

## An Unusual Post-Inflammatory Hyperpigmentation of Male Genitalia

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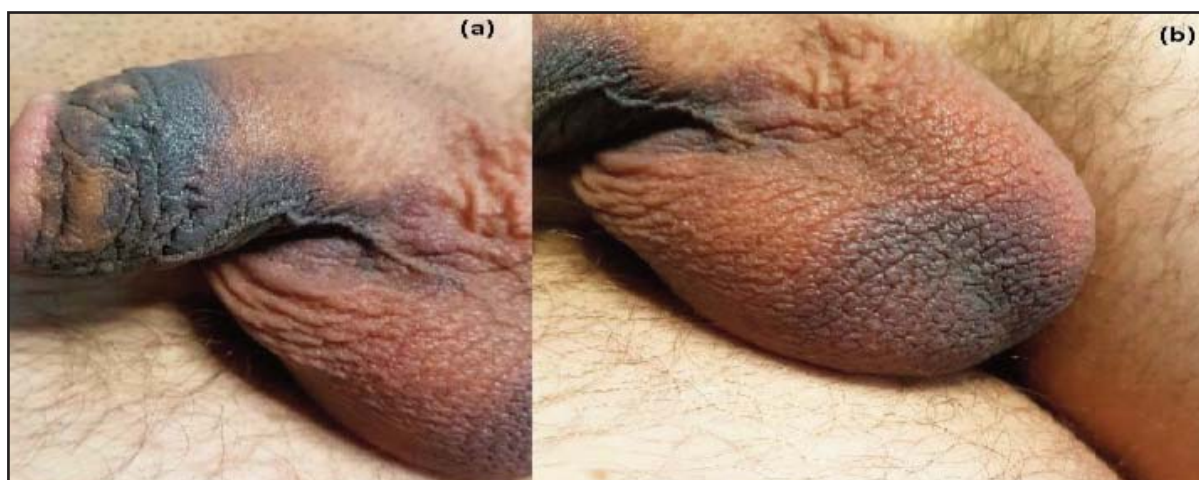
### Abstract

**Observation:** Post-inflammatory hyperpigmentation is an epidermal or dermal hypermelanosis which is characterized by brown-black colored macules and large patches. It usually occurs following inflammatory skin diseases like lichen planus, atopic dermatitis or dermatologic procedures like laser therapy and chemical peels. Post-inflammatory hyperpigmentation is usually asymptomatic. However, the condition can lead to cosmetic concerns, low self-esteem and depression. Herein, we presented a 24-year-old Caucasian male patient with hyperpigmented lesions on the skin of his genitalia and we discussed underlying inflammatory diseases.

### Introduction

Post-inflammatory hyperpigmentation is a reactive response to inflammatory skin diseases like lichen planus, psoriasis, atopic dermatitis, acne vulgaris and inflammatory conditions including non-ionizing radiation, phototoxic reactions, laser therapy and chemical peels. Melanin can be deposited in epidermis, dermis or both. Epidermal hypermelanosis presents with brown colored macules and patches. However, dermal hypermelanosis presents with gray-blue colored lesions. Distribution of the skin lesions depends on the underlying condition. Post-inflammatory hyperpigmentation is usually asymptomatic. However, the condition can influence patient's self-esteem [1].

Anogenital pruritus is described as itching of the anus, perianal region and genital skin. It affects men more than women. Pruritus lasting more than six weeks is called chronic pruritus. Chronic anogenital pruritus can be idiopathic or psychogenic. Moreover, dermatoses like seborrheic dermatitis, psoriasis, atopic dermatitis, lichen sclerosus; malignancies like extramammary Paget's disease, Bowen's disease, erythroplasia of Queyrat, basal cell carcinoma; mechanical causes and systemic disorders including diabetes mellitus, liver diseases, iron deficiency, hyperthyroidism can cause anogenital pruritus. Chronic anogenital pruritus can result in excoriation, lichenification and hyperpigmentation [2].



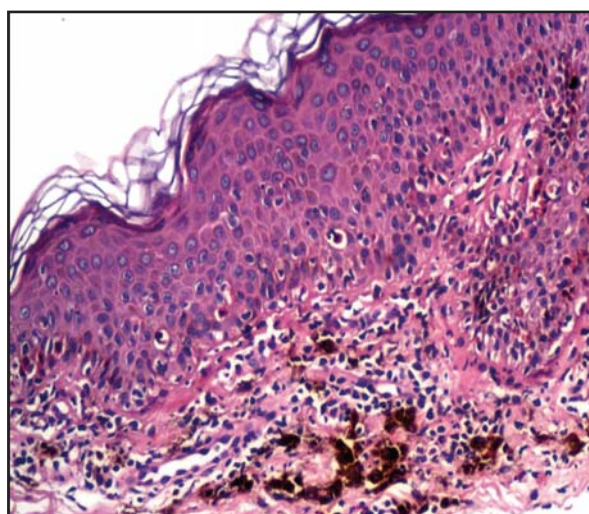
**Figures 1a and b.** Hyperpigmented patches on the penis and scrotum

### Case Report

A 24-year-old Caucasian male patient presented with a two-year history of hyperpigmentation on the penis and scrotum. The patient admitted that the pigmentation first appeared on the penis and then gradually spread to the scrotum. The lesions were itchy and itching was more severe during night. He had been treated with oral terbinafine 250 mg a day, topical isoconazole nitrate and methylprednisolone twice daily for the last three months. However, no clinical improvement has been achieved. The patient had a past medical history of migraine and was taking oral flurbiprofen occasionally. He had no known allergies. The family history was unremarkable. Dermatological examination revealed hyperpigmented patches on

the corpus of the penis and scrotum (**Figures 1a-b**). The patient had a Fitzpatrick skin type IV.

The laboratory tests including complete blood count, sedimentation rate, blood chemistry panel, serum ferritin, vitamin B12, folate and thyroid stimulating hormone level were all in normal limits. Fixed drug eruption, lichen planus pigmentosus, Bowen's disease, lichen amyloidosis and acanthosis nigricans were considered in the differential diagnosis. Therefore, a skin biopsy was performed to reach a definitive diagnosis. Histopathological examination revealed orthokeratosis, hypermelanosis in the basal layer of the epidermis, perivascular inflammatory infiltrate and melanophages in the papillary dermis. Crystal violet stain didn't show amyloid deposition (**Figure 2**). The diagnosis of post-inflammatory hyperpigmentation was made based on the clinical and histopathological features.



**Figure 2.** Orthokeratosis, hypermelanosis in the basal layer of the epidermis, perivascular inflammatory infiltrate and melanophages in the papillary dermis (H&Ex200)

### Discussion

Post-inflammatory hyperpigmentation is characterized by brown, black macules due to excess melanin in epidermis or dermis. Many inflammatory disorders including lichen planus, morphea, contact dermatitis and mechanical trauma can induce melanin production [3]. Contact dermatitis of the scrotum is usually defined as scrotal dermatitis. It presents with pruritus, erythema, scaling and lichenification on the scrotal skin. However, Krishnan et al. implicated that scrotal dermatitis is not a type of contact dermatitis and it should be considered as a distinct entity [4].

In our patient, hyperpigmented patches were induced by mechanical trauma due to chronic

pruritus. There weren't any underlying diseases. However, post-inflammatory hyperpigmented lesions on the penis and scrotum of the patient can mimic various dermatoses including fixed drug eruption, lichen planus pigmentosus, Bowen's disease, lichen amyloidosis and acanthosis nigricans.

Besides, fixed drug eruption usually presents as a solitary lesion; acanthosis nigricans is usually associated with obesity, diabetes and insulin resistance; pigmented Bowen's disease histopathologically shows epidermal dysplasia and melanin rich cells, lichen amyloidosis shows amyloid deposition; lichen planus pigmentosus usually presents on sun-exposed areas and it is characterized by dermal melanophages and pigment incontinence histopathologically [5,6].

Dermatoscopy may be helpful for diagnosis of malignant lesions. However, dermatoscopic evaluation of genital lesions is not always easy in clinical practice. Recently, Agazzino et al. reported that reflectance confocal microscopy is a useful diagnostic method in pigmented genital lesions [7].

In conclusion, severe and chronic itching can result in skin changes that lead to diagnostic difficulties. In such cases, histopathological evaluation is important to reach a definitive diagnosis. The case we presented summarize the differential diagnosis of hyperpigmented lesions of male genitalia.

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