

REVIEW



Skin infections in the modern age: A review of bacterial, fungal, and viral dermatological conditions

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ABSTRACT

Skin infections remain a significant public health concern, with bacterial, fungal, and viral pathogens causing a range of dermatological conditions. This review explores the most common bacterial skin infections, including impetigo, cellulitis, and folliculitis, caused primarily by *Staphylococcus aureus* and *Streptococcus pyogenes*, and their treatment with antibiotics. Fungal infections, similar as tinea corporis, candidiasis, and seborrheic dermatitis, are bandied, pressing the part of dermatophytes, *Candida* species, and *Malassezia* in their pathogenesis and operation with antifungal curatives. Viral skin infections, including herpes simplex contagion (HSV), varicella- zoster contagion (VZV), and mortal papillomavirus (HPV), are also examined, with an emphasis on antiviral treatments and the part of vaccines. The review also addresses ultramodern challenges in the opinion and treatment of these infections, particularly the rise of antimicrobial resistance, and underscores the significance of early intervention and substantiated treatment approaches. Understanding these infections is critical for effective operation in the contemporary clinical setting.

KEYWORDS

Skin infections; Bacterial dermatological conditions; Fungal dermatological conditions; Impetigo; Viral dermatological conditions; Cellulitis; Folliculitis; Tinea corporis

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Introduction

Skin infections are a major global health concern, affecting individualities of all periods and backgrounds. In the ultramodern age, the frequency of bacterial, fungal, and viral dermatological conditions has increased due to factors similar as climate change, urbanization, transnational trip, and the rise in immunocompromised populations [1]. Bacterial skin infections, similar as impetigo, cellulitis, and folliculitis, are generally caused by *Staphylococcus aureus* and *Streptococcus pyogenes*, with clinical instantiations ranging from localized skin lesions to more severe systemic infections. Fungal infections, including tinea corporis, candidiasis, and seborrheic dermatitis, are on the rise, frequently told by environmental factors, hygiene practices, and immunosuppressive treatments. These infections are caused by dermatophytes, *Candida* species, and *Malassezia*, and can affect in habitual, intermittent dermatological issues [2]. Viral infections, similar as herpes simplex contagion (HSV), varicella- zoster contagion (VZV), and mortal papillomavirus (HPV), also contribute significantly to the dermatological burden, leading to conditions like cold blisters, chickenpox, knobs, and molluscum contagiosum [3]. Advances in diagnostics, including PCR- grounded tests and dermoscopy, have bettered early discovery and treatment strategies [4]. still, the adding frequency of antimicrobial resistance, alongside the need for substantiated remedial approaches, presents ultramodern challenges in managing these infections [5]. This review explores the pathophysiology, clinical features, and current treatment options for bacterial, fungal, and viral skin infections in the ultramodern clinical geography.

Bacterial Skin Infections

Bacterial skin infections are a current concern, frequently caused by *Staphylococcus aureus* and *Streptococcus pyogenes* [6]. These infections can range from superficial, localized conditions to more serious, life- changing bones. Impetigo is a common superficial infection, generally affecting children, characterized by caked, honey- coloured lesions [7]. It's frequently caused by *Streptococcus pyogenes* or *Staphylococcus aureus* and treated with topical antibiotics like mupirocin or systemic antibiotics for more expansive cases. Cellulitis is a deeper skin infection that presents with greenishness, warmth, swelling, and pain, frequently accompanied by fever [8]. Caused by *Streptococcus* or *Staphylococcus* species, cellulitis is generally treated with oral or intravenous antibiotics like cephalexin or clindamycin. Folliculitis, characterized by lit hair follicles, is constantly caused by *Staphylococcus aureus*, leading to red, pustular lesions [9]. Treatment frequently involves topical antibiotics, but severe cases may bear systemic treatment.

The emergence of antibiotic- resistant bacteria, particularly methicillin- resistant *Staphylococcus aureus* (MRSA), complicates the operation of these infections [10]. MRSA infections can beget more severe or habitual conditions, challenging the use of indispensable antibiotics similar as clindamycin or vancomycin [11]. opinion generally involves clinical evaluation, bacterial culture, or PCR tests to identify the causative agent and determine antibiotic perceptivity. Proper antibiotic stewardship, early discovery, and prompt treatment are critical in managing bacterial skin infections and precluding complications (Table 1).

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Table 1. Current commercially available ultrasound contrast agents.

Infection	Pathogen(s)	Clinical Features	Treatment
Impetigo	Streptococcus pyogenes, Staphylococcus aureus	Crusted lesions, blisters	Topical antibiotics (e.g., mupirocin)
Cellulitis	Streptococcus pyogenes, Staphylococcus aureus	Swelling, redness, pain	Oral or IV antibiotics (e.g., cephalexin, clindamycin)
Folliculitis	Staphylococcus aureus	Red, inflamed hair follicles	Topical antibiotics, oral antibiotics (severe cases)

Fungal Skin Infections

Fungal skin infections are increasingly common, particularly in immunocompromised individuals, and can be caused by dermatophytes, yeasts, and molds [12]. Dermatophytes such as *Trichophyton*, *Microsporum*, and *Epidermophyton* cause tinea infections, commonly referred to as ringworm. These include tinea corporis (ringworm of the body), tinea pedis (athlete's foot), and tinea cruris (jock itch). These conditions present as red, scaly, annular lesions with raised borders and can be treated effectively with topical antifungals like clotrimazole or terbinafine [13]. Severe or widespread infections may require oral antifungal treatment.

Candidiasis, caused by *Candida albicans*, is another significant fungal infection, typically affecting areas of skin that are warm and moist, such as the armpits, groin, and under the breasts. Symptoms include erythematous, inflamed patches, often with satellite lesions. Topical antifungals like nystatin or clotrimazole are typically effective, though systemic treatment may be required for more severe cases [14].

Seborrheic dermatitis, linked to *Malassezia* species, manifests as greasy, scaly patches on the scalp, face, and upper body [15]. It is associated with an overgrowth of the fungus in sebaceous-rich areas. Treatment involves antifungal shampoos (e.g., ketoconazole) and topical corticosteroids (Table 2).

Table 2. Fungal Skin Infections and Therapeutic Options.

Infection	Pathogen(s)	Clinical Features	Treatment
Tinea corporis	Trichophyton, Microsporum	Annular, scaly lesions	Topical antifungals (e.g., clotrimazole, terbinafine)
Candidiasis	<i>Candida albicans</i>	Erythematous rash, often with satellite lesions	Topical antifungals (e.g., nystatin, clotrimazole)
Seborrheic Dermatitis	<i>Malassezia</i> spp.	Red, flaky patches on scalp, face	Topical antifungals (e.g., ketoconazole shampoo), corticosteroids

Viral Skin Infections

Viral skin infections are common and diverse, caused by various viruses, including Herpes simplex virus (HSV), Varicella-zoster virus (VZV), and Human papillomavirus (HPV) [16]. HSV leads to painful blisters and ulcers, typically around the mouth (HSV-1) or genital area (HSV-2), and is treated with antivirals like acyclovir. VZV causes chickenpox (primary infection) and shingles (reactivated infection), presenting as a vesicular rash and treated with antivirals such as acyclovir [17]. HPV causes warts, including common warts, plantar warts, and genital warts, which can be managed with cryotherapy, salicylic acid, or immunotherapy. Molluscum contagiosum, caused by a poxvirus, results in dome-shaped papules and is treated with topical therapies like imiquimod [18,19]. These viral infections often require antivirals or immunomodulatory treatments, with prevention through vaccination (e.g., HPV, varicella).

Conclusions

skin infections caused by bacterial, fungal, and viral pathogens continue to be a significant public health concern, with different clinical donations and varying treatment approaches. Bacterial skin infections, similar as impetigo, cellulitis, and folliculitis, frequently caused by *Staphylococcus aureus* and *Streptococcus pyogenes*, are treated with applicable antibiotics, although the

rise of antimicrobial resistance, particularly with MRSA, presents challenges. Fungal infections, including tinea, candidiasis, and seborrheic dermatitis, are managed with antifungal curatives, but their adding frequency, particularly in immunocompromised populations, requires watchful opinion and treatment. Viral infections like herpes simplex, varicella-zoster, and mortal papillomavirus result in a range of dermatological conditions, from painful vesicular lesions to knobs, taking antiviral and immunomodulatory treatments. As skin infections continue to impact global health, advancements in individual technologies, early discovery, and effective treatments are essential. The growing concern of resistance and the need for individualized treatment strategies punctuate the significance of ongoing exploration in dermatological care to manage these conditions effectively.

Disclosure statement

No potential conflict of interest was reported by the authors.

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