinea pedis (common source)

Monitoring and Follow-Up

- **Clinical response**: Expected within 1-2 weeks
- **Mycological cure**: Confirm if persistent/recurrent (repeat culture)
- **Recurrence**: Address predisposing factors; consider maintenance therapy in high-risk patients
- **Treatment failure**: Consider drug resistance, non-compliance, reinfection, or alternative diagnosis

Note: Dosages provided are for adults. Pediatric dosing requires weight-based calculations. Always check for drug interactions, contraindications, and obtain informed consent before initiating systemic therapy.