

Clinical Images

Presentations of Cutaneous Disease in Various Skin Pigmentations: Inverse Psoriasis

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Abstract

Description

Inverse psoriasis is a clinical variant of psoriasis involving flexural or intertriginous areas of the body. Inverse psoriasis may be present in 3 to 36% of psoriasis patients. Lesions are clinically characterized as smooth, well-demarcated, erythematous plaques (raised, >1 cm) without the typical silvery scales of classic psoriasis. Differential diagnosis includes tinea infection, candidiasis, seborrheic dermatitis, or bacterial streptococcal infection. The clinical images in this review focus on identifying inverse psoriasis along the full spectrum of skin tones.

Keywords

dermatology; psoriasis; psoriasis/diagnosis; psoriasis/ethnology; papulosquamous skin diseases; inverse psoriasis; diagnosis; flexural psoriasis; intertriginous psoriasis; skin pigmentation; skin of color; Fitzpatrick skin types

Introduction

Psoriasis is a chronic systemic inflammatory condition affecting skin and joints.¹ Inverse psoriasis is a clinical variant of psoriasis involving flexural or intertriginous areas of the body.² These sites include the flexural surfaces and may or may not include external genitalia.² Lesions are clinically characterized as smooth, well-demarcated, erythematous plaques (raised, >1 cm) without the typical

silvery scales of classic psoriasis.² This series of clinical images focuses on identifying inverse psoriasis along the full spectrum of skin tones, as commonly described by the Fitzpatrick scale (**Figure 1**).² Additional background information on the Fitzpatrick scale and a description of the classification of skin types are discussed in further detail in the article "Presentations of Cutaneous Disease in Various Skin Pigmentations: An Introduction".³



Figure 1. The Fitzpatrick scale provides a classification system for an individual's skin type based on the ability to burn and/or tan when exposed to ultraviolet light. It is used to approximate the degree of skin pigmentation.



Figure 2. Fitzpatrick type II (mostly burns, rarely tans) skin demonstrating inverse psoriasis in the inguinal folds. The lesions are erythematous or pink to red-colored. The lesions are papules (raised, <1 cm) and plaques (raised, >1 cm). The lesions are well-demarcated (distinctly different from the adjacent normal skin where the border is readily identified). The lesions are moist and shiny due to the level of skin hydration and oil retention between skin folds, which can lead to maceration. Maceration is softening of the skin leading to skin breakdown. Scaly skin can be seen when looking at the central lesion of inverse psoriasis at the peripheral lesions. The papules (raised, <1 cm) and plaques (raised, >1 cm) on the distal legs have more prominent scaling and are consistent with classic plaque psoriasis.

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Figure 2 is a Caucasian female with Fitzpatrick type II (mostly burns, rarely tans) skin. This image demonstrates the typical lesions of inverse psoriasis with moist, shiny, macerated, erythematous symmetrical pink plaques (raised, >1 cm) in the inguinal folds. On the periphery

of the intertriginous lesions are subtle silvery scales. This becomes more prominent on the distal lesions of the extremities, demonstrating classic plaque psoriasis lesions.

Figure 3 demonstrates inverse psoriasis and classic plaque psoriasis in a Fitzpatrick type III



Figure 3. Fitzpatrick type III (sometimes burns, often tans) skin demonstrating inverse psoriasis in the gluteal cleft and plaque psoriasis on the buttocks. Inverse psoriasis is located on the skin of the sulcus between the sacral and anal areas. Beyond the intertriginous gluteal cleft, the same plaque (raised, >1 cm) develops thick scaling on its border. Other isolated plaques (raised, >1 cm) on the buttocks have an erythematous base of thick scaling that is representative of classic plaque psoriasis.



Figure 4. Fitzpatrick type IV (rarely burns, mostly tans) skin demonstrating inverse psoriasis in the inguinal folds. The lesions are similar in morphology to those in **Figure 2**, with a few notable differences. The erythema is a darker red, and there is substantial surrounding hyperpigmentation on the lateral edge of the plaques (raised, >1 cm). Hyperpigmentation is characterized by macules (flat, <1 cm) and patches (flat, >1 cm) that have darker skin tones, usually browns, greys, or black.

patient (sometimes burns, often tans). Inverse psoriasis can be seen centrally between the gluteal cleft, where there is skin-to-skin contact. As the lesion extends beyond the adjacent touching skin, the same plaque (raised, >1 cm) develops scales on its borders similar to the truncal plaques (raised, >1 cm), which demonstrate psoriasis vulgaris.

Figure 4 is a Hispanic male with Fitzpatrick type IV (rarely burns, mostly tans) skin. The

lesions of inverse psoriasis are similar to the Caucasian patient with well-demarcated erythematous plaques (raised, >1 cm). However, the erythema is a darker red, and there is notable surrounding hyperpigmentation.

Figure 5 is an African American female with Fitzpatrick type V (almost never burns, always tans) skin. In this image, erythema is difficult to appreciate, and lesions appear as a purple to brown color with some gray tones. **Figure 6** is



Figure 5. Fitzpatrick type V (almost never burns, always tans) skin demonstrating inverse psoriasis in the inguinal folds. The erythema or redness is subtle in appearance and can easily be missed if not actively looking for it. The prominent colors of the lesions are purple, blue, brown, or black, with mixed gray tones. There is also surrounding hyperpigmentation.



Figure 6. Fitzpatrick type V (almost never burns, always tans) skin demonstrating inverse psoriasis in the axillae. The erythema is dark red to violaceous in color, and there is darkening or hyperpigmentation surrounding a clearly defined border. There is significant scaling in the edge as opposed to minimal or no scaling in the center.

inverse psoriasis in the axillae of a patient with Fitzpatrick type V (almost never burns, always tans) skin.

Discussion

Psoriasis affects approximately 2% of the population, while the clinical variant of inverse psoriasis may be present in 3 to 36% of psoriasis patients.^{1,2} Asian patients have inverse psoriasis less frequently than Caucasians.⁴ External genital involvement can be seen in up to 79% of patients, but some consider this a separate entity from inverse psoriasis and may classify it as typical plaque psoriasis.⁵⁻⁷

Presentation of inverse psoriasis (**Figures 2-6**) is characteristically well-defined erythematous and moist, smooth, shiny plaques (raised, >1 cm) with minimal to no scales.² A shiny or glazed appearance may be present at flexural sites due to conglomerations of follicles and glands.⁷ Superficial ulceration and maceration are often present, which can cause intense itching, irritation, soreness, and/or secondary infections. The groin is the most affected site in up to 95.8% of cases.^{2,7} Other commonly affected areas include the inguinal folds, axillae, inframammary folds, perianal area, umbilicus, retro auricular area, antecubital and popliteal fossae, and interdigital spaces.^{2,7} Scales may be seen at the terminal surfaces of genital skin,

naturally following where skin surfaces are more keratinized.⁷ New lesions of inverse psoriasis can erupt secondary to trauma, known as the Koebner phenomenon. Infection can also precipitate this phenomenon.⁷

The skin at intertriginous sites has less epidermal keratinization and increased eccrine glands compared to extensor skin.⁷ Increased moisture at these sites may propagate bacterial or fungal overgrowth, contributing to the psoriasis pathogenesis of atypical T-cells and keratinocyte response.^{7,8} Intertriginous areas are more susceptible to mechanical friction from chronic skin-on-skin rubbing or patient scratching and are at greater risk for the Koebner phenomenon.^{5,7}

Psoriasis, including the inverse psoriasis form, carries a heavier burden on quality of life and disease severity in individuals with darker pigmented skin.¹ Due to racial and ethnic barriers to healthcare and differences in clinical morphology, under-reporting may contribute to lower prevalence estimates.^{1,9} Delayed treatment may lead to complications such as psoriatic arthritis, poor quality of life, sexual dysfunction, debilitating emotional distress, and/or cardiometabolic disease.^{2,8,10} Psoriatic arthritis can result in irreversible joint damage in approximately one-third of patients with psoriasis.¹¹ The 2020 US population census revealed



Figure 7. Fitzpatrick type IV (rarely burns, mostly tans) skin demonstrating tinea cruris in the inguinal fold. The image shows bilateral involvement, similar to inverse psoriasis. However, the tinea cruris plaques (raised, >1 cm) have an annular or polycyclic shape. Annular lesions have a “ring” morphology or circle shape emphasizing the outer peripheral border. Polycyclic lesions have 2 or more ring shapes coalescing together. When lesions coalesce, they are combining or coming together. The lesions of tinea cruris often have peripheral scaling and erythema where the dermatophyte is actively expanding, while there may be “central clearing.”

that Caucasians accounted for approximately 75% of individuals. However, population projections estimate that by 2050, 50% of individuals will be non-Caucasian. Physicians need to recognize and treat inverse psoriasis in the entire spectrum of skin color.¹²

Differential diagnosis includes tinea infection (**Figure 7**), candidiasis (**Figure 8**), streptococcal bacterial infection (**Figure 9**), or seborrheic

dermatitis (**Figure 9**). Tinea cruris commonly involves inguinal folds like inverse psoriasis; however, plaques (raised, >1 cm) of tinea cruris have an annular shape, often with peripheral scale, and there may be a central clearing of the lesions.^{2,13} Candidiasis is classified as “beefy” red, can involve the scrotum, and may have satellite lesions or pustules.^{2,13} Seborrheic dermatitis often affects skin folds, while findings of greasy yellow scales at the place of involvement



Figure 8. Fitzpatrick type II (mostly burns, rarely tans) skin demonstrating candidiasis in the inguinal fold. The lesion is not symmetrical. The erythema is “beefy” red or a darker red compared to the lighter pink erythema seen in inverse psoriasis of another Fitzpatrick type II (mostly burns, rarely tans) skin shown in **Figure 2**. Also, there are several small papules (raised, <1 cm) and pustules surrounding the sizeable central plaque (raised, >1 cm). These are satellite lesions.



Figure 9. Fitzpatrick type II (mostly burns, rarely tans) skin demonstrating bacterial streptococcus infection in the right inguinal fold at the superior portion down to mid-level of the crease. The lesion is not symmetrical, as seen on the same patient's left inguinal fold. The erythema is intensely bright red compared to the lighter pink erythema seen in inverse psoriasis of another Fitzpatrick type II (mostly burns, rarely tans) skin shown in **Figure 2**. Streptococcal infection is well demarcated (distinctly different from the adjacent normal skin where the border is readily identified) and has several erosion areas. There are no satellite lesions as seen in candidiasis. From the mid-level of the left crease down to the inferior aspect, seborrheic dermatitis is represented by the erythematous pink thin plaque (raised, >1 cm) with white-yellow greasy scales.

can aid the diagnosis.^{2,13} The scalp, eyebrows, glabella, nasolabial folds, or ears are other areas commonly associated with seborrheic dermatitis.^{2,13} When the clinical presentation and distribution of seborrheic dermatitis and psoriasis both exist (without classic psoriasis found elsewhere on the body), the conditions may co-exist, and the term “sebopsoriasis” is used.

To help differentiate inverse psoriasis from other etiologies, look for other signs of psoriasis, including scalp psoriasis, pitting or other nail changes, joint tenderness or swelling, and/or micaceous scales on extensor knees or elbows.¹³ Potassium hydroxide (KOH) can aid in diagnosing tinea and seborrheic dermatitis, but KOH does not necessarily rule out underlying inverse psoriasis. A skin biopsy can be performed, but there are overlapping conditions with a psoriasiform reaction pattern; thus, the diagnosis is usually made clinically.

Informed Consent

Written informed consent was obtained from the patients for their anonymized information to be published in this article.

Conflicts of Interest

The authors declare they have no conflicts of interest.

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