Case Study

45 YEAR OLD MAN WITH ATHLETE'S FOOT

Case History

45 year old male , known diabetic on treatment presented to the dermatologist for itching and maceration of 2nd and 3rd toes since last 2 months.
His blood sugar Fasting was 130 mg%, post lunch 146 mg%, he was taking metformin tablets 500 mg twice daily and tab. glimepiride 1mg daily
On examination,there was toe web scaling, fissuring, maceration; scaling of soles.

The findings are consistent with the diagnosis of tenia pedis- fungal infection of the soles of the feet and the interdigital space

1. Which fungi cause tenia pedis?

T rubrum, Trichophyton mentagrophytes, and Epidermophyton floccosum most commonly cause tinea pedis, with T rubrum being the most common cause.

2. What are the risk factors for tinea pedis?

The risk factors for tenia pedis include

- Living in a warm humid climate
- Wearing air-tight shoes
- Use of Communal baths
- Immunocompromised states
- Diabetes mellitus

3. What are the various clinical presentations of tenia pedis?

The various clinical presentations of tenia pedis are:

- Interdigital tinea pedis - There is erythema, maceration, fissuring, and scaling, most often seen between the fourth and fifth toes. This type is often accompanied by pruritus
- Chronic hyperkeratotic tinea pedis- Here there is chronic plantar erythema with slight scaling to diffuse hyperkeratosis
- Inflammatory/vesicular tinea pedis - Painful, pruritic vesicles or bullae, most often on the instep or anterior plantar surface, characterize the inflammatory/vesicular type
- Ulcerative tinea pedis- The ulcerative variety is characterized by rapidly spreading vesiculopustular lesions, ulcers, and erosions, typically in the web spaces, and is often accompanied by a secondary bacterial infection

Case contd.

Patient was treated with oral fluconazole 150 mg/week for 6 weeks. He was prescribed miconazole cream to be applied twice daily for 4 weeks .

He responded well to treatment.

4. What are the various treatments available for tenia pedis?

Topical antifungal drugs

- Ketoconazole 2% cream - Imidazole, broad-spectrum antifungal agent , Inhibits synthesis of ergosterol (main sterol of fungal cell membranes), causing cellular components to leak; results is cell death
- Clotrimazole 1% cream or lotion- Broad-spectrum antifungal agent that inhibits yeast growth by altering cell membrane permeability, causing fungal cell death.
- Econazole 1% cream or lotion- Interferes with RNA and protein synthesis and metabolism. Disrupts fungal cell-wall membrane permeability, causing fungal cell death.

- Miconazole 2% cream -- Damages fungal cell-wall membrane by inhibiting biosynthesis of ergosterol. Membrane permeability is increased, causing nutrients to leak and resulting in fungal-cell death.
- Terbinafine 1% cream- Apply to affected area qd for 1-4 wk

Systemic antifungal drugs

- Terbinafine - Synthetic allylamine derivative that inhibits squalene epoxidase, a key enzyme in sterol biosynthesis of fungi, resulting in a deficiency in ergosterol that causes fungal cell death. Dosage- 250 mg/d orally for 2-6 weeks
- Griseofulvin - An antibiotic derived from a species of Penicillium that is deposited in the keratin precursor cells, which are gradually replaced by noninfected tissue; the new keratin then becomes highly resistant to fungal invasions. Dosage- 0.75-1 g microsize (660-750 mg ultramicrosize) orally in single or divided doses for 2-6 weeks
- Itraconazole -- Synthetic triazole antifungal agent that inhibits fungal cell growth by inhibiting the cytochrome P-450–dependent synthesis of ergosterol, a vital component of fungal cell membranes. Dosage 200 mg bid orally for 1 week
- Fluconazole – Broad-spectrum triazole antifungal agent. A potent and selective inhibitor of fungal enzymes necessary for ergosterol synthesis. Dosage 150 mg/wk orally for as long as 6 weeks

5. What are the complications of tenia pedis?

Complications of tenia pedis include secondary cellulitis, lymphangitis and pyoderma. These complications are seen more frequently in patients with conditions such as chronic edema, immunosuppression, and diabetes.

6. How will you prevent tenia pedis?

Preventive measures include

- Carefully drying the feet and spaces between the toes after bathing
- Applying a drying powder to the feet or shoes daily

- Changing socks frequently if they become damp
- Avoiding occlusive (non-breathable) footwear
- Wearing sandals or other open footwear when possible
- Avoiding walking barefoot in locker rooms and communal showers where fungal spores may be found
- Avoiding sharing socks, towels, or shoes with others

References

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