5 Inflammatory Disorders

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Contact Dermatitis (Irritant/Allergic)

Definition: contact dermatitis is an inflammation of the skin caused by contact with certain substances. Based on pathogenesis, two distinct types of contact dermatitis may be identified: Irritant Contact Dermatitis (ICD) and Allergic Contact Dermatitis (ACD).

Etiology: ICD is a nonimmunologic inflammatory response induced by exposure to chemical agents (alkali, hydrofluoric acid, solvents) or urine and feces in incontinent patients, directly damaging the skin, while ACD is a delayed type IV sensitivity (allergy) to specific sensitizing agents (allergens) that come into contact with the skin. The commonest allergens in genital areas include topical medications, additives in personal hygiene products, condoms, and piercing. Saliva and semen can rarely be allergenic.

Epidemiology: both ICD and ACD may occur at any age and are more frequent in women than men (female-to-male ratio 2:1). Both forms have a prevalence of about 4 cases per 10,000 individuals. They are more common during adulthood, and they are thought to be more prevalent among whites.

Clinical appearance: in the acute stage, erythema, edema, and possible blistering with exudation are present. Chronic lesions are usually dry, thickened, fissured, and scaly. In the moist genital area, scaling is often less noticeable. ACD is characterized by pruritic papules and vesicles on an erythematous base. ICD can show different patterns, with macular erythema, edema or vesiculation. Chronic ICD may have hyperkeratosis and ACD lichenification. Pruritus and burning at the contact site are common symptoms.

Clinical course: if the offending agent is identified and removed, ACD and ICD subside. In chronic contact dermatitis, the presence or absence of sleep disturbance, the number and location of the involved sites, and the clinical course are indicators of disease severity. Superinfection may be a complication.

Diagnosis: if symptoms occur immediately after exposure, ICD should be considered. In ACD, patch tests can be useful to identify the agent to which the patient is allergic, while in ICD these are usually negative. Many patients may be sensitized to multiple allergens.

Therapy: it is important to establish the irritating/allergenic source so as to avoid further contact. Active dermatitis is usually treated with emollient creams, topical steroids, topical or oral antibiotics for secondary infection, oral steroids (usually short courses), azathioprine, ciclosporin or other immunosuppressive agents for severe cases. Tacrolimus ointment and pimecrolimus cream are immunomodulating drugs that inhibit calcineurin and may be helpful for ACD. Patients with active contact dermatitis in the genital area should avoid intercourse, as friction, spermicides, artificial lubricants, condoms, semen and vaginal secretions are all irritants.

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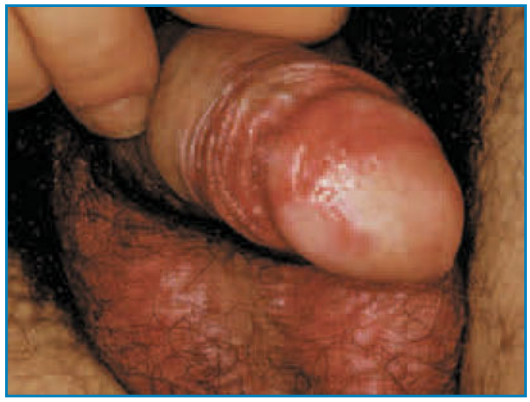

Fig. 5.1 Acute allergic contact dermatitis: intense erythema and oozing, involving the penis and the scrotum, caused by a topical cream

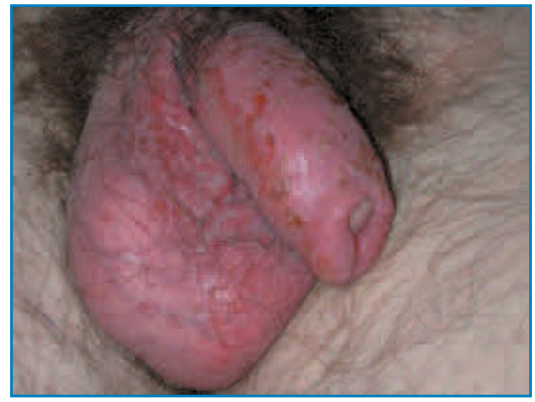

Fig. 5.2 Acute allergic contact dermatitis: erythema, vesicles, and crusts involving the penis and the scrotum after fragrance application

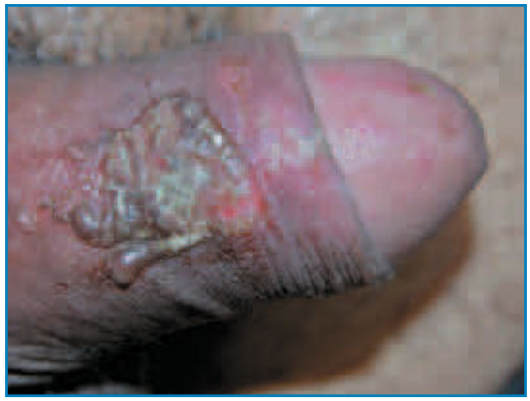

Fig. 5.3 Acute allergic contact dermatitis: blisters on the shaft due to topical medication

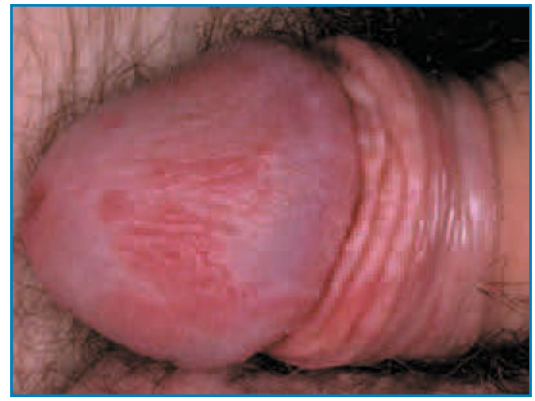

Fig. 5.4 Acute irritant contact dermatitis: slight erythema of the glans in an incontinent patient

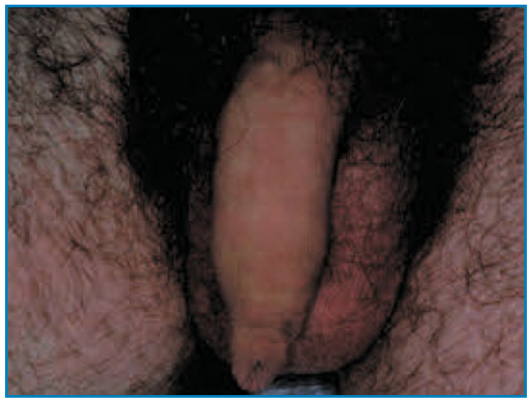

Fig. 5.5 Acute irritant contact dermatitis: slight erythema on the shaft due to condom use

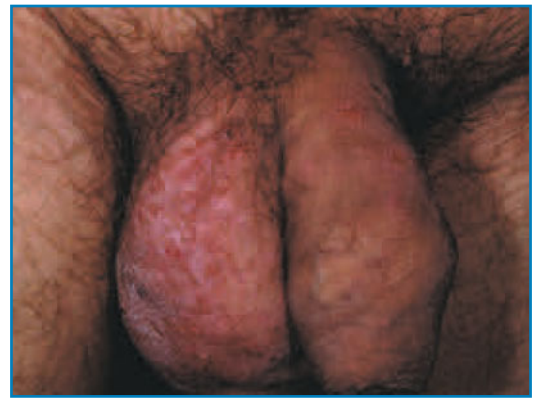

Fig. 5.6 Chronic irritant contact dermatitis: hyperkeratosis and lichenification of the penile and scrotal skin

Atopic Dermatitis

Definition: Atopic Dermatitis (AD) is a chronic, inflammatory, noninfective skin disease characterized by pruritus, eczema, xerosis (dry skin), and lichenification.

Etiology: it is a disease of unknown origin. A hereditary component of the disease has been recognized, as it is often seen in multiple members of the same family. Several factors may trigger or worsen atopic dermatitis, including dry skin, cold weather, exposure to aggressive detergents, tight clothing, and seasonal allergies.

Epidemiology: it is very common and its incidence and prevalence appear to be increasing. It is estimated that AD accounts for about 20% of all dermatologic referrals. Although quite difficult to establish, since the diagnostic criteria are not universally applied and standardized, its prevalence is thought to range from 10% to 30%. Localization on the penis and/or scrotum is rare.

Clinical appearance: although AD can occur at any age, it usually starts in early infancy. In the genital area the skin may become extremely itchy and inflamed. Repeated scratching may lead to crusting, scaling, lichenification, and hyperpigmentation.

Clinical course: it is a chronic disease that most often affects infants and young children. In some instances, it may persist into adulthood or first show up later in life. A large number of patients tend to have a long-term course with various episodes of exacerbation and remission.

Diagnosis: past medical history and clinical appearance generally prompt the correct diagnosis. Currently, there is no single specific diagnostic test.

Therapy: the primary treatment involves prevention, by avoiding or minimizing environmental triggers. Fingernails should be cut very short to avoid scratching. The use of soap should be discouraged because of its drying effect. Topical treatments (corticosteroid creams and ointments, antibiotics) can be used to reduce both the dryness and inflammation of the skin. Pimecrolimus cream and tacrolimus ointment are reasonable alternative options to corticosteroids. Oral antihistamines given in the early evening may be helpful in controlling nightime scratching.

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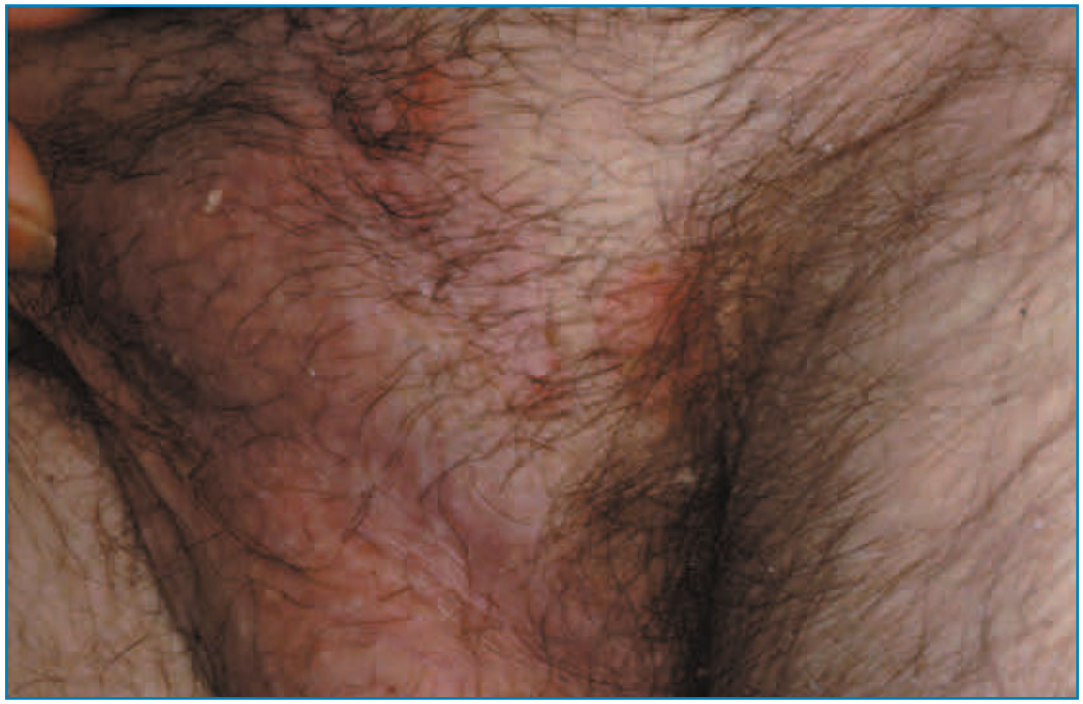

Fig. 5.7 Erythema and scaling of the scrotum

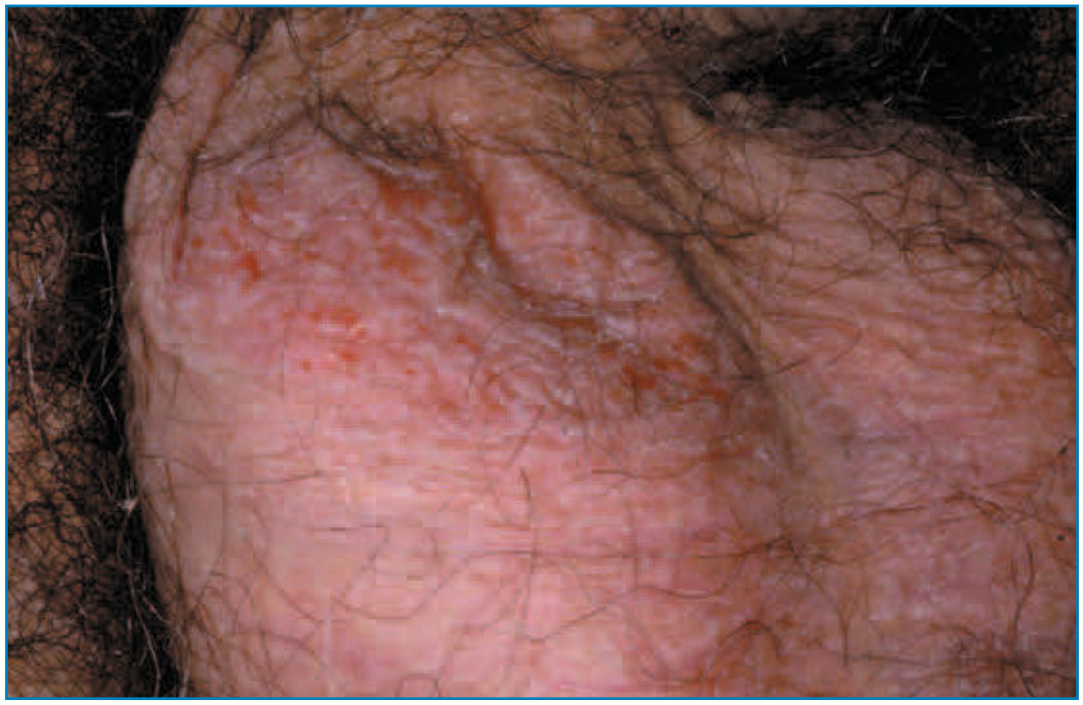

Fig. 5.8 Crusting, scaling, and lichenification of the scrotum

Seborrheic Dermatitis

Definition: Seborrheic Dermatitis (SD) is an inflammatory and nontransmissible disorder patterned on the sebum-rich areas of the body.

Etiology: its cause is unknown, but it is believed to be an inflammatory reaction related to a proliferation of a normal skin inhabitant, a yeast called *Malassezia furfur* (formerly known as *Pityrosporum ovale*). It may be worsened by seasonal climate changes in humidity and temperature as well as by illness, psychological stress, fatigue, and impairment of general health. It is more common in immunocompromised (especially HIV positive) or debilitated patients with neurological disorders such as Parkinson's disease or stroke.

Epidemiology: it is common, with a prevalence of about 1% to 2% in the general population. It is more frequent in men but its genital localization is more common in women.

Clinical appearance: erythematous marginated plaques with characteristic yellowish scaling are usually found. Genital lesions are usually observed in the context of a more generalized disease. If superinfection ensues, itching may worsen.

Clinical course: it is a chronic disorder, and there is usually no treatment that stops it permanently.

Diagnosis: it can be made based on the medical history and physical examination. Detection in other seborrheic areas is usually helpful to confirm diagnosis. When the diagnosis is unclear, a skin biopsy is suggested, although the histological findings are not specific.

Therapy: SD can generally be kept under control with regular use of antifungal agents and intermittent applications of low potency topical steroids. Creams, foams or lotions containing an antifungal agent, such as ketoconazole, reduce flare-ups, supporting the idea that the yeast is a contributing factor. In the hair-bearing genital skin a lotion is preferable.

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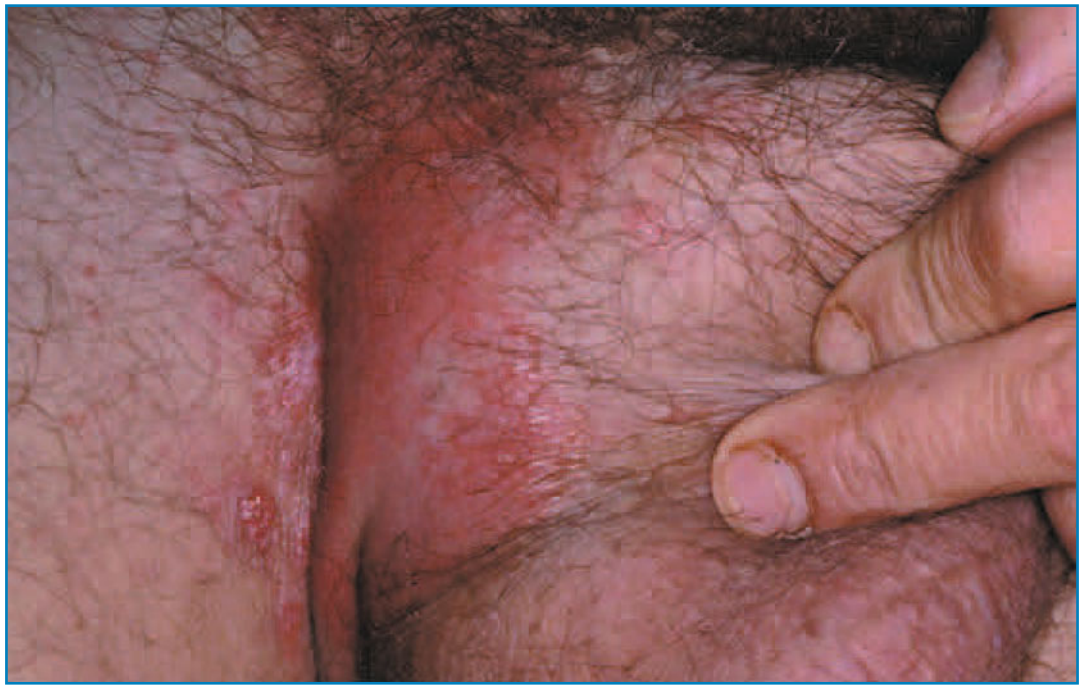

Fig. 5.9 Erythematous and oozing plaques involving the scrotum and the groin

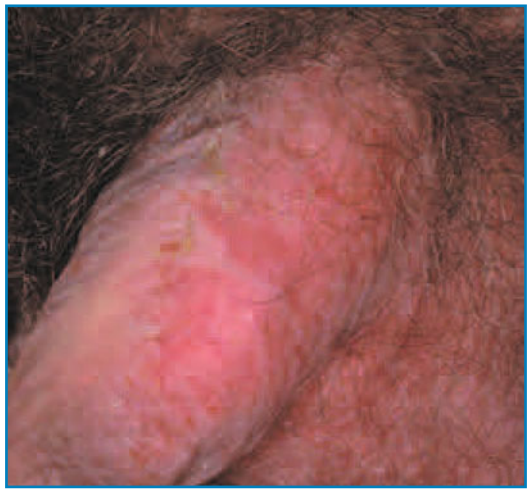

Fig. 5.10 Erythematous plaques of the penis with typical yellowish scales

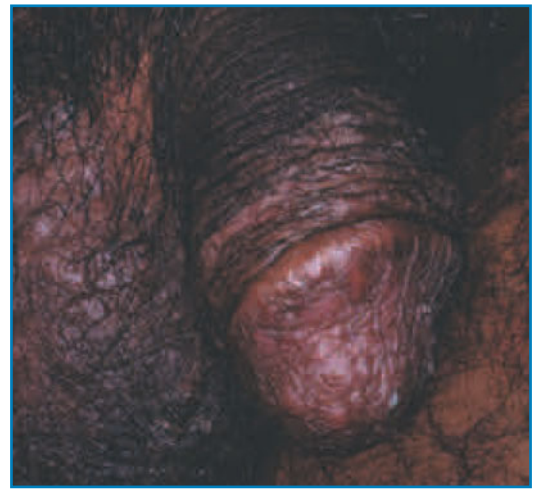

Fig. 5.11 Lichenification and hyperpigmentation of penis and scrotum in an Afro-American patient

Lichen Simplex (Neurodermatitis)

Definition: lichen simplex (neurodermatitis) is a chronic inflammatory disease in which itching gives rise to scratching and subsequent cutaneous inflammation.

Etiology: the exact cause remains unknown. Exposure to certain triggers can increase the risk of developing neurodermatitis. Stress and nervous tension increase itching. In young patients the disease is more often associated with anxiety, in the elderly with depression.

Epidemiology: it is a common disease that affects more women than men. It generally affects adults.

Clinical appearance: the scrotum is a common location. The disease starts insidiously and may result in one or many itchy patches. The affected area is erythematous with excoriations, often showing grouped small firm papules, or thickened skin with hyperpigmentation. Bacterial and/or mycotic superinfection may occur because of continuous scratching.

Clinical course: it tends to be very persistent, and it readily recurs despite initial treatment is often effective. Chronic itching and scratching can cause excoriations, lichenification and hyperpigmentations, and the disease results in a chronic "itch-scratch cycle".

Diagnosis: it may be difficult in earlier stages, since neurodermatitis may occur along with other common skin disorders, such as eczema and psoriasis. An anamnestic documentation of itch-scratch cycles and a clinical examination showing lichenification, with or without excoriations, help diagnosis. The diagnostic work up includes cultures for fungi and/or bacteria, patch testing, and a skin biopsy.

Therapy: successful treatment depends on identification and elimination of trigger factors, stopping the itch-scratch cycle. Over-the-counter and prescription creams can help ease neurodermatitis symptoms. A low-potency steroid cream would be appropriate, but if lichenification is prominent, the use of an ointment is preferable. Moisturizing creams are also recommended. Oral antihistamines are indicated in the early evening to control nighttime scratching. In elderly patients the use of antidepressants should be considered.

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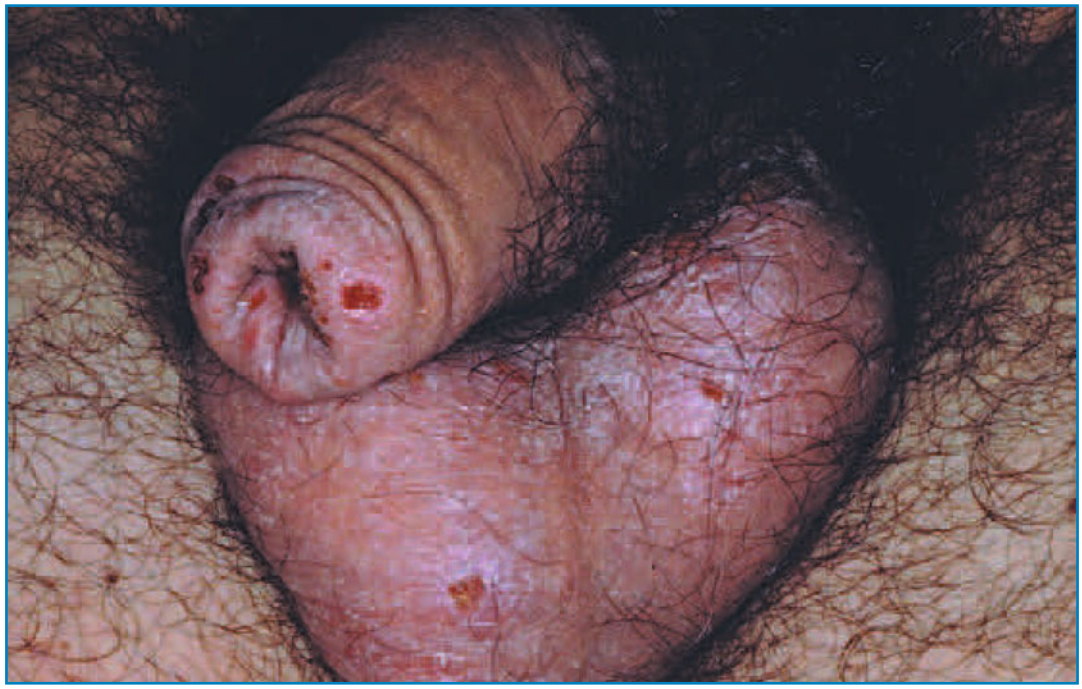

Fig. 5.12 Lichenification and excoriations involving the penis and the scrotum

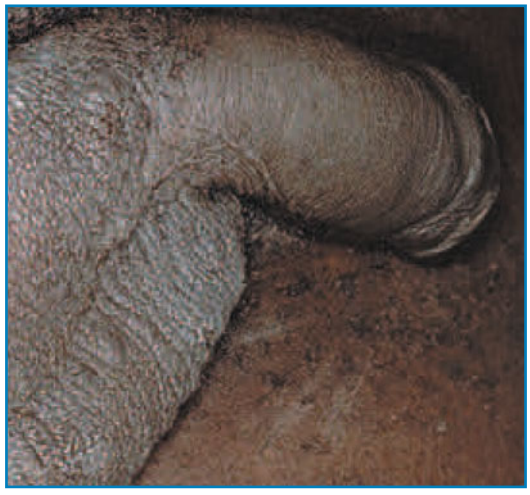

Fig. 5.13 Lichenification of the scrotum in an Afro-American patient

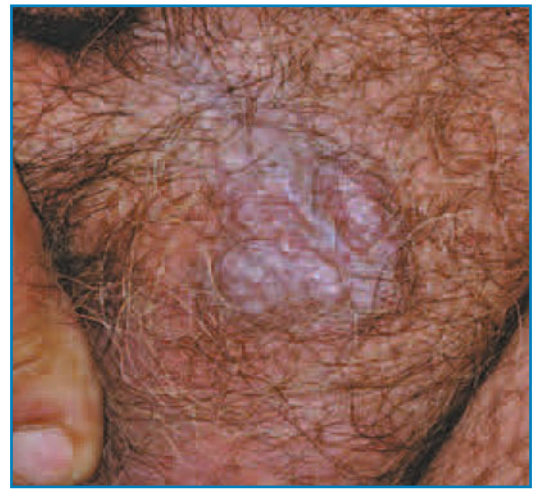

Fig. 5.14 Lichenification of scrotal skin

Psoriasis

Definition: psoriasis is a chronic, inflammatory, noncontagious erythemato-squamous disease.

Etiology: it is unknown. In predisposed patients, trigger factors such as stress and local trauma can favor the appearance or worsening of skin lesions. Koebner's phenomenon may play a role in the location of the psoriasis in the genital area because of local irritation produced by continuous friction from clothing, harsh hygiene products, and/or sexual intercourse.

Epidemiology: the prevalence in the general population is approximately 3%. The genital skin is involved in 29–40% of patients. In many cases, genital psoriasis is part of a more generalized plaque psoriasis or occurs in the setting of inverse psoriasis. Psoriasis is located exclusively in the genital area in only 2–5% of psoriatic patients.

Clinical appearance: both scrotum and shaft may be affected, but the glans is the most commonly affected area. Occasionally, the whole penis, scrotum, and inguinal folds are involved. Psoriatic lesions on the genital area are brightly erythematous, often less well-demarcated and devoid of the typical psoriatic scales, due to maceration. Whereas in uncircumcised males the nonscaling plaques are most common under the prepuce and on the proximal glans, in circumcised male patients they are usually present on the glans and corona, and they may be more scaly than those usually seen in genital skin. Fissures, pruritus, and/or burning in the affected area, ranging from minimal to marked, may be observed.

Clinical course: genital psoriasis is a chronic disease that exhibits ups and downs. It is usually controlled by the prevention of local traumas and the use of adequate treatments. Patients with genital psoriasis often experience emotional stress and have difficulty coping with the disease.

Diagnosis: it can usually be made clinically. The genitals may be the only affected area, but lesions are more often part of a more generalized disorder. In the case of aspecific genital lesions, the diagnosis may be suggested by the presence of typical lesions elsewhere, or nail deformities, or joint complaints. Videodermatoscopy may be helpful in addressing the correct diagnosis: at low magnifications (X10–X50) a dotted pattern is evident; higher magnifications (X100-X400) are able to visualize dilated, elongated and convoluted capillaries showing a typical "*glomerular*" or "*bushy*" pattern. Skin biopsy is needed in the case of single and/or difficult to diagnose lesions.

Therapy: in patients with exclusively genital lesions, topical therapy can be sufficient. It is better to avoid irritant topicals in the management of genital psoriasis, as they can worsen symptoms. First-line therapy includes low- and mid-potency topical corticosteroids, which may be used in combination with topical vitamin D analogues (calcipotriol). Pimecrolimus ointment or tacrolimus

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Lacarrubba F, Nasca MR, Micali G (2009) Videodermatoscopy enhances diagnostic capability in psoriatic balanitis. J Am Acad Dermatol 61:1084-6

Meeuwis KA, De Hullu JA, De Jager ME et al (2010) Genital psoriasis: a questionnaire-based survey on a concealed skin disease in the Netherlands. J Eur Acad Dermatol Venereol 24:1425-30

Meeuwis KA, de Hullu JA, Massuger LF et al (2011) Genital psoriasis: A systematic literature review on this hidden skin disease. Acta Derm Venereol 91:5-11

Meeuwis KA, De Hullu JA, Van De Nieuwenhof HP et al (2011) Quality of life and sexual health in patients with genital psoriasis. Br J Dermatol 164:1247-55

cream may be useful, though they may cause local irritation and stinging. UVB and PUVA therapy is not recommended to treat genital psoriatic lesions because of the high risk of penile or scrotal squamous cell carcinoma. Systemic treatment is indicated in case of generalized psoriasis. Local hygiene is very important as local maceration and continuous use of corticosteroids can enhance the risk of bacterial and/or fungal superinfections, especially in the intertriginous areas.

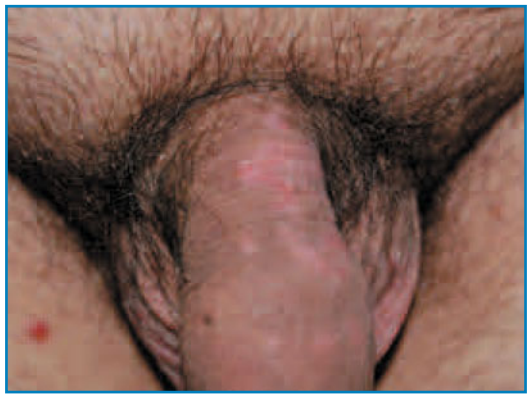


Fig. 5.15 Typical erythematous and scaling plaques on the penis

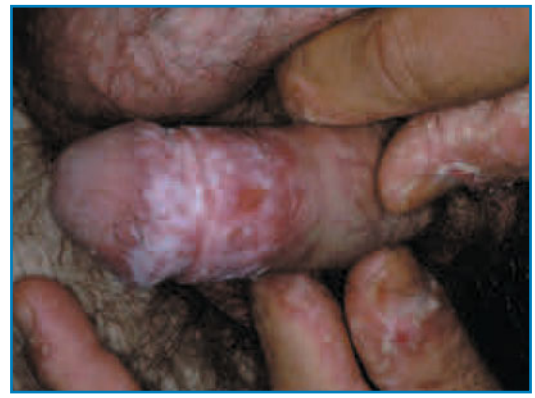


Fig. 5.16 Typical erythematous and scaling plaques involving the penis and the fingers in an HIV+ patient

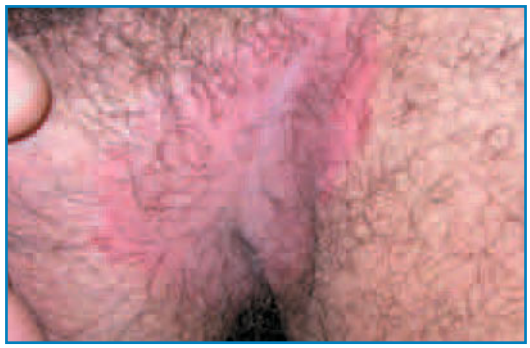
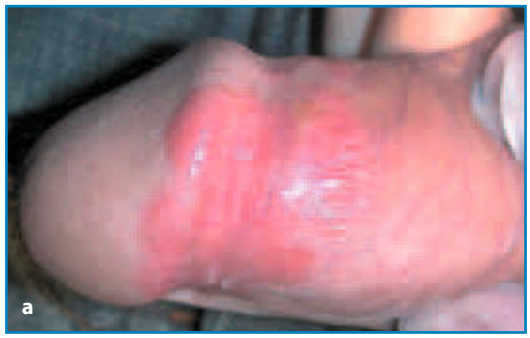


Fig. 5.17 Inverse psoriasis: typical erythematous and oozing plaque of the groin



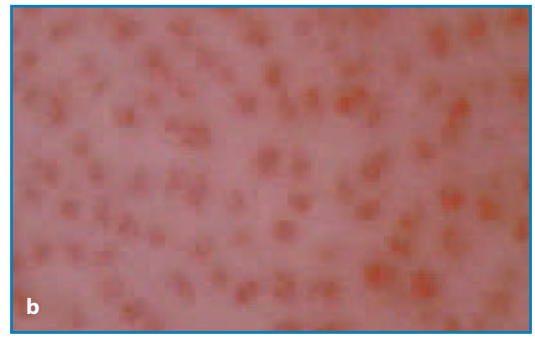


Fig. 5.18 Psoriatic balanitis. **a** Erythematous and scaling plaques of the penis. **b** Videodermatoscopy (X200) showing dilated, elongated, and convoluted capillaries with a typical "bushy" pattern

Pityriasis Rosea (Gibert)

Definition: Pityriasis Rosea (PR) is a common inflammatory disease with characteristic skin findings.

Etiology: it is unknown. Infectious agents (*Mycoplasma hominis*, *Staphylococcus albus*, *spirochaetes*, *beta-hemolytic Streptococcus*), drugs, and environmental factors have been implicated in its pathogenesis. Current evidence indicates that PR exanthema may possibly be linked to a human herpes virus infection.

Epidemiology: its incidence ranges between 0.4% and 4.8%. It is most common in young adults, and usually occurs in spring and autumn.

Clinical appearance: it is characterized by erythematosquamous lesions usually confined to the trunk and to the upper third of the arms and legs. The lesions on the genital area represent part of the general eruption. The rash starts with a "herald patch" that precedes the onset of other similar smaller lesions. The herald patch is a solitary large lesion which occurs in half of the patients. When it occurs in the genital area, it may resemble tinea. The smaller lesions that ensue are roundish, salmon-colored, slightly scaling, especially at their edge, and show a typical pattern on the trunk ("Christmas tree rash"). The rash is generally asymptomatic, but occasionally may be intensely itchy.

Clinical course: it is benign and the lesions usually disappear spontaneously after 6 to 8 weeks, without scarring or residual pigmentation. A recurrence may be observed in about 5% of patients.

Diagnosis: it is based on the clinical appearance and examination of other skin areas, such as trunk and arms. In some atypical cases a syphilis serologic test, culture, or skin biopsy may be required to rule out other disorders.

Therapy: it usually resolves spontaneously and treatment is not required. The use of mild soaps is recommended. In presence of itching, oral antihistamines may provide symptomatic relief.

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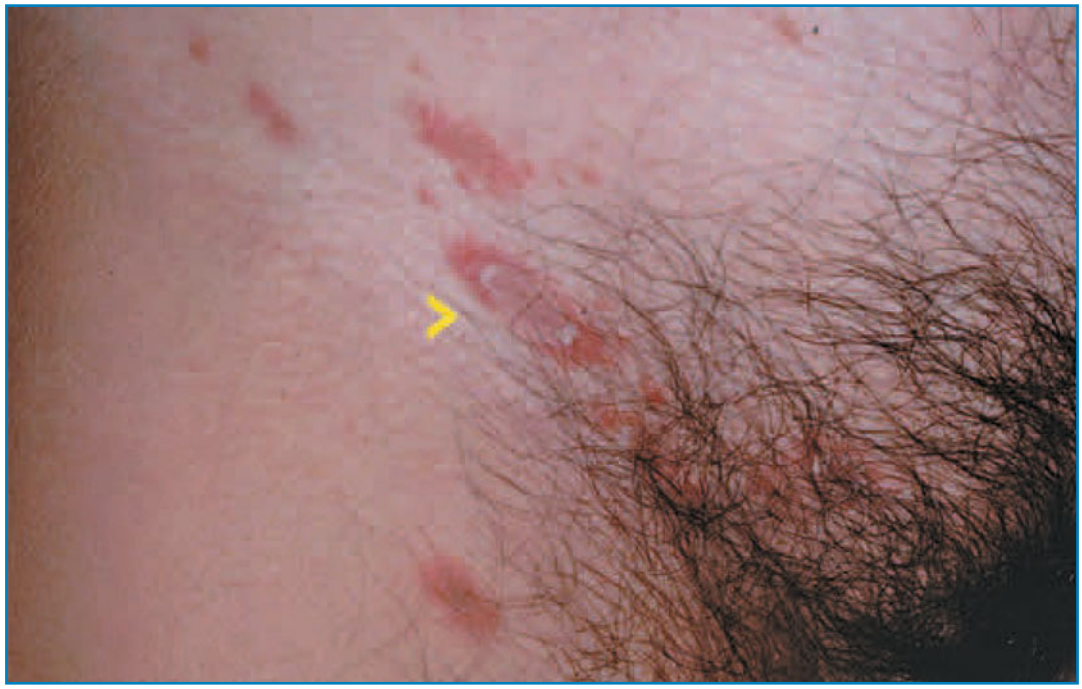

Fig. 5.19 "Herald patch" in the genital area

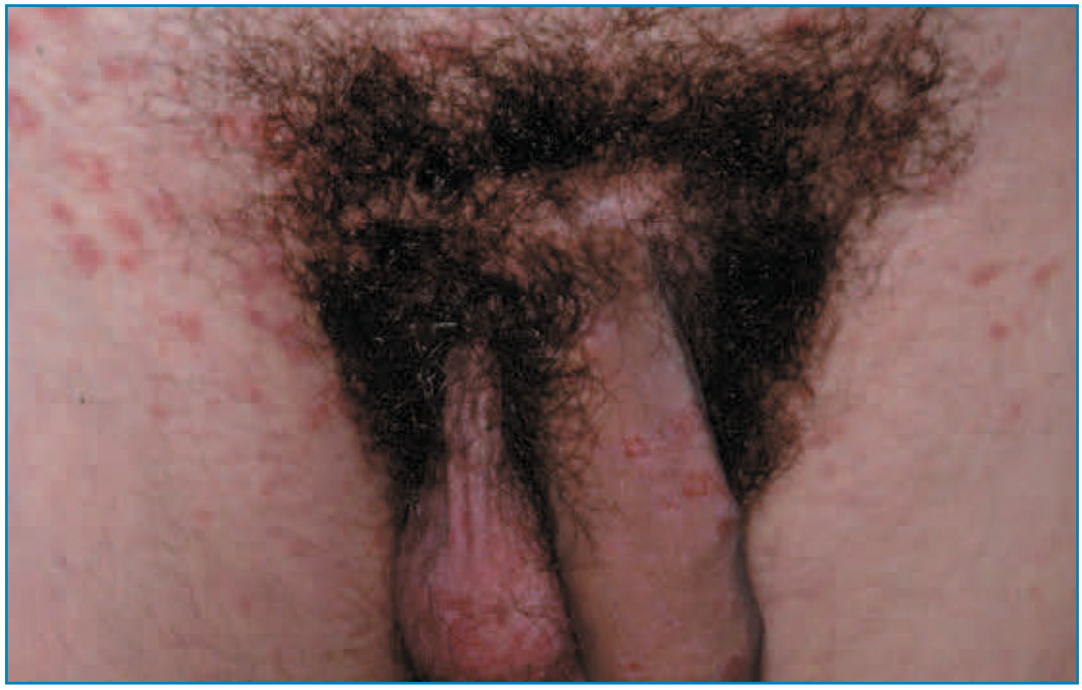

Fig. 5.20 Typical roundish, erythematous, and scaling lesions involving the penis and the groin

Circinate Reactive Balanitis (Reiter's Disease)

Definition: circinate reactive balanitis is a marker for, or associated with, Reiter's syndrome, a disorder characterized by the triad of symptoms (conjunctivitis, urethritis, and arthritis) occurring after an infection, mostly of the urogenital or gastrointestinal tract.

Etiology: there is an association with the HLA B27 gene in 60-80% of cases. *Chlamydia trachomatis* is implicated in 70% of cases. Other associated infections include those caused by enteric pathogens, such as *Salmonella*, *Shigella*, *Yersinia* and *Campylobacter*.

Epidemiology: it occurs in 20-80% of male patients with Reiter's disease. Reiter's disease is more frequent in men, although cases have also been reported in children and women.

Clinical appearance: the lesions usually occur on the glans, but in some cases they may spread over the corona and foreskin. In circumcised patients they appear as erythematous, well-demarcated, scaling or crusted plaques, while in uncircumcised patients they appear as small white circinate papules and resembling single or multiple coalescing rings. Palms and soles are usually affected.

Clinical course: it is a chronic disorder that requires ongoing treatment.

Diagnosis: it can be made on the basis of the clinical appearance. The patient should be checked for other signs and symptoms of Reiter's syndrome and/or psoriasis. Bacterial and candidal balanitis should be excluded. Stool cultures should be performed in those with enteric complaints, and any identified infections should be treated. In inconclusive cases, skin biopsy may be required.

Therapy: low-potency corticosteroid creams applied 1-2 times daily usually produce a prompt response. If not, a mid- to high-potency corticosteroid can be used once a day for a week. Systemic involvement (reactive arthritis, uveitis) can be managed with nonsteroidal anti-inflammatory drugs, sulfasalazine, methotrexate, azathioprine or anti-TNF-alpha medications.

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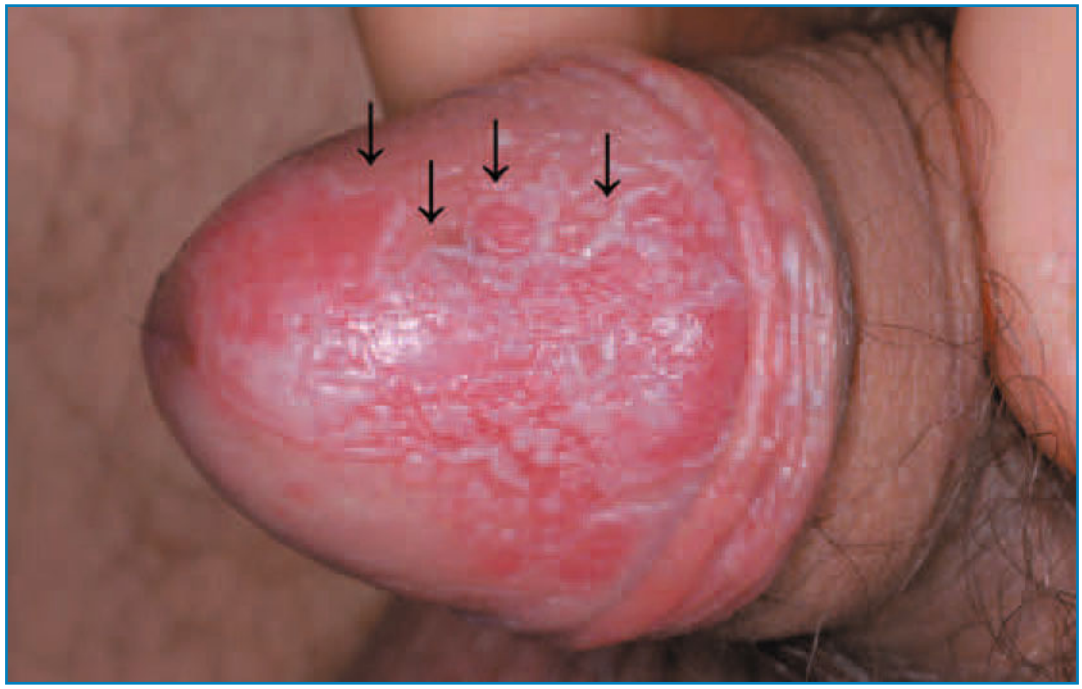

Fig. 5.21 Typical erythematous and circinate (*arrows*) plaques on the glans

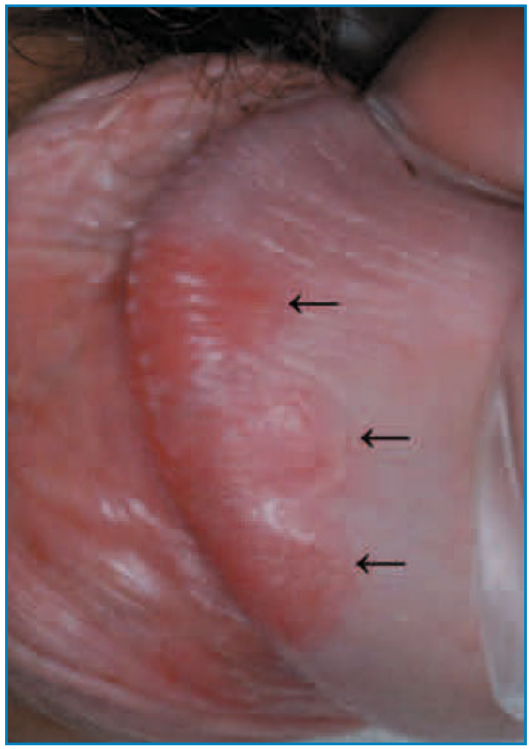

Fig. 5.22 Typical erythematous, sharply marginated, and circinate plaques involving the glans and the coronal sulcus

Lichen Planus

Definition: Lichen Planus (LP) is a chronic, inflammatory, mucocutaneous disease that can affect the mucosae.

Etiology: it is unknown, although many studies have investigated and supported an autoimmune pathogenesis. Lymphocytes, particularly T-cells, play a major role.

Epidemiology: genital lesions are frequent in patients with LP. It has been estimated that approximately 25% of men with cutaneous LP have genital lesions, but isolated genital LP is unusual.

Clinical appearance: the lesions usually appear on the glans as well-defined lilac annular pruritic papules often topped by reticular white streaks known as Wickham's striae. In many, but not all, Wickham's striae may also be detected in the oral mucosa. Genital lichen planus may also exhibit other morphologic variants (hypertrophic and erosive). Erosive forms may be very painful, and, in longstanding cases, may lead to penile disfigurement. Erosive LP is usually not associated with cutaneous lesions, but oral involvement can be present.

Clinical course: non-erosive forms are well controlled with therapy. Erosive LP is poorly responsive to treatment, it is chronic and painful, causing considerable discomfort and impaired sexual function.

Diagnosis: it can be made on the basis of the clinical appearance. In the case of unspecific features, careful inspection of other skin areas or of oral mucosa may provide the diagnostic clue. Dermatoscopy ensures easy and rapid recognition of Wickham's striae, which appear as pearly whitish structures which secondarily develop thin spikes (*comblike projections*) or arboriform ramifications departing from the periphery. Skin biopsy is indicated in inconclusive cases of subtle erosive LP without mouth lesions. In later stages, differential diagnosis between LP and lichen sclerosus may be very difficult. Moreover, both diseases may sometimes coexist in a single patient.

Therapy: a potent topical steroid is the conventional therapy. Side-effects or steroid resistance can be encountered, and a second-line therapy such as topical pimecrolimus may be required. In severe forms, systemic therapy with oral prednisone or cyclosporine can be used. Patient education and support is encouraged.

Suggested Reading

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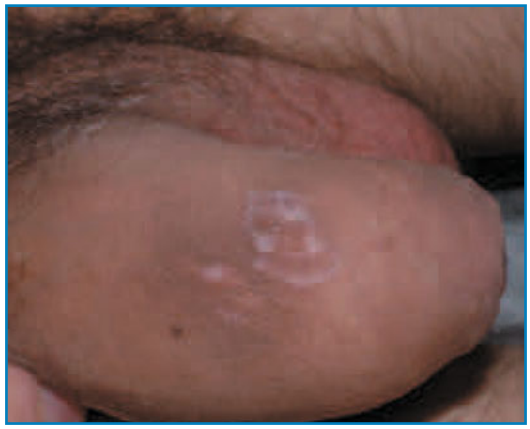

Fig. 5.23 Typical lilac papules, covered by reticular, white streaks (Wickham's striae), on the shaft

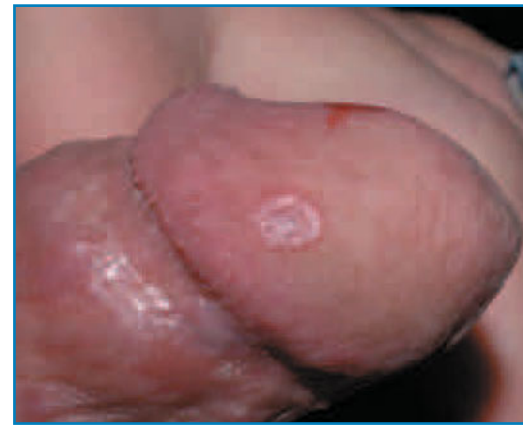

Fig. 5.24 Single annular papule on the glans

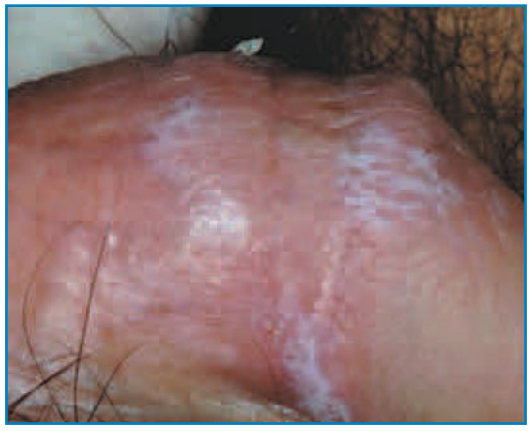

Fig. 5.25 Coalescent papules, with evident Wickham's striae, involving the glans and the foreskin

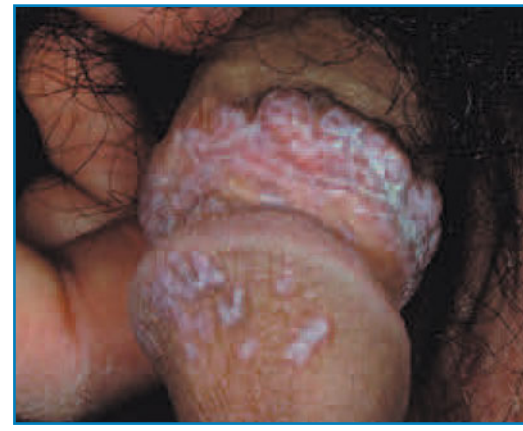

Fig. 5.26 Hypertrophic lichen planus: whitish and verrucous papules on the glans and foreskin

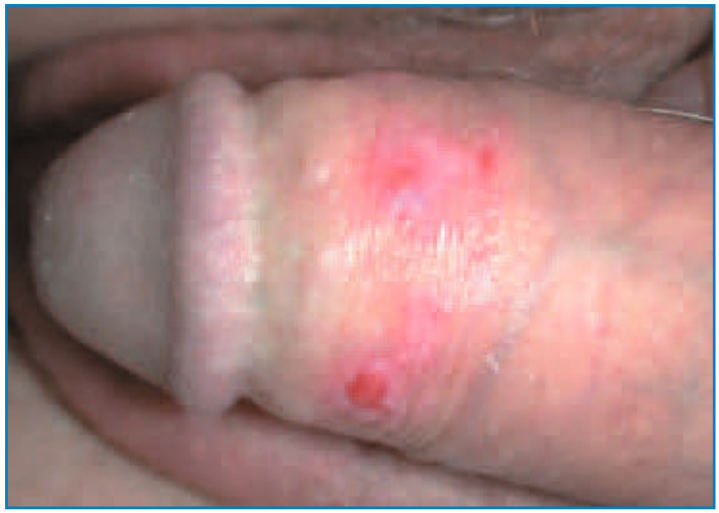

Fig. 5.27 Erosive lichen planus: ulcerative lesions on the foreskin

Pyogenic Granuloma

Definition: Pyogenic Granuloma (PG) is a common benign vascular lesion of the skin and mucosa. It is not an infective, purulent or granulomatous disease, as the name might suggest, but it is rather a reactive inflammatory process involving the blood vessels.

Etiology: it is not fully understood. Rapid growth occurs in response to an unknown stimulus that triggers endothelial proliferation and angiogenesis. Trauma and burns can sometimes be the causative agents, but frequently there is no identifiable cause. Other suggested precipitating factors include infection, hormonal influences (pregnancy and oral contraceptive pill in women), and cytogenetic abnormalities. PG has also been associated with the intake of some medications, such as systemic and topical retinoids, protease inhibitors, and chemotherapeutic agents.

Epidemiology: its incidence decreases with age, and it peaks at 6-7 years.

Clinical appearance: on the scrotum and penis it appears as a solitary, red, purple or yellowish papule or nodule arising from normal skin. Size varies from a few millimeters to several centimeters in diameter. PGs are friable, polypoid and pedunculated lesions that often bleed, with consequent pain, crusting or ulceration.

Clinical course: rapid eruption and growth occur over a few weeks. Untreated lesions spontaneously involute, but only a minority completely clear with residual atrophy within six months. Recurrence rates following treatment can be quite high (40-50%).

Diagnosis: it is usually made on clinical grounds, and histopathology is only seldom required in doubtful cases.

Therapy: treatment options include curettage and cautery, cryotherapy, shave excision, excision with primary closure, and laser therapy.

Suggested Reading

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Eickhorst KM, Nurzia MJ, Barone JG (2003) Pediatric pyogenic granuloma of the glans penis. Urology 61:644
Tomasini C, Puiatti P, Bernengo MG (1998) Multiple pyogenic granuloma of the penis. Sex Transm Infect 74:221-2

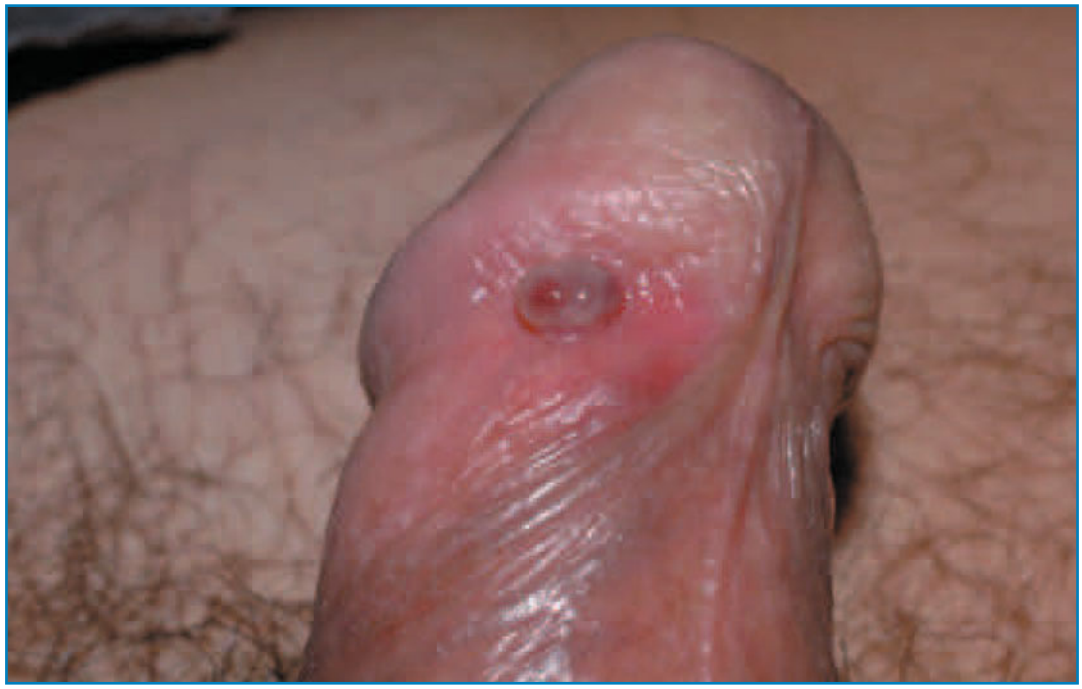

Fig. 5.28 Circumscribed, raised, and reddish nodule arising from the coronal sulcus

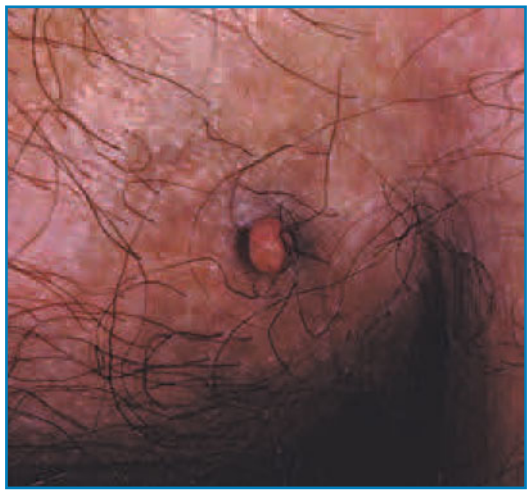

Fig. 5.29 Small, raised, and reddish nodule on the scrotum

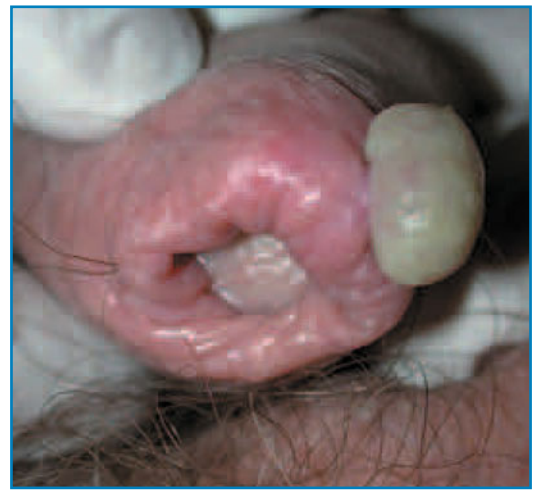

Fig. 5.30 Pedunculated and whitish nodule arising from the foreskin

Sclerosing Lymphangitis

Definition: Sclerosing Lymphangitis (SL) is an inflammation of the lymphatic channels proximal to the glans, producing a cord-like thickening.

Etiology: it is unknown. Circumferential scarring from circumcision, enterovirus infection, tuberculosis are some of the postulated etiologies. However, the most frequent hypothetic triggering factor is a local mechanical trauma from repeated penile injury during vigorous sexual intercourse. In 25% of all reported cases, a close temporal relationship to gonorrhea, chlamydia, and syphilis has been noted.

Epidemiology: SL of the penis is usually seen in sexually active men in their 20s to 40s following sexual intercourse or masturbation.

Clinical appearance: it is characterized by a serpiginous, translucent, flesh-colored or reddish cord-like thickening, non-adherent to overlying skin and located on the shaft or glans, encircling the coronal sulcus parallel to the corona. Although it is mostly asymptomatic, some patients report pain and discomfort on erection.

Clinical course: it causes negligible physical discomfort to the patient and seems to resolve spontaneously within a relatively short period (4-6 weeks).

Diagnosis: it is usually made based on the clinical findings.

Therapy: the condition is self-limiting. Abstinence from sexual intercourse for several weeks with reassurance is the treatment of choice. Excision is rarely required in case of persistence.

Suggested Reading

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Rosen T, Hwong H (2003) Sclerosing lymphangitis of the penis. J Am Acad Dermatol 49:916-8

Yap FB (2009) Nonvenereal sclerosing lymphangitis of the penis. South Med J 102:1269-71

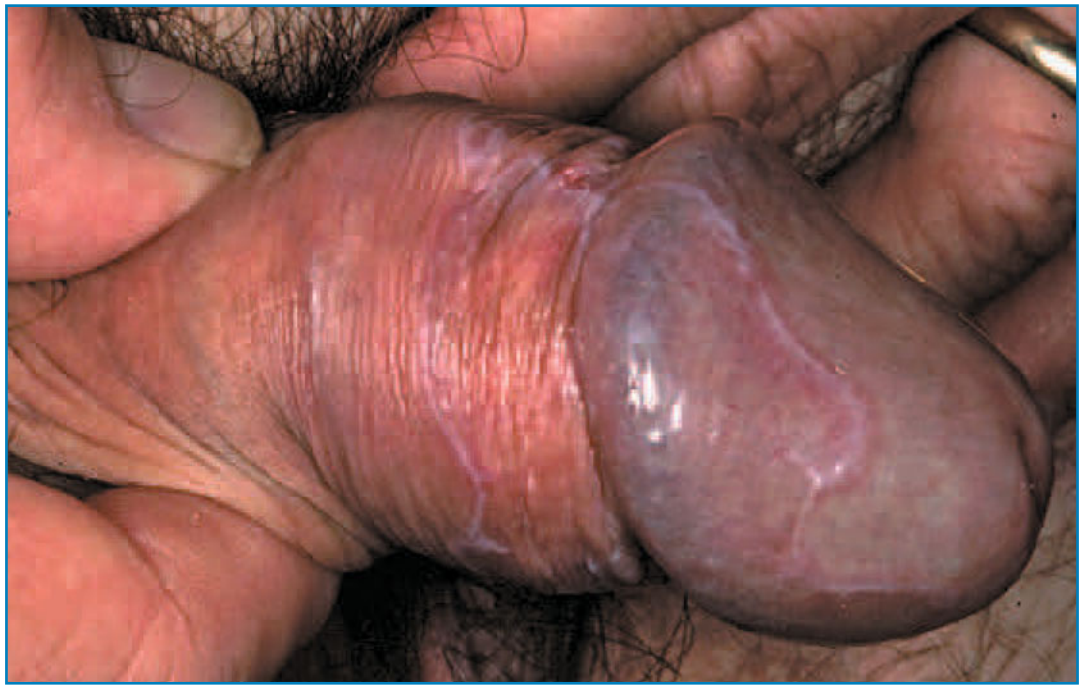

Fig. 5.31 Serpiginous, translucent, and reddish cord-like thickening on the glans and foreskin

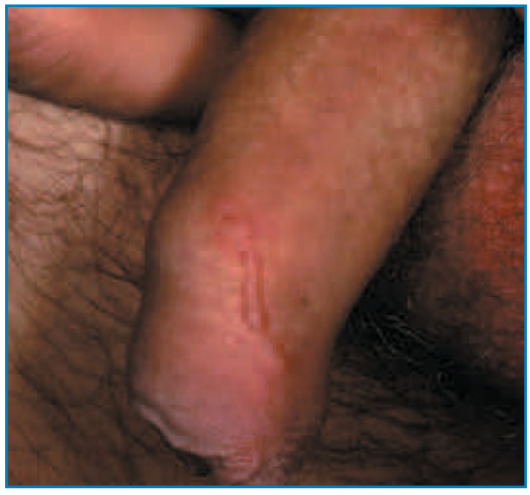

Fig. 5.32 Serpiginous and skin-colored tract on the shaft

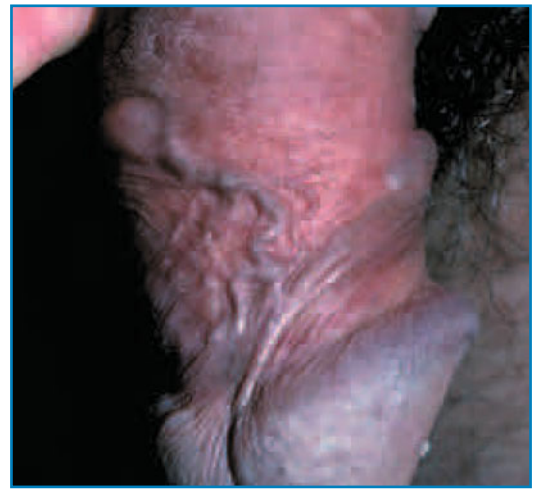

Fig. 5.33 Serpiginous and bluish tract on the ventral appearance of the shaft

Hidradenitis Suppurativa (Verneuil's Disease)

Definition: Hidradenitis Suppurativa (HS), also known as Verneuil's disease or acne inversa, is a chronic, inflammatory, suppurating, fistulizing, and scar-producing disorder affecting body areas that contain sweat glands.

Etiology: its exact cause is disputed. Traditionally considered to be a disease of the apocrine glands, it has been hypothesised to derive from a defect of the follicular epithelium. Some studies have suggested an autosomal dominant inheritance. Triggering factors possibly associated with HS include heat, humidity, and friction from clothing, obesity via occlusion and maceration, hyperandrogenism, chemical irritants, smoking, and lithium exposure. Bacterial infection is thought to occur secondarily.

Epidemiology: its precise incidence is uncertain. The disorder might be more common than once thought, since its diagnosis is frequently ignored or missed.

Clinical appearance: it mostly occurs in the armpits, groin, and buttocks, but the scalp may also be involved (dissecting folliculitis). Less severe cases may only present as a cluster of 2 or 3 deeply interconnected blackheads. Once the disease begins, it gets progressively worse. Extensive, deep inflammation leads to painful abscesses and fistulae that heal incompletely and cause cord-like scars on the skin. This condition can cause considerable discomfort to patients, hamper movements of the affected area and significantly impair the quality of life.

Clinical course: it is a chronic disabling disorder progressing relentlessly and leading to draining sinuses, fistulas, abscesses and progressive scarring. Other potential complications include dermal contraction, local or disseminated infection, and lymphedema.

Diagnosis: it is primarily clinical, based on the presence of both sinus tracts and abscesses with a characteristic distribution.

Therapy: it is difficult. In the early and mild stages, before extensive scarring develops, conservative measures such as warm baths, hydrotherapy, cryotherapy and topical cleansing agents to reduce the bacterial load may be useful. In moderate to severe cases, other treatment options, such as systemic antibiotics (erythromycin, tetracycline, minocycline, doxycycline), isotretinoin or steroid injection (normally combined with other treatments) are necessary. Local surgical excision should be performed as early as possible if abscesses, fistulas, scars, or sinus tracts occur.

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Alikhan A, Lynch PJ, Eisen DB (2009) Hidradenitis suppurativa: a comprehensive review. J Am Acad Dermatol 60:539

Jemec GBE, Heidenheim M, Nielsen NH (1996) The prevalence of hidradenitis suppurativa and its potential precursor lesions. J Am Acad Dermatol 35:191-4

Jansen T, Altmeyer P, Plewig G (2001) Acne inversa (alias hidradenitis suppurativa). J Eur Acad Dermatol Venereol 15:532-40

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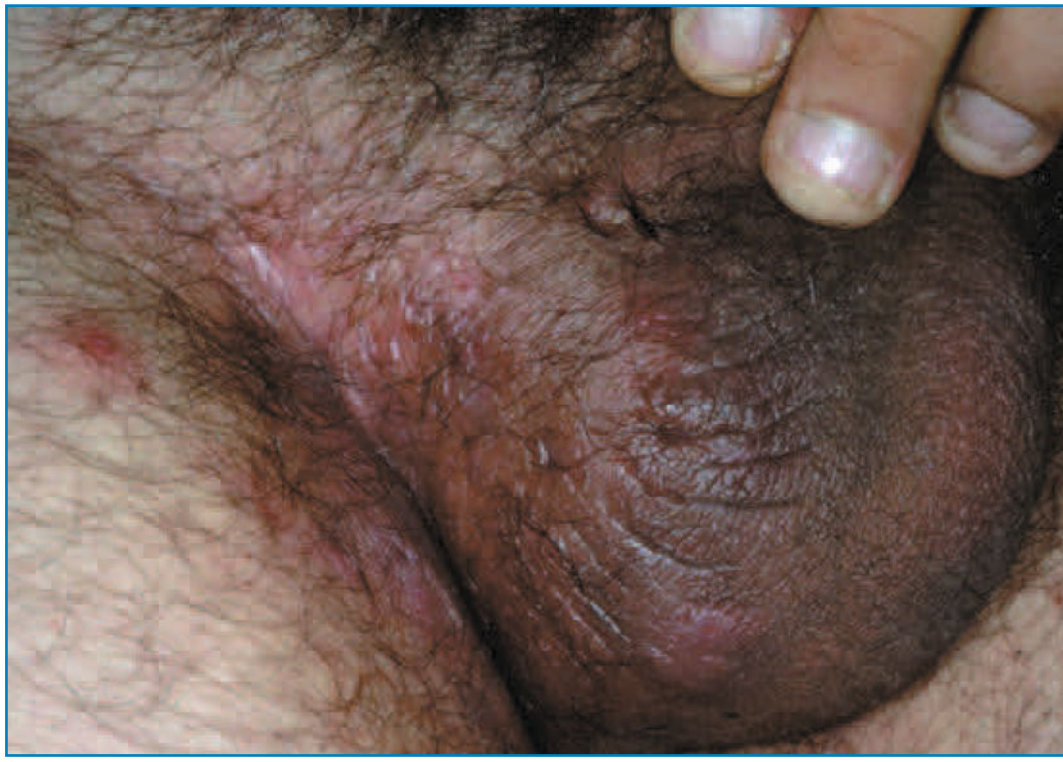

Fig. 5.34 Intense inflammation of the groin and scrotum with presence of deep nodules and scars

Erythema Multiforme

Definition: Erythema Multiforme (EM) is an acute, inflammatory skin disorder resulting from an immune response to antigenic sensitization.

Etiology: it is unknown but the disease is considered to be a type IV hypersensitivity reaction, usually associated with viral infections (herpes simplex virus), and medications (carbamazepine, phenytoin, sulfonamide, and penicillin). Other trigger factors include lymphoreticular malignancies and autoimmune diseases (lupus erythematosus and rheumatoid arthritis).

Epidemiology: globally, its frequency is estimated at approximately 1.2 - 6 cases per million individuals per year.

Clinical appearance: the penis and scrotum are commonly involved, but the disease may also occur elsewhere. Initially, erosions are located at the meatus and then extend to the glans and prepuce. Sometimes, the entire genitalia can be affected. In some cases, the disease occurs in the genital and oral mucosa without generalized cutaneous involvement. These patients are acutely ill. EM is often accompanied by fever, malaise and myalgias.

Clinical course: after bullous eruptions and erosions, the patient's condition gradually improves. Recurrences are possible after repeated drug exposure or following recurrent herpes simplex virus infection. Common complications in male genital areas are meatal stenosis and phimosis. Severe EM may result in death.

Diagnosis: it is based mainly on anamnesis and clinical appearance. Careful inspection of other skin areas as well as of the oral mucosa is recommended. A skin biopsy is mandatory to confirm the diagnosis.

Therapy: if a causative drug is suspected, it must be withdrawn as soon as possible. The use of systemic corticosteroids is debatable, but topical corticosteroids may be considered in treating genital EM. Local genital care is very important to prevent complications.

Suggested Reading

Borchers AT, Lee JL, Naguwa SM et al (2008) Stevens-Johnson syndrome and toxic epidermal necrolysis. Autoimmun Rev 7:598-605

Hazin R, Ibrahimi OA, Hazin MI, Kimyai-Asadi A (2008) Stevens-Johnson syndrome: pathogenesis, diagnosis, and management. Ann Med 40:129-38

Katoulis AC, Liakou A, Bozi E et al (2010) Erythema multiforme following vaccination for human papillomavirus. Dermatology 220:60-2

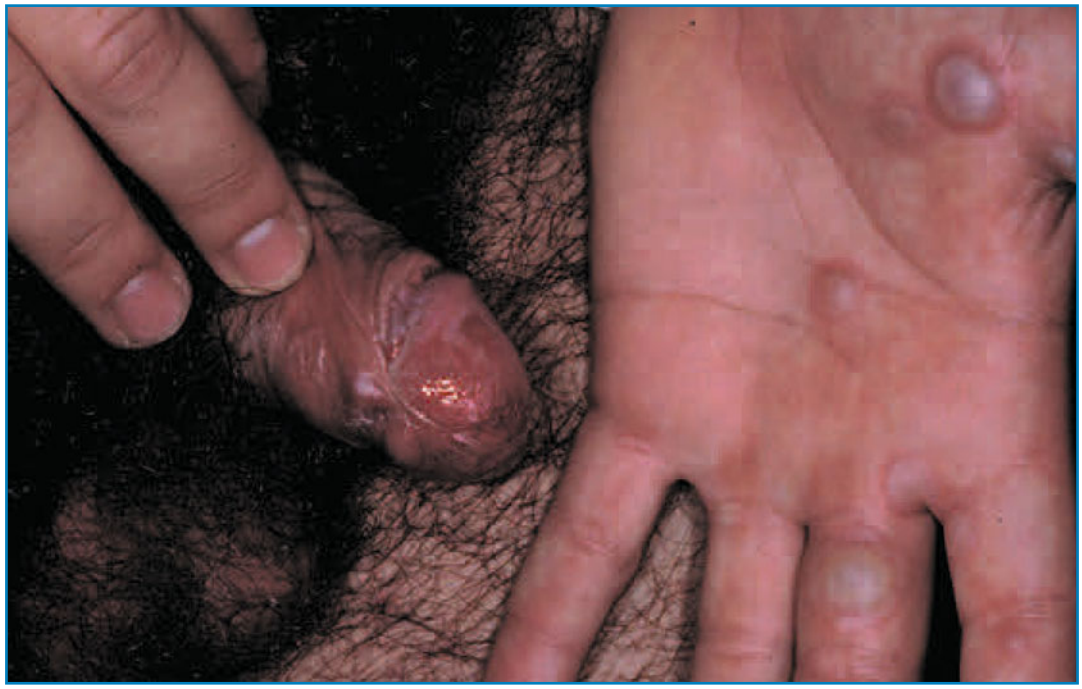

Fig. 5.35 Diffuse erosion of the glans with typical target-like bullous lesions on the palms

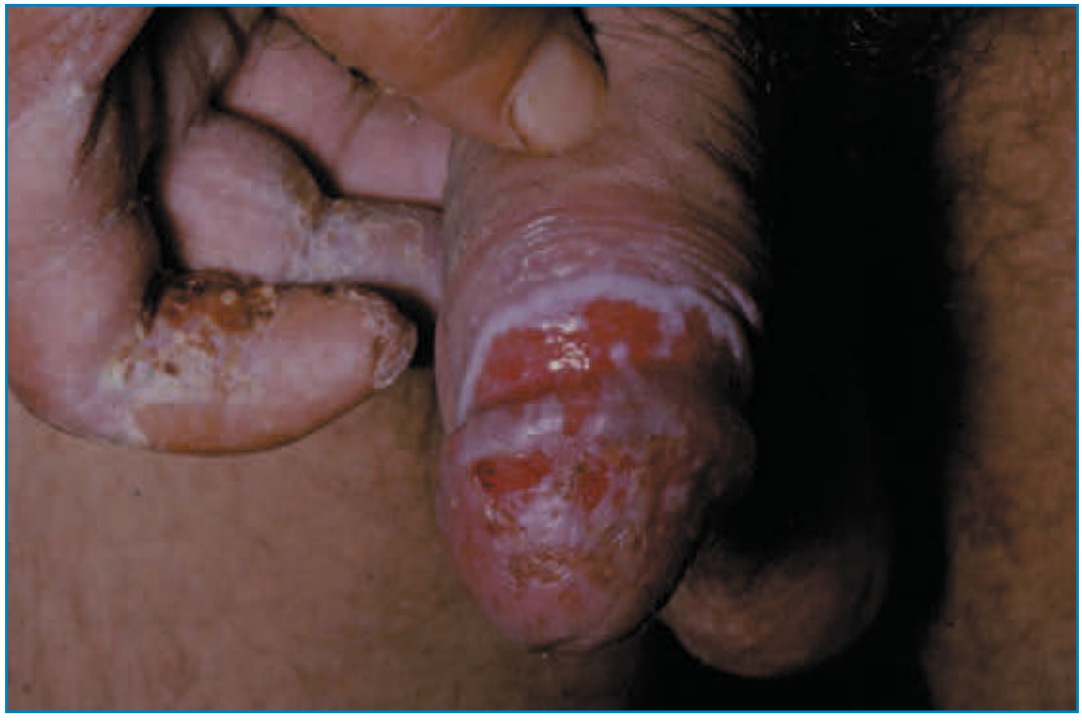

Fig. 5.36 Erosions and crusts involving the glans and foreskin

Fixed Drug Eruption

Definition: Fixed Drug Eruption (FDE) is a mucocutaneous reaction to a systemic drug characterized by the recurrent onset of skin lesions at the same sites each time the responsible drug is administered.

Etiology: any drug can cause FDE, notably antibiotics and nonsteroidal anti-inflammatory agents, by a direct cytotoxic immune-mediated effect.

Epidemiology: it is quite frequent, representing about 10% of drug reactions. The penis is a frequent site for FDE.

Clinical appearance: a few hours after drug intake, one or more erythematous or purplish rounded patches appear on the skin and/or on the glans. Lesions can be very swollen and turn into blisters, leading to the development of erosions that heal with a residual hyperpigmentation which increases at each repeated drug exposure. Any cutaneous or mucous site can be affected, but the most frequent localizations are the genitalia and the oral mucosa.

Clinical course: after discontinuing drug intake, the lesions self-heal within a few days, leaving postinflammatory pigmentation. If the same drug is taken again, the lesions relapse and worsen.

Diagnosis: it is based on past medical history and clinical features. In the case of multiple lesions, FDE must be differentiated from erythema multiforme.

Therapy: it consists of discontinuation of the offending drug. Topical corticosteroids and antiseptics are effective in speeding recovery.

Suggested Reading

Baykal Y, Baykal C (2004) Fixed drug eruption of the penis due to zolmitriptan. Dermatology 208:235

Gendernalik SB, Galeckas KJ (2009) Fixed drug eruption: a case report and a review of the literature. Cutis 84:215-9

Lawrentschuk N, Pan D, Troy A (2006) Fixed drug eruption of the penis secondary to sulfamethoxazole-trimethoprim. Scientific World Journal 6:2319-22

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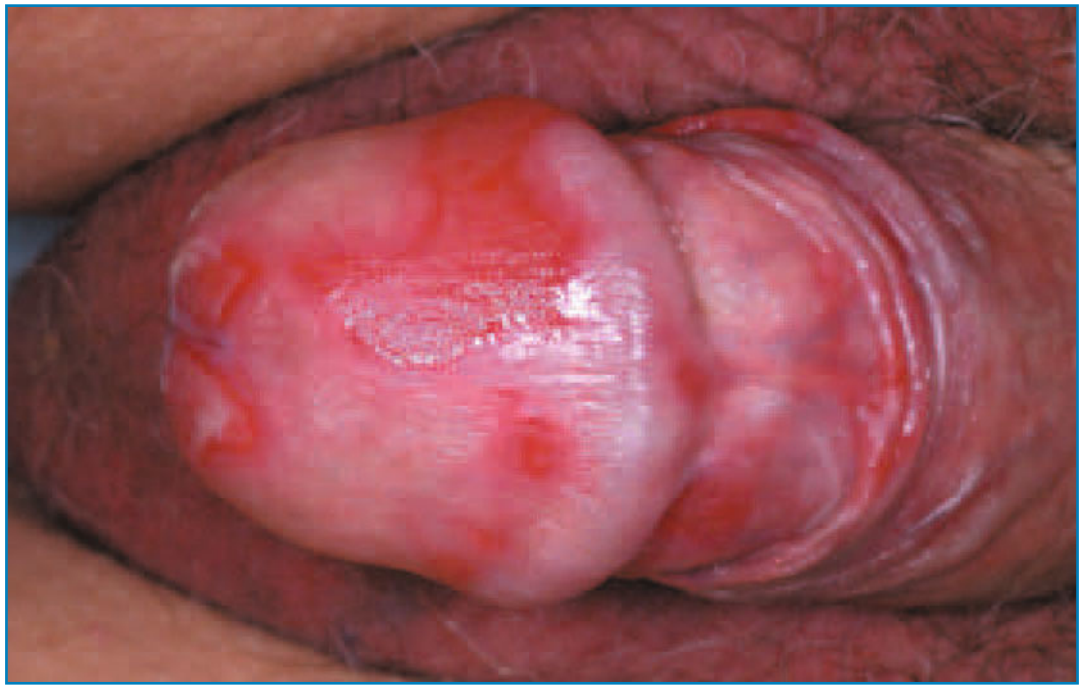

Fig. 5.37 Rounded, glistening, and reddish patch on the glans and foreskin

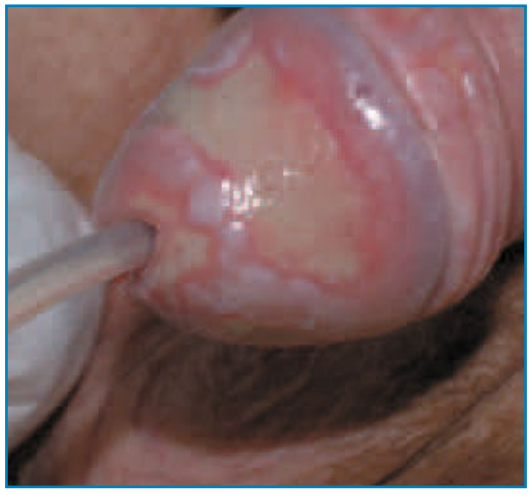

Fig. 5.38 Multiple erosions on the glans

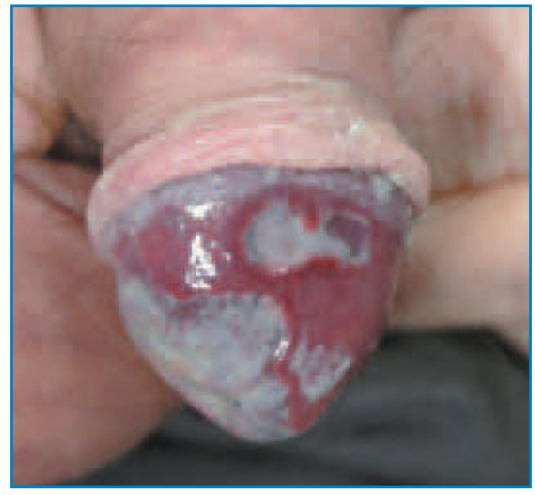

Fig. 5.39 Multiple, confluent, and hemorrhagic erosions of the glans

Pemphigus Vulgaris

Definition: Pemphigus Vulgaris (PV) is an autoimmune, intraepithelial, bullous disorder affecting the skin and mucous membranes.

Etiology: its primary cause is unknown. Its pathogenesis is mediated by circulating autoantibodies directed against keratinocyte desmosomal components (desmogleins) that produce suprabasal acantholysis.

Epidemiology: it affects men and women equally and it is most frequent in middle age. It has been reported to occur worldwide and in all races. Its incidence is about 0.5-3.2 cases per 100,000. Localization in the male genitalia is rare.

Clinical appearance: initial genital lesions are nonspecific superficial erosions located on the glans and prepuce. When the disease progresses, flaccid blisters may occur on the hair-bearing genital area or distant skin. PV can produce scarring of the inner prepuce and glans in uncircumcised men. Pemphigus vegetans is a variant of PV (2-7% of cases) predominantly involving skin folds, scalp, face, and mucous membranes, in which hypertrophic papillated plaques develop in the affected area, obscuring the underlying flaccid blisters. Pemphigus erythematosus represents a superficial variant of pemphigus that implies the formation of flaccid bullae, scaling, erosions and crusting.

Clinical course: PV is a chronic disease requiring lifelong treatment. Untreated PV has a high mortality rate. Among treated patients, complications are mostly related to the side effects of prolonged systemic treatments.

Diagnosis: it should be suspected in patients with any bullous disorder or chronic mucosal ulceration. Like lesions in the oral mucosa, penile lesions may linger for several months or even years before the condition is diagnosed correctly. A biopsy with direct immunofluorescence testing, showing intercellular deposits of IgG or C3 in the epidermis, is mandatory for diagnosis. Indirect immunofluorescence, showing circulating autoantibodies directed against desmoglein-3 or desmoglein-1, immunoblotting, and ELISA are also useful.

Therapy: the most commonly used medications are systemic corticosteroids such as oral prednisone or intravenous methylprednisolone. As PV is a chronic disorder, the onset of side effects from protracted therapy should be taken into consideration. Immunosuppressant agents, such as cyclophosphamide, azathioprine and mycophenolate mofetil, should be considered as steroid-sparing agents. Plasmapheresis can be attempted in refractory cases. Some oral anti-inflammatory antibiotics, such as tetracycline or erythromycin, may be useful in some patients. Local genital care is very important in uncircumcised men with mucous membrane lesions of PV to prevent the development of superinfections and scarring.

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Sami N, Ahmed AR (2001) Penile pemphigus. Arch Dermatol 137:756-8

Yeh SW, Sami N, Ahmed RA (2005) Treatment of pemphigus vulgaris: current and emerging options. Am J Clin Dermatol 6:327-42

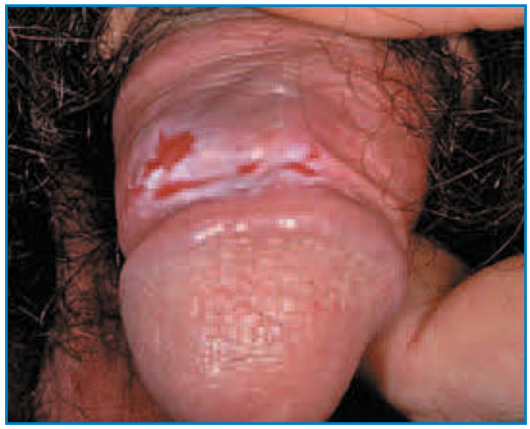

Fig. 5.40 Erosive lesions located on the inner foreskin

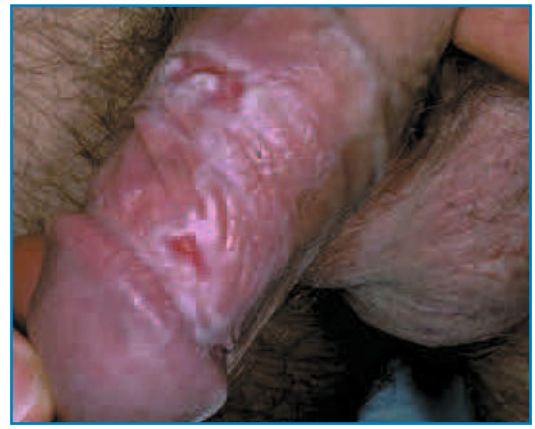

Fig. 5.41 Multiple erosive lesions of the inner foreskin

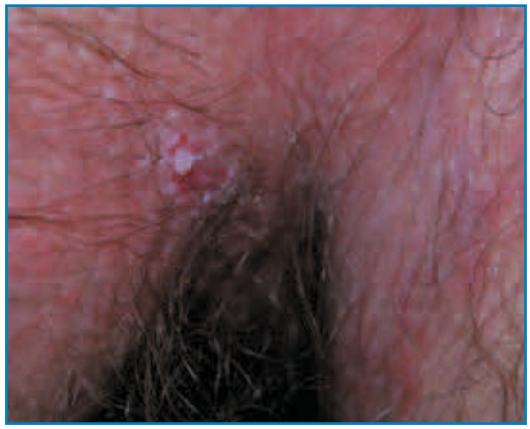

Fig. 5.42 Solitary and erosive lesion on the groin

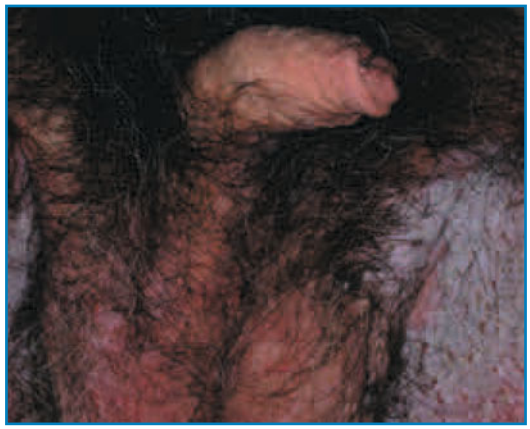

Fig. 5.44 Pemphigus vegetans: grayish and hypertrophic plaques on the groins

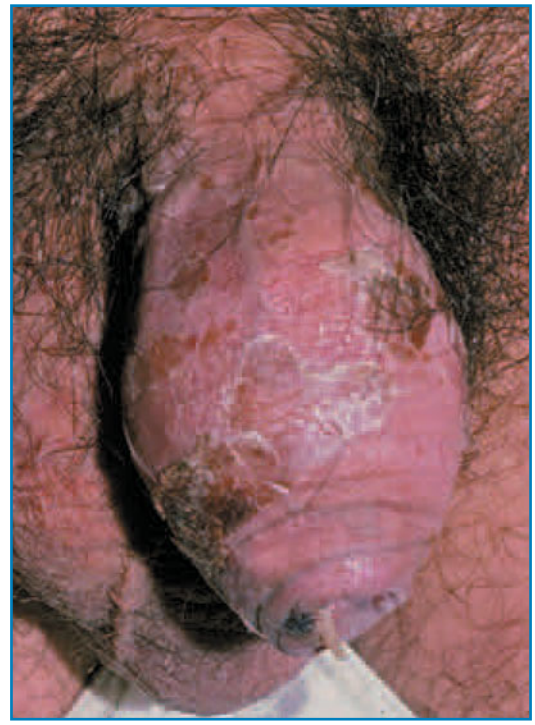

Fig. 5.43 Pemphigus erythematosus: multiple erosions and crusts of the shaft

Dermatitis Herpetiformis (Dühring's Disease)

Definition: Dermatitis Herpetiformis (DH) is an autoimmune blistering disorder.

Etiology: it is the result of an immunologic response to chronic stimulation of the gut mucosa by dietary gluten.

Epidemiology: DH is mostly observed in young men. Its prevalence has been reported as high as 10 cases per 100,000 population. Among patients with celiac disease, 15-25% develop DH.

Clinical appearance: it is a pruritic condition, initially characterized by erythematous and urticarial plaques, and successively by papules with vesicles and bullae. These lesions may involve the genital area, although other skin areas are usually involved.

Clinical course: DH is a chronic disease. However, it may improve after discontinuing dietary gluten intake.

Diagnosis: it requires direct immunofluorescence of a skin biopsy specimen showing IgA deposition in a granular pattern in the upper papillary dermis. Although most patients are asymptomatic, more than 90% have an associated gluten-sensitive enteropathy upon endoscopic examination.

Therapy: it includes a gluten-free diet and pharmacotherapy. Dapsone (diaminodiphenyl sulfone) and sulfapyridine are the primary medications used to treat DH. Other less effective treatments include colchicine, cyclosporine, azathioprine, and prednisone.

Suggested Reading

Doffoel-Hantz V, Cogné M, Sparsa A et al (2008) Physiopathology of herpetiform dermatitis. Current data. Ann Dermatol Venereol 135:784-8

Fry L (2011) The falling incidence and prevalence of dermatitis herpetiformis. Br J Dermatol 165:229

Rebora A (2011) Shape and configuration of skin lesions: grouped herpetiform. Clin Dermatol 29:509-10

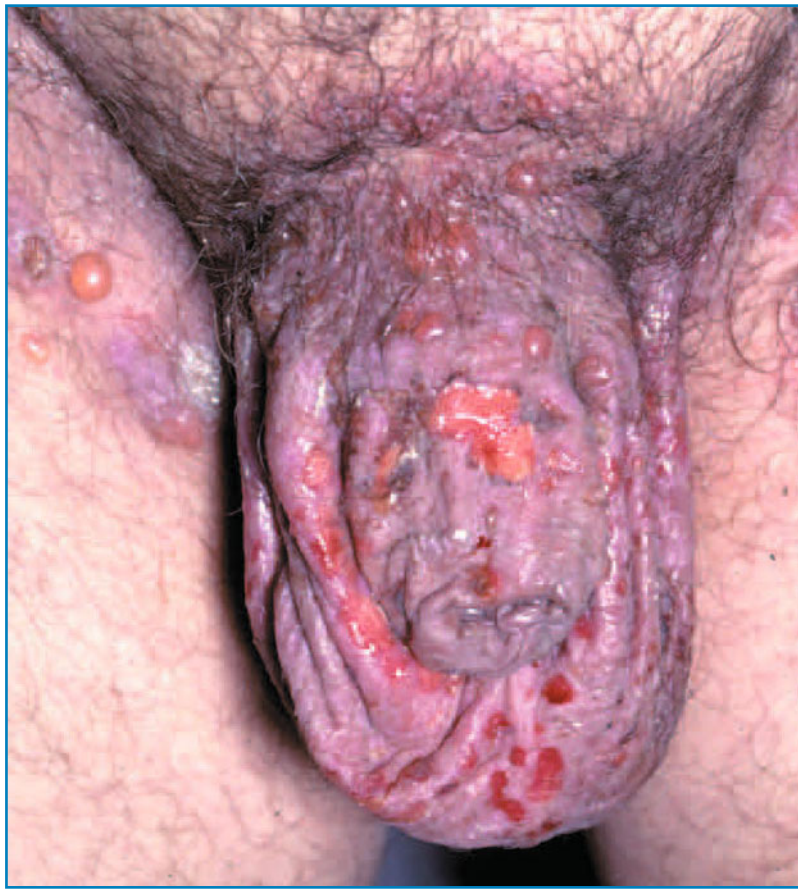

Fig. 5.45 Multiple blisters and erosions in the genital area

Bullous Pemphigoid

Definition: Bullous Pemphigoid (BP) is an autoimmune, subepidermal, blistering disorder that rarely involves the mucous membranes.

Etiology: it is characterized by the presence of circulating IgG autoantibodies directed against the hemidesmosomal antigens BP230 (BPAg1) and BP180 (BPAg2).

Epidemiology: it is an uncommon disease that occurs equally in males and females. It can affect patients at any age, but especially during the sixth to eighth decades of life.

Clinical appearance: the hair-bearing skin of the inner thighs, inguinal crease, scrotum, and perineum are the main affected genital areas. The penis is usually involved as part of a generalized eruption. In such cases, intact blisters are seldom observed and, due to mechanical traumatism, soon develop into erosions that may be asymptomatic and go undiscovered.

Clinical course: it is a chronic condition. Its course is mainly complicated by the side effects of the long-term treatments required, which are a significant concern in elderly patients with several comorbidities.

Diagnosis: genital lesions are more often part of a more generalized form of the disease. In the case of nonspecific findings, examination of other skin areas usually reveals typical lesions. Direct immunofluorescence microscopy of a perilesional skin biopsy that typically shows linear deposits of IgG and/or C3 in the basal membrane zone is still the diagnostic gold standard.

Therapy: it is directed at reducing the inflammatory response and autoantibody production. Corticosteroids are the mainstay of treatment for BP. Other immunosuppressive agents, such as azathioprine, cyclophosphamide, methotrexate, and mycophenolate mofetil, can be used in resistant cases. Dapsone and other oral agents with anti-inflammatory effect, such as tetracycline or macrolides (erythromycin), are indicated in mild or localized forms of the disease. Local genital care is very important in uncircumcised men with mucous membrane lesions because of the risk of infections and scarring.

Suggested Reading

Hertl M, Niedermeier A, Borradori L (2010) Autoimmune bullous skin disorders. Ther Umsch 67:465-82

Ingen-Housz-Oro S, Valeyrie-Allanore L, Ortonne N et al (2011) Management of bullous pemphigoid with topical steroids in the clinical practice of a single center: outcome at 6 and 12 months. Dermatology 222:176-9

Mirza M, Zamilpa I, Wilson JM (2008) Localized penile bullous pemphigoid of childhood. J Pediatr Urol 4:395-7

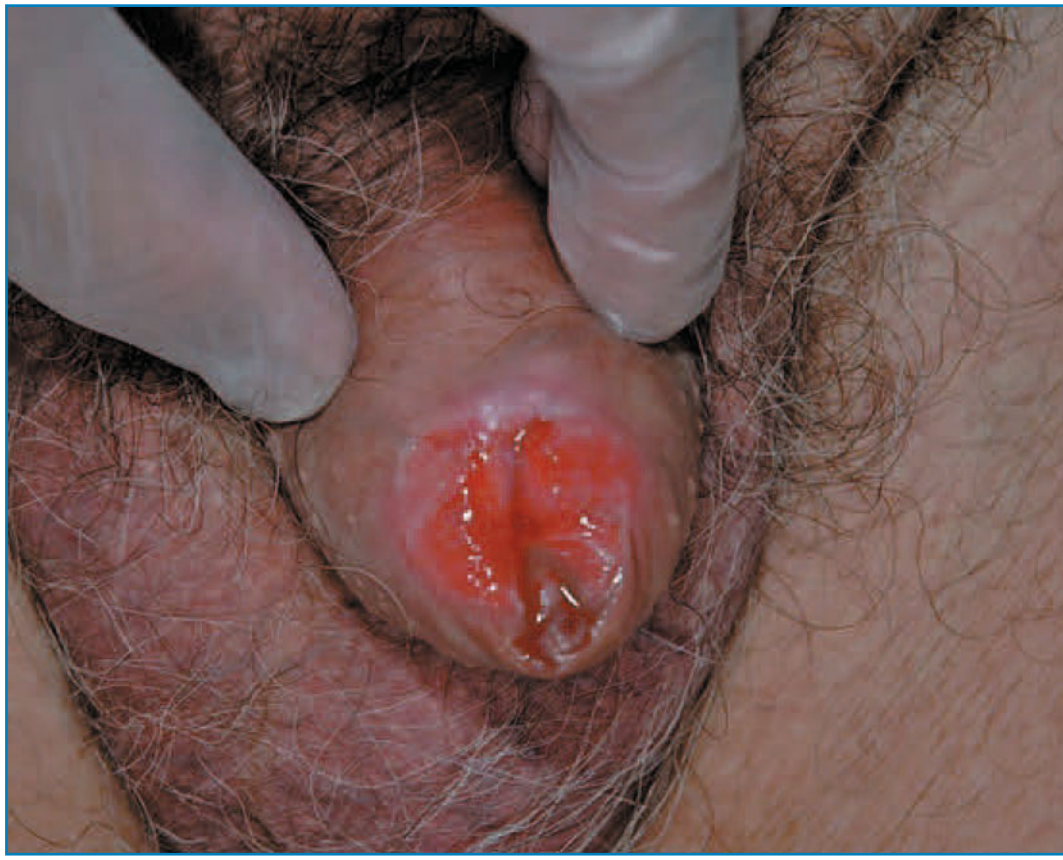

Fig. 5.46 Large, erythematous, and erosive lesion of the foreskin

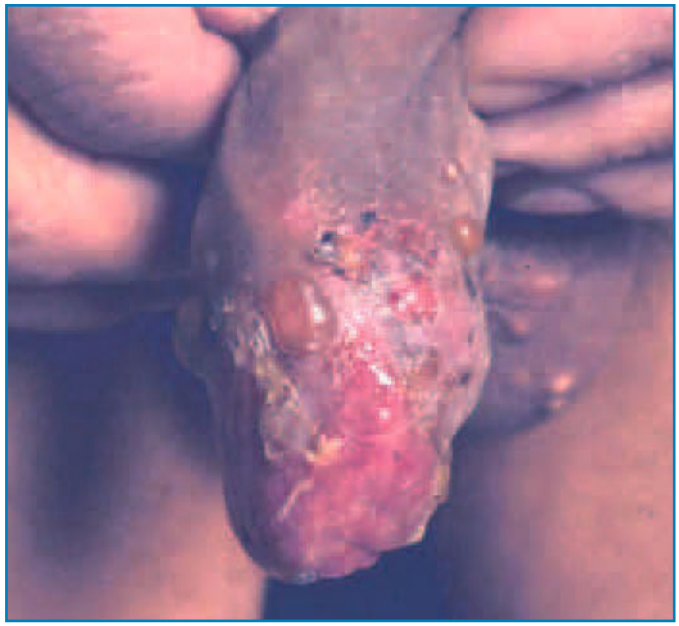

Fig. 5.47 Multiple blisters and erosions of the penis

Hailey-Hailey Disease

Definition: Hailey-Hailey Disease (HHD), also known as benign familial pemphigus, is an inherited bullous skin disorder that predominantly affects the intertriginous areas.

Etiology: ATP2C1, encoding the human secretory pathway Ca(2+)-ATPase (hSPCA1), has been identified as the defective gene of this autosomal dominant disease characterized by abnormal keratinocyte adhesion in the suprabasal layers of the epidermis.

Epidemiology: HHD is a rare condition. It is found worldwide, with a prevalence of approximately 1/50,000. Males and females are equally affected. The symptoms worsen during summer, when the rise in environmental temperature and humidity facilitate superinfections in the intertriginous areas.

Clinical appearance: in the genital area, first small epidermal fragile blisters usually appear in the groin as a result of friction. Subsequently, they evolve into red, eroded, cracked, macerated and foul-smelling plaques. The eruption may also involve the penis and scrotum with similar features.

Clinical course: the disease has an irregular course that depends at least partially on warmth and secondary bacterial and mycotic infections.

Diagnosis: it is usually suggested by the clinical features and the family history. Diagnosis may require a skin biopsy. The histology is characteristic, with layers of detached skin cells ('acantholysis'). Unlike pemphigus vulgaris, in HHD the immunofluorescence test for antibodies is negative.

Therapy: HHD waxes and wanes in intensity. The therapy aims at controlling local environmental precipitating factors and superinfections. Soothing compresses followed by intermittent use of mild corticosteroid preparations and topical antibiotics (clindamycin or erythromycin) result in transient improvement. In resistant cases, systemic dapsone, corticosteroids, methotrexate, retinoids (isotretinoin or acitretin) have been tried with some success.

Suggested Reading

Stolze I, Hamm H, Weyandt GH (2011) Segmental multilayered argon plasma coagulation: effective therapy option for perianal and scrotal Hailey-Hailey disease. Colorectal Dis 13:802-4

Wong TY, Mihm MC Jr (1994) Acantholytic dermatosis localized to genitalia and crural areas of male patients: a report of three cases. J Cutan Pathol 21:27-32

Nasca MR, De Pasquale R, Amodeo S et al (2000) Treatment of Hailey-Hailey disease with oral erythromycin. J Dermatol Treatment 11:273-277

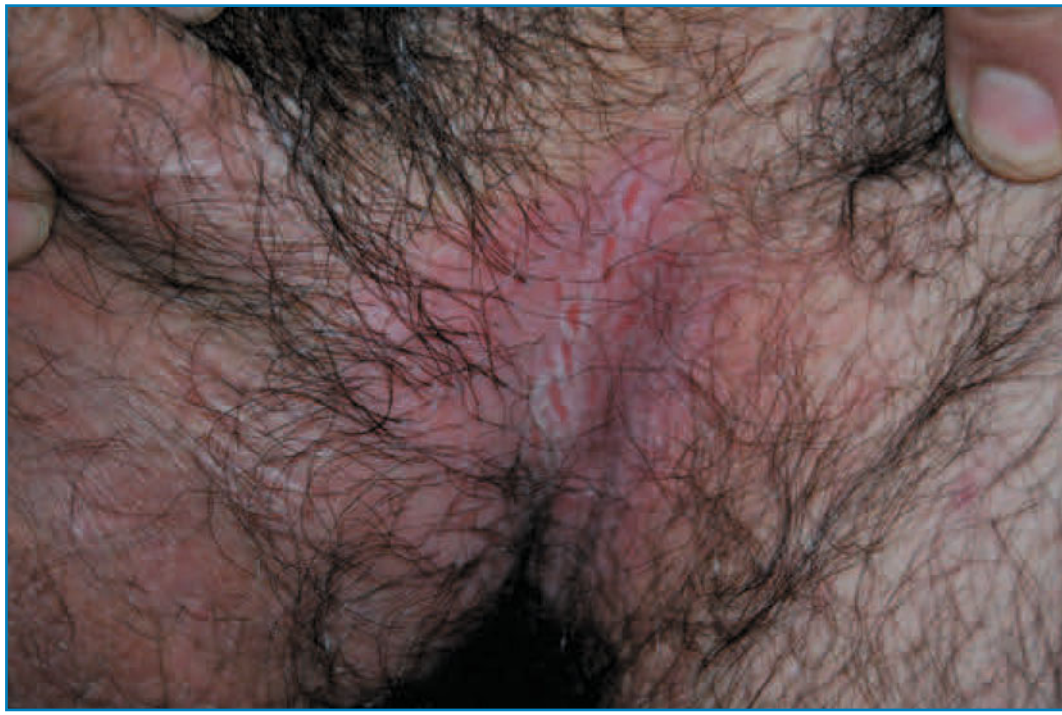

Fig. 5.48 Reddish plaque associated with multiple erosions on the groin

Aphthous Ulcers

Definition: aphthous ulcers, also called aphthae, are benign cutaneous inflammatory lesions that appear and spontaneously heal.

Etiology: it is unknown. It is likely to be multifactorial: genetic, immunological, and psychological factors may contribute to the pathogenesis of the lesions.

Epidemiology: aphthae of the genitalia are not as frequent as those of the oral mucosa. Exact epidemiologic data are not avalaible. They are very rare in men, but are more frequent in women. The peak age of onset is from late childhood to early adulthood.

Clinical appearance: the lesions are often localized on the penis and scrotum, and occasionally on the perianal area. They begin as single, or less often multiple, tiny erythematous macules that soon evolve into small painful ulcers, of size ranging between 0.3 and 2 cm in diameter. They are characteristically sharply marginated and surrounded by an erythematous halo. They are usually round and deep, although larger ones may be irregular in shape.

Clinical course: the lesions usually heal in 2 to 4 weeks, most often without scarring unless they are quite large. The same patient can show oral and genital aphthae, a condition called aphthosis major or bipolar aphthosis. Systemic symptoms, such as fatigue and malaise, can be present in extensive forms of the disease. Frequency of relapses has been reported to gradually decrease after the fifth decade of life.

Diagnosis: the past medical history and the clinical features generally suggest the correct diagnosis. Serologic tests for syphilis, cultures for *H. ducreyii*, and biopsy for malignancy are indicated in equivocal cases. Behçet's syndrome should be excluded if the international diagnostic criteria are not fulfilled.

Therapy: the small asymptomatic lesions can be left untreated. The larger symptomatic ones may require treatment with topical, intralesional or oral corticosteroids. Unresponsive or frequently relapsing cases can be managed by long-term treatment with anti-inflammatory or immunosuppressive agents, such as dapsone, hydroxychloroquine, and azathioprine.

Suggested Reading

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Liu C, Zhou Z, Liu G et al (2012) Efficacy and safety of dexamethasone ointment on recurrent aphthous ulceration. Am J Med 125:292-301

O'Neill ID (2012) Efficacy of tumour necrosis factor-α antagonists in aphthous ulceration: review of published individual patient data. J Eur Acad Dermatol Venereol 26:231-5

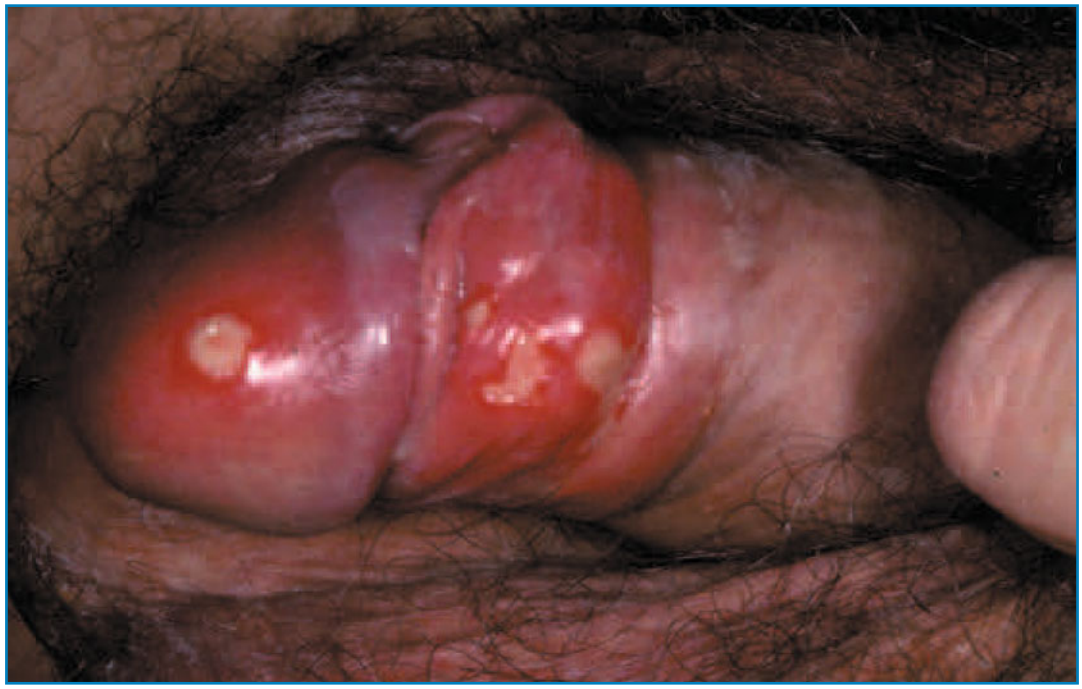


Fig. 5.49 Typical small and "punched out" lesions involving the glans and the inner foreskin

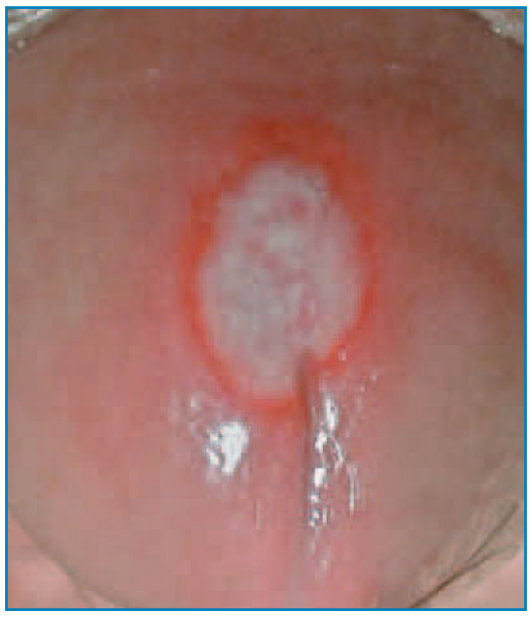


Fig. 5.50 Large lesion of the glans

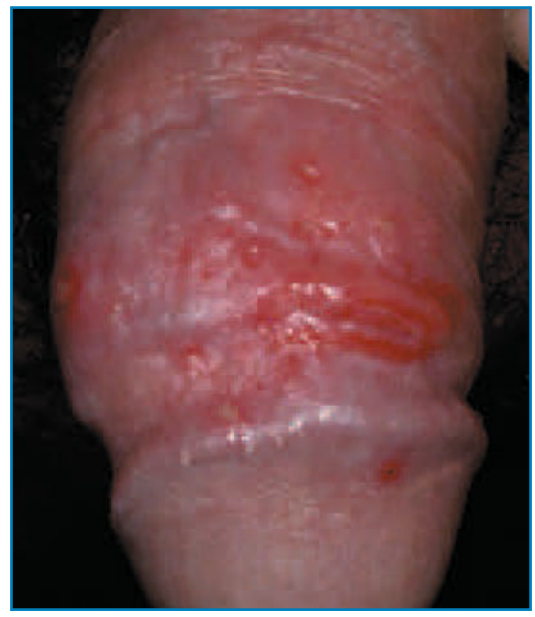


Fig. 5.51 Multiple, small, and herpes-like lesions on the glans

Behçet's Disease

Definition: Behçet's disease (BD) is a systemic necrotising vasculitis affecting blood vessels of all sizes. It is characterized by oral aphthae in all patients and by at least 2 of the following symptoms: genital aphthae, cutaneous pustular vasculitis, synovitis, posterior uveitis, and meningoencephalitis, in the absence of inflammatory bowel disease or collagen-vascular disease.

Etiology: it is unknown, but a pathogenic role of Th1-mediated immune response has been suggested. Pathergy, i.e., the development of skin lesions after trauma or injury, may occur.

Epidemiology: BD is described in Europe, North America and Japan. The variant recognized in Western Europe and North America includes oral and genital ulceration and it is less severe. "Western" BD is more frequent in female patients and often presents as collagen-vascular disease. "Eastern" BD is more frequent in male patients and often presents as a central nervous system and ocular disorder.

Clinical appearance: the lesions, generally superficial, appear as "punched out" small ulcers and are extremely painful and tender. Genital ulcers occur in about 90% of patients, and generally recur in crops (many shallow ulcers at the same time). They range in size from a few mm to 2 cm in diameter. They usually occur on the scrotum, less often on the penis, and can heal with residual scarring.

Clinical course: the disease relapses into acute episodes for many years. In addition to the mucosal ulcers, patients can present diarrhea, arthritis, thrombophlebitis, and psychiatric and neurologic problems. In severe cases, BD can lead to blindness, meningoencephalitis or stroke.

Diagnosis: it is supported by the past medical history and by the clinical findings, and requires fulfilment of the international diagnostic criteria (see definition).

Therapy: first-line therapies include topical or intralesional corticosteroids and topical tacrolimus. Dapsone and colchicine may be beneficial for some patients. Since high serum levels of TNF and soluble TNF receptors have been found in BD, therapy with TNF blockers is an option to consider when other therapies fail.

Suggested Reading

Davatchi F, Shahram F, Chams-Davatchi C et al (2010) Behçet's disease: from East to West. Clin Rheumatol 29:823-33
Dilsen N (1996) History and development of Behçet's disease. Rev Rhum Engl Ed 63:512-9
Mendes D, Correia M, Barbedo M et al (2009) Behçet's disease—a contemporary review. J Autoimmun 32:178-88
Yesudian PD, Edirisinghe DN, O'Mahony C (2007) Behçet's disease. Int J STD AIDS 18:221-7

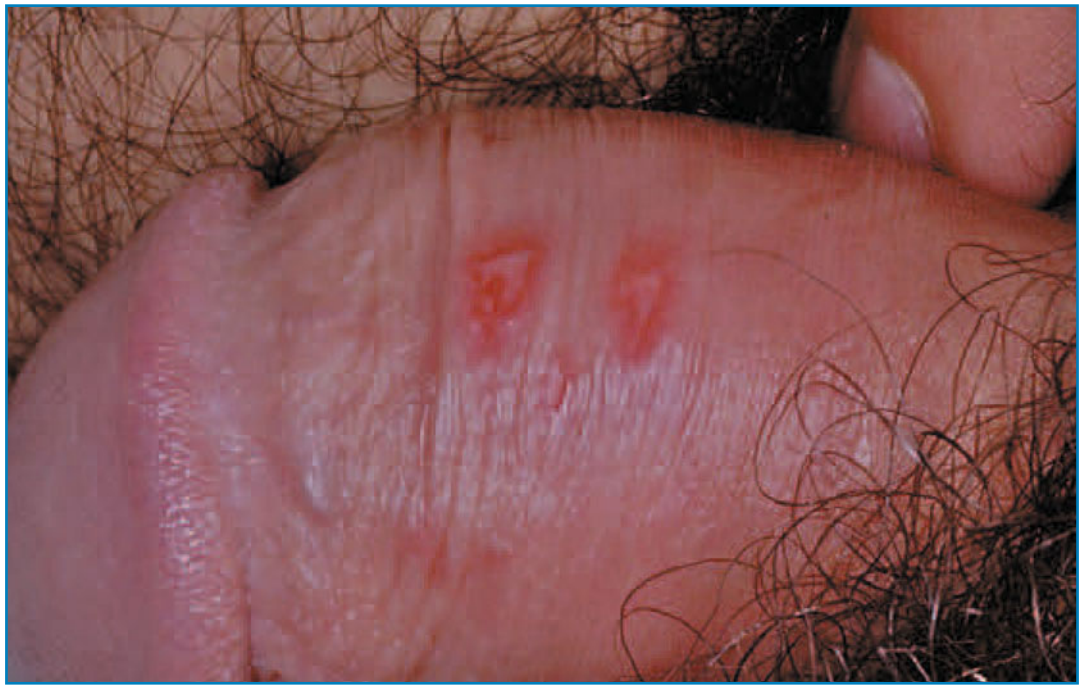


Fig. 5.52 Aphthous ulcers on the shaft

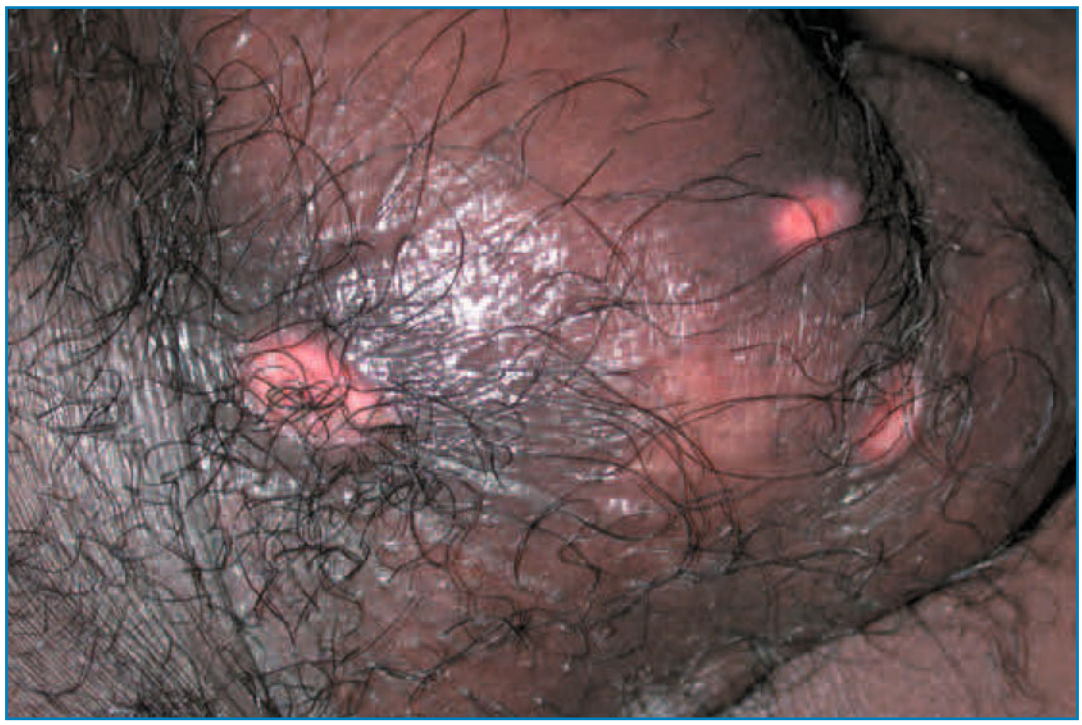


Fig. 5.53 Multiple aphthous ulcers on the scrotum in an Afro-American patient

Pyoderma Gangrenosum

Definition: Pyoderma Gangrenosum (PG) is a destructive, neutrophilic inflammatory disorder, mostly involving the lower extremities, which can also involve the hands, head, neck, and genitals.

Etiology: it is not well understood, but the disease is thought to be due to immune system dysregulation, and particularly to neutrophil dysfunction. Ulcerations of PG may occur after skin trauma or injury in 30% of patients; this process is called *pathergy*.

Epidemiology: it is a rare disease. Its annual incidence in the United States is approximately 1 case per 100,000 people. It mostly affects people in their 40s and 50s.

Clinical appearance: different clinical manifestations have been described, including ulcerative, pustular, bullous, and vegetative variants. PG usually starts as a pustule that breaks down and turns into an enlarging ulcer, usually with a typical violaceous, frequently raised, undermined border. Ulcers can be single or multiple. The genital location in men is very rare.

Clinical course: it may occur alone even though, in about 50% of patients, PG is associated with an underlying systemic disease, such as inflammatory bowel disease, arthritis, and hematologic malignancy.

Diagnosis: it is one of exclusion, with penile lesions having a substantial differential diagnosis from infections like syphilis, herpes simplex, mycobacterial ulceration, and amoebiasis, and from noninfectious causes of genital ulceration like squamous cell carcinoma, cutaneous Crohn's disease, and ulcerating sarcoidosis. PG should be suspected in any patient with an ulcerative penile lesion who fails to respond to adequate therapy and who has a negative or nonconfirmatory diagnostic evaluation for infectious or other inflammatory conditions.

Therapy: there is no treatment that is always effective. The most consistent results are reported with systemic corticosteroids and cyclosporine. Topical tacrolimus and imiquimod represent interesting novel approaches to treatment. Effective management of an underlying disorder often seems to result in improvement of the PG.

Suggested Reading

Das NK, Dutta RN (2010) Pyoderma gangrenosum on glans penis: an unusual site. J Indian Med Assoc 108:873-4

Georgala S, Georgala C, Nicolaidou E (2008) Pyoderma gangrenosum of the penis: a potentially dramatic skin disease. Urology 72:1185

Kim TH, Oh SY, Myung SC (2009) Pyoderma gangranosum of the penis. J Korean Med Sci 24:1200-2

Parren LJ, Nellen RG, Van Marion AM et al (2008) Penile pyoderma gangrenosum: successful treatment with colchicine. Int J Dermatol 47:7-9

Crohn's Disease

Definition: Crohn's Disease (CD) is an inflammatory granulomatous disease that may affect any part of the gastrointestinal tract from mouth to anus, causing a wide variety of symptoms. It can directly affect the skin of the involved bowel (contiguous form), or it can affect sites distant from the gastrointestinal tract (noncontiguous form); this phenomenon is also known as "metastatic CD".

Etiology: it is unknown. It is believed that CD is caused by interactions between environmental, immunological and bacterial factors in genetically susceptible individuals. This results in a chronic inflammatory disorder, possibly directed to microbial antigens, in which the host immune system attacks the gastrointestinal tract. Psychological factors may be triggers for the periodic exacerbations of the disease.

Epidemiology: there is a paucity of literature describing the occurrence of genital CD in men. Although perianal involvement occurs in nearly one-third of patients with CD and cutaneous involvement can be seen in 22-44%, genital manifestations are extremely rare. CD typically presents after the onset of bowel symptoms, although it has been reported to precede bowel symptoms by 3 months to 8 years in 20% of patients.

Clinical appearance: genital CD can present in several different forms. It can occur as a result of direct extension from areas near the bowel, such as the anus or a colostomy site, or it can appear on the genitalia as a solitary lesion. Male and female genital lesions usually appear as a nonhealing ulcer, but they can present as a papule, a plaque, or swelling. Penile and scrotal edema may occur. Linear fissures can develop within intertriginous folds. This sign, termed "knife cut", is a very distinctive finding. Interestingly, the severity of the cutaneous findings may not correlate with the severity of the bowel symptoms.

Clinical course: the anogenital disease persists for long periods of time with little evidence of spontaneous remission. Healing of anogenital lesions usually occurs with scarring. CD can cause abdominal pain, diarrhea, vomiting, or weight loss, but it may also give rise to extraintestinal manifestations with cutaneous involvement.

Diagnosis: diagnosis of noncontiguous genital CD is based on clinical history and histological findings, showing in the dermis the typical noncaseating granulomas arranged in a perivascular distribution.

Therapy: there is no specific treatment for genital involvement of Crohn's disease. Topical and systemic corticosteroids, sulfasalazine, azathioprine, metronidazole, tetracyclines, dapsone, and hyperbaric oxygen, have been used with success. A few cases in which circumcision was required have been described. Recently, the efficacy of combined treatment with topical tacrolimus and systemic prednisone has been reported.

Suggested Reading

Lane VA, Vajda P, King D et al (2010) Metastatic Crohn's disease: two cases of penile Crohn's and literature review. J Pediatr Urol 6:270-3

Lopez V, Alonso V, Monteagudo C et al (2009) Penile and scrotal edema as a manifestation of Crohn's disease. Int J Dermatol 48:1136-7

Rajpara S, Siddha S, Ormerod A et al (2008) Cutaneous penile and perianal Crohn's disease treated with a combination of medical and surgical interventions. Aust J Dermatol 49:21-24

Reyes M, Borum M (2009) Severe case of genital and perianal cutaneous Crohn's disease. Inflamm Bowel Dis 15:1125-6

Lichen Sclerosus

Definition: Lichen Sclerosus (LS) is a chronic inflammatory disease that affects the genitalia and less often the extragenital skin (upper trunk and arms).

Etiology: although uncertain, the etiology seems to be multifactorial, including genetic, autoimmune, and hormonal factors.

Epidemiology: it can occur in patients of any age group, sex, or race, but seems to be more common in prepuberal girls and postmenopausal women. It is most common in whites and rare in blacks. About 10% of male patients with genital LS present extragenital locations. The exact prevalence is unknown, but estimates range from 1:60 to 1:1,000.

Clinical appearance: anal and scrotal involvement is rare and the lesions are generally localized on penile skin and mucosa. LS occurs on the glans and foreskin as erythematous papules and plaques that rapidly become whitish and hard in consistency. The skin and the mucosa slowly become atrophic and this fragility may lead to the development of erosions and purpura, and less commonly to hemorrhagic blistering. As the disease progresses, scarring may cause the formation of synechiae and phimosis. Itching and burning are common symptoms.

Clinical course: prepuberal LS is generally self-healing, while adult LS has a chronic course. If not treated, in men LS can lead to various complications such as preputial adhesion, phimosis, paraphimosis, and urethral stenosis. Moreover, LS is associated with a higher risk of developing a squamous cell carcinoma in the genital area, while malignancies have not been reported in extragenital regions. LS generates discomfort and incapacity for sexual intercourse.

Diagnosis: the clinical features are usually diagnostic but in doubtful cases, or to rule out malignancy, a histopatological examination must be performed. Depending on the clinical findings, the differential diagnosis may include erosive lichen planus, lichen simplex, leukoplakia, and vitiligo.

Therapy: it is aimed at reducing pain and the burning sensation, at healing the mucocutaneous lesions, and at preventing permanent scarring and the development of malignancies. First-line treatment includes topical therapy with corticosteroids and calcineurin-inhibitors. If the therapy is protracted, the risk of bacterial, mycotic, and viral superinfections should be taken into account, prompting specific treatment in case such complications should occur. Other treatments, such as topical testosterone and calcipotriol, cryosurgery, phototherapy and photodynamic therapy, have been proposed, but none has proved to be more effective than topical corticosteroids. Circumcision can produce improvement in adult men and resolution in young men. Urethral stenosis may require surgical therapy. Careful follow-up is recommended for timely detection and treatment of incipient squamous cell carcinoma.

Suggested Reading

Clouston D, Hall A, Lawrentschuk N (2011) Penile lichen sclerosus (balanitis xerotica obliterans). BJU Int 108:14-9

Edmonds EV, Hunt S, Hawkins D et al (2012) Clinical parameters in male genital lichen sclerosus: a case series of 329 patients. J Eur Acad Dermatol Venereol 26:730-7

Garaffa G, Shabbir M, Christopher N et al (2011) The surgical management of lichen sclerosus of the glans penis: our experience and review of the literature. J Sex Med 8:1246-53

Innocenzi D, Nasca MR, Skroza N et al (2006) Penile lichen sclerosus: Correlation between histopathologic features and risk of cancer. Acta Dermatovenerol Croat 14:225-9

Nasca MR, Innocenzi D, Micali G (1999) Penile cancer among patients with genital lichen sclerosus. J Am Acad Dermatol 41:911-4

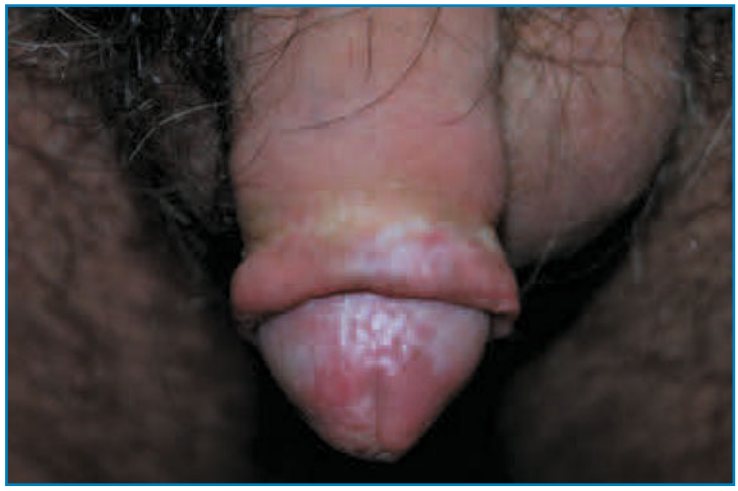
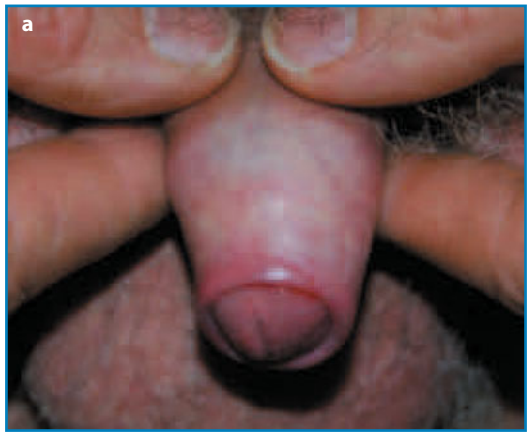


Fig. 5.54 Erythematous and whitish sclerotic plaques of the glans and foreskin



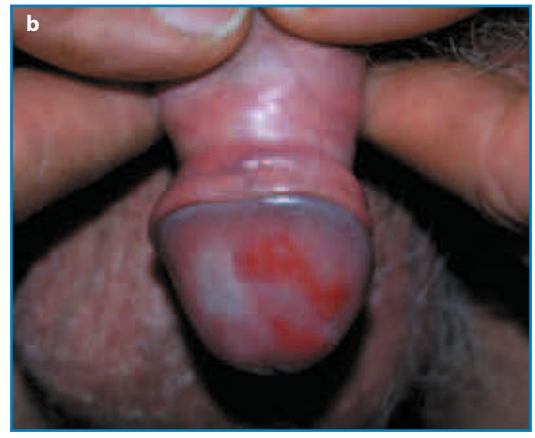


Fig. 5.55 a Sclerosis of the foreskin. **b** Whitish plaques and erosive lesions of the glans

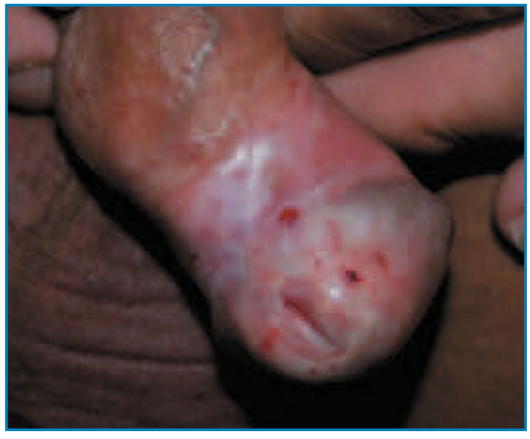


Fig. 5.56 Whitish, coalescent sclerotic plaques, synechiae, and hemorrhagic lesions of the glans and foreskin

Fig. 5.57 Phimosis and fissuring of the foreskin

Plasma Cell Balanitis (Zoon)

Definition: Plasma Cell Balanitis (PCB), also known as Zoon balanitis, is an inflammatory disease with chronic-relapsing course and benign behaviour.

Etiology: it is not well known, the friction between the glans and the prepuce and related microbiological alterations are believed to play an important role. This consideration is supported by the absence of the condition in circumcised men.

Epidemiology: it is a common disease in middle-aged and older uncircumcised men. It is unusual in young people.

Clinical appearances: it is characterized by a single erythematous, or erythematous-brownish, sharply marginated patch on the glans and/or the inner foreskin, 1.5 cm or more in diameter, with a bright, smooth, and sometimes erosive surface. It is usually asymptomatic.

Clinical course: it is chronic with continual relapses.

Diagnosis: the clinical features can suggest the diagnosis but, in many cases, histopathological confirmation is necessary. This condition must be primarily differentiated from erythroplasia of Queyrat, which may often clinically resemble PCB.

Therapy: topical corticosteroids and calcineurin inhibitors (tacrolimus and pimecrolimus) are effective, but the recurrence rate is very high, while circumcision can be a definitive treatment. Some authors have reported the efficacy of CO_2 laser therapy.

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Nasca MR, De Pasquale R, Micali G (2007) Treatment of Zoon's balanitis with imiquimod 5% cream. J Drugs Dermatol 6:532-4

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Retamar RA, Kien MC, Chouela EN (2003) Zoon's balanitis: presentation of 15 patients, five treated with a carbon dioxide laser. Int J Dermatol 42:305-7

Weyers W, Ende Y, Schalla W, Diaz-Cascajo C (2002) Balanitis of Zoon: a clinicopathologic study of 45 cases. Am J Dermatopathol 24:459-67

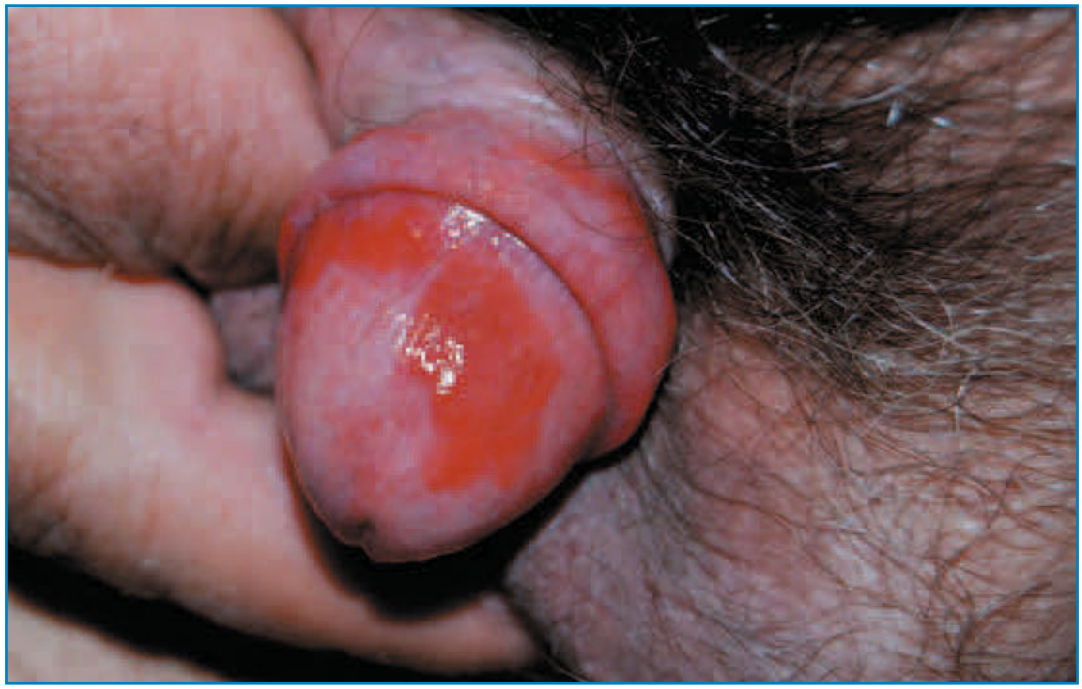

Fig. 5.58 Sharply demarcated, glistening, and red patches on the glans

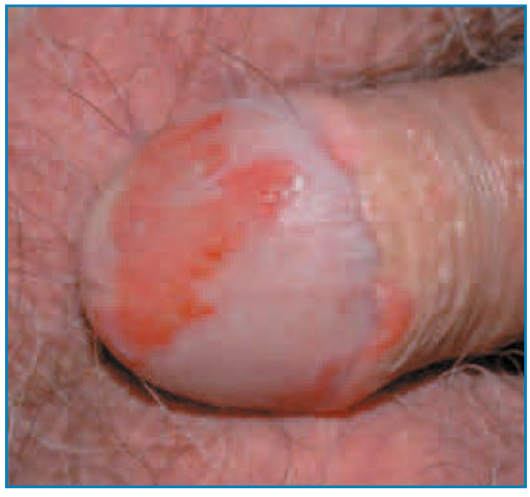

Fig. 5.59 Smooth, confluent, and erythematous patches on the glans and foreskin

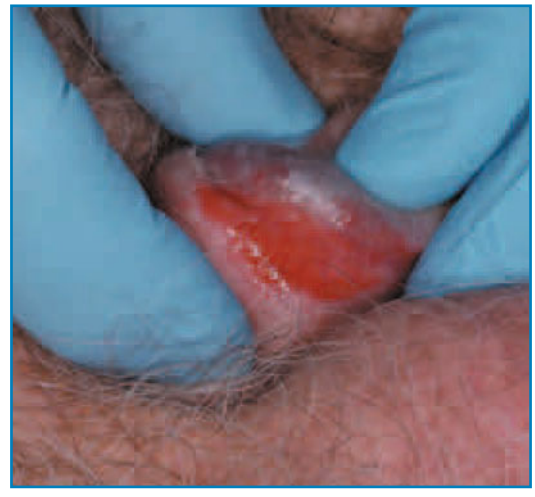

Fig. 5.60 Glistening and red patches on the foreskin

Angioedema

Definition: angioedema is an acute, inflammatory disorder characterized by the rapid onset of edema involving cutaneous, subcutaneous, and mucosal tissues.

Etiology: it can be caused by a localized allergic reaction. Consequently, it may occur in association with other allergic symptoms, such as urticaria. Genital involvement is more often reported in subjects with latex allergy (condoms or diaphrams) or sensitized to their partner's genital discharge. An inherited autosomal dominant variant resulting from a deficiency or a dysfunction of the C1 inhibitor, localized in the gastrointestinal and upper respiratory tracts, without signs or symptoms of urticaria, is also well known.

Epidemiology: genital angioedema is a rare condition.

Clinical appearance: it is characterized by recurrent episodes of edema involving both skin and mucosa of genital area, especially the glans.

Clinical course: when extensive, angioedema can be a medical emergency because airway obstruction can occur, leading to asphyxiation.

Diagnosis: it is clinical. Laboratory investigations for C4, C1q, and C1 inhibitor (antigenic and functional) blood levels should be performed to rule out hereditary angioedema. Testing for allergy is also recommended.

Therapy: the treatment of idiopathic angioedema is the same as that of urticaria, and includes the use of systemic antihistamines and corticosteroids. Hereditary angioedema requires proper prophylactic strategies and pharmacological management of acute attacks.

Suggested Reading

Banerji A (2010) Current treatment of hereditary angioedema: An update on clinical studies. Allergy Asthma Proc 1:398-406

Dhairyawan R, Harrison R, Buckland M, Hourihan M (2011) Hereditary angioedema: an unusual cause of genital swelling presenting to a genitourinary medicine clinic. Int J STD AIDS 22:356-7

Johnston DT (2011) Diagnosis and management of hereditary angioedema. J Am Osteopath Assoc 111:28-36

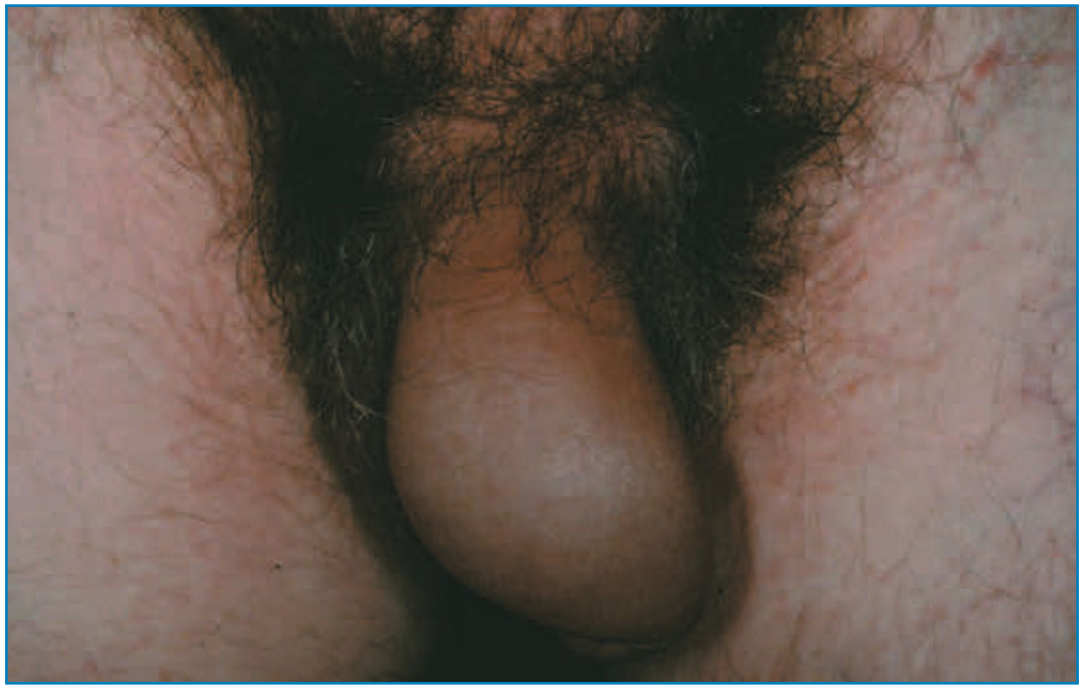

Fig. 5.61 Penile edema due to latex allergy

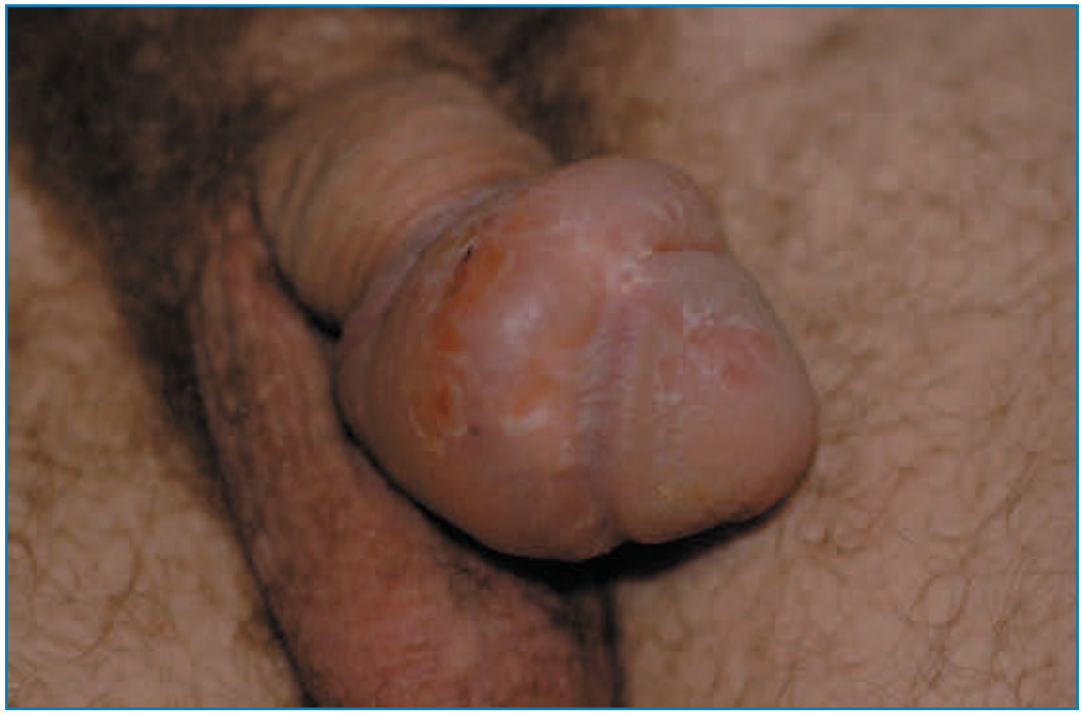

Fig. 5.62 Marked edema of the foreskin