Common Dermatological Conditions in Sports: A Review of Environmental, Traumatic, and Infectious Causes

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Key Points

Most dermatological conditions in sports can be prevented with good hygiene and properly fitted equipment and clothing.

Dermatological conditions with contraindications for participation in contact sports include active herpes infection and molluscum contagiosum.

Athletes training in the sun should wear a good sports sunscreen containing both UVA and UVB protection.

Blisters should be left intact when possible because the roof provides a protective barrier to the environment and bacteria.

Any athlete with a dermatological condition that appears infectious should be referred to a physician.

Key Words: dermatology, skin, sunburn, dermatitis, herpes, warts, impetigo, athlete’s foot, frostbite, acne

Athletic participation can be rewarding both mentally and physically, and it should be an enjoyable activity. Oftentimes, however, there are setbacks in participation as a result of injuries and illnesses. Some of these conditions present themselves in the form of dermatological disorders. Dermatological problems in sports result from several causes including environmental, traumatic, and infectious factors. In this article, some of the more common dermatological entities in sports and their treatments are discussed. When specific invasive procedures or prescription medications are indicated, the patient should be referred to a physician.

Environmental Lesions

Sun-Related Disorders

There are several skin disorders related to sun exposure. The most common are sunburn and drug-induced photosensitivity. Both can be very painful and prevent athletic participation because of pain or interference with heat-dissipating mechanisms resulting from fever. Sunburn can also be disfiguring. It is usually caused by exposure to UVB rays during their greatest intensity from 10 a.m. to 3 p.m. Burns can range from first-degree erythema to third-degree with blisters and ulcerations. Systemic symptoms might include fever, chills, nausea, and prostration. The best prevention is by liberal application of a waterproof sunscreen of SPF 15 or greater that screens both UVA and UVB, avoiding sun exposure during peak hours, and taking 300 mg aspirin 1–2 hr before exposure (Batts, 1995). If burns do occur, treat with cool compresses and topical anesthetic/steroid sprays and lotions. Nonsteroidal anti-inflammatory drugs can be helpful if used immediately after sun exposure. Athletes with third-degree sunburns should be referred to a physician for evaluation and treatment with an antibacterial cream, such as Silvadene, and bandaged.

Drug-induced photosensitivity is a skin reaction to the sun resulting from prescription
medications such as tetracycline, sulfonylureas, and thiazides (Fitzpatrick, Johnson, Wolff, & Suurmond, 1997). They might present as severe sunburn with variable pruritus, or they might be urticarial (whelps) or maculopapular (flat plaques with bumps). Most reactions are caused by UVA exposure. Therefore, applying a sunscreen that provides UVA protection is necessary to prevent these reactions while one is taking sensitizing medications. Treatment consists of using topical or oral corticosteroids, eliminating the offending agent, and avoiding sun exposure (Fitzpatrick et al.).

**Cholinergic Urticaria**

Cholinergic urticaria is an acetylcholine-mediated response induced by heat, emotion, and exertion. It presents with 1- to 2-mm urticarial wheals surrounded by a red flare (Figure 1). Symptoms can include sweating, abdominal cramps, bradycardia, dizziness, and wheezing. There is no cure, and therefore, athletes with this condition often give up training for indefinite periods. Antihistamines and H2 blockers might relieve symptoms.

**Exercise-Induced Urticaria**

This entity can be a variant of cholinergic urticaria. It presents with giant whelps and angioedema. Other symptoms might include wheezing, abdominal cramps, bradycardia, dizziness, and wheezing. There is no cure, and therefore, athletes with this condition often give up training for indefinite periods. Antihistamines and H2 blockers might also be helpful in prevention (Landry, 1999).

**Miliaria (Prickly Heat)**

Miliaria is caused by retained sweat that is extravasated into different levels in the skin and usually develops during activity in hot, humid environments. It presents as a red bumpy rash that might be painful or itchy. There is no treatment, but avoiding occlusive topical ointment and close-fitting, poorly absorbent fabrics can aid in prevention.

**Frostnip**

Frostnip is the most common superficial cold-induced injury. It is caused by prolonged exposure to below-zero or near-freezing temperatures with significant wind-chill. The most common areas affected are the face and ears. It presents as painful, erythematous areas of exposed skin that might be numb and eventually form blisters. An athlete with frostnip should return to a warm environment and quickly re-warm the affected area (Batts, 1995). Shaving and bathing should be delayed until the end of the day’s outdoor activities. Application of sunscreen can be helpful in prevention.

**Frostbite**

Frostbite is actual freezing of the epidermis, dermis, and subcutaneous tissues (Figure 2). On freezing, the extracellular ice crystals denature cell proteins and enzymes. Affected areas have a waxy appearance, and blisters develop 24–36 hr after skin damage. Treatment consists of rewarming in a 38 °C bath and transfer to a facility experienced in frostbite management (Batts, 1995). Analgesics are helpful for pain control. One should never rub ice or snow on affected areas, and thawing should be avoided if refreezing is likely.

**Cold Urticaria**

Cold urticaria is the most common acquired urticaria in athletes. It results from nonallergic release of histamine from mast cells in response to cold exposure and presents as localized or generalized urticarial wheals. The cold exposure might be environmental or result from local treatments involving ice therapy. Cyproheptadine and small doses of oral corticosteroids have been found helpful in the treatment of this problem.

**Raynaud’s Phenomenon**

Raynaud’s phenomenon can be either an idiopathic cold hypersensitivity or secondary to a systemic connective-tissue disease such as lupus. It presents as vascular spasm with pallor and cyanosis that can be painful. Gangrene of the affected digits can result in severe cases. Treatment is primarily with calcium-channel blockers. Proper protection of the hands and feet with battery-heated gloves and boots is paramount in prevention. Smoking is absolutely prohibited because of the associated vasoconstriction and relative hypoxia (Fitzpatrick et al., 1997).
**Contact Dermatitis**

Contact dermatitis can be caused by either an allergy or an irritant. Allergic dermatitis is a hypersensitivity reaction to a specific allergen. The skin appears dry, thick, or acutely inflamed with vesicles (small blisters) and is red, itchy, or painful (Figure 3). Common insulting agents include adhesive tape, rubber items, medications, and exposure to plants in the Rhus genus (e.g., poison ivy). Irritant dermatitis is caused by exposure of the skin to substances that cause direct damage to the skin, and it presents in much the same way as allergic dermatitis. Common offending agents include poorly fitted protective gear, occlusion of skin with adhesive tape or padding, and exposure to artificial playing surfaces. Diagnosis of both conditions relies heavily on the distribution of the rash as it relates to exposure history. Treatment consists of identification and avoidance of the offending agent, application of cool compresses, and avoidance of abrasive soaps. Topical and systemic corticosteroids, as well as antihistamines, have been found helpful in treating allergic dermatitis (Fitzpatrick et al., 1997).

**Traumatic Lesions**

Traumatic dermatological conditions are the most common dermatological problems in sports. They are often related to environmental and biomechanical factors, as well as improperly fitted equipment. Some of the more common conditions are described next.

**Blisters**

Blisters are the most common skin problem in athletes (Figure 4). They usually occur on the feet but can occur anywhere there is friction. Blisters are caused by horizontal shearing forces and result in intradermal splitting and accumulation of serum or blood. Contributing factors include heat, humidity, perspiration, lack of training, underlying bony abnormalities, and poorly fitting equipment. Treatment consists of draining with a sterile needle and leaving the roof intact if possible. If unroofed, a second-skin product such as DuoDERM® or moleskin can be beneficial after the area has been cleaned. If a second-skin product is not used, the area should be covered with an antibiotic occlusive dressing. Prevention consists of fitting equipment (e.g., shoes) properly, lubricating with petroleum jelly, wearing two pairs of socks, and wearing gloves in the case of hand lesions (Batts, 1995).

**Calluses**

Calluses are advantageous in many sports. They present as thick, hard skin over bony prominences that might be associated with significant pain or tenderness (Figure 5). Common sites are over the metatarsal heads, medial great toe, metacarpal heads, and palmodigital regions. If the calluses are painful, treatment consists of paring or sanding after hydration and nightly application of a topical acidic agent such as 10% salicylic acid. Calluses can be prevented by reducing moisture and fitting equipment properly. For foot calluses, custom orthotics might be necessary.

**Black Toe (Subungual Hematoma)**

Black toe is a hemorrhage, usually under the first or second toenail, resulting from repeated or sudden blunt trauma to the nail. It is often seen in tennis players, soccer players, and marathoners. Hard surfaces and ill-fitting shoes are aggravating factors. The athlete presents with a painful blue-black bruised area under the nail that might include vertically oriented lines of hemorrhage. Treatment consists of either incision or hot-wire puncture drainage of the nail plate by a physician (Batts, 1995). Prevention requires wearing properly fitted shoes, padding distal toes, and tightly lacing shoes and retying them if necessary.

**Ingrown Toenails**

Ingrown toenails have numerous contributing factors that include trauma, improper trimming of the toenails, ill-fitting shoes, developmental abnormality of the nail, and overcurvature of the nail plate. They present as painful, inflamed, edematous soft-tissue masses around the lateral border of the nail. Treatment includes warm antiseptic soaks, analgesics, antibiotics, elevation of the corner of the nail with cotton, and, possibly, surgical excision by a physician. To prevent this problem, the nails should be trimmed straight across and allowed to grow over the edge of the toe. Properly fitted shoes are also important.

Figure 2  Severe frostbite.

Figure 3  Contact dermatitis.
Jogger’s Nipples

Jogger’s nipples present as painful, inflamed, fissured, and, occasionally, bleeding nipples resulting from repetitive friction contact with the coarse fabric of a shirt. This condition is more common in men than in women because women often wear sport bras. Jogger’s nipples are easily treated by applying petroleum jelly or lanolin, taping over the nipples, and wearing semisynthetic fabrics (Batts, 1995).

Intertrigo

Intertrigo is maceration (painful erythema and softening) of the skin found in the inguinal creases, axillae, and inframammary folds. It is aggravated by obesity and humidity, and it is often associated with fungal and bacterial infections (Fitzpatrick et al., 1997). The athlete should keep the area clean with soap and water and allow the area to dry frequently. Application of a compress using Burrow’s solution (a drying agent) is helpful. An antibiotic or antifungal ointment is indicated when secondary infection is suspected from the presence of exudates or erythematous satellite lesions (Fitzpatrick et al.).

Acne Mechanica

Acne mechanica is a local exacerbation of acne vulgaris caused by pressure and friction from protective equipment or clothing. It presents as erythematous...
clusters of papules and pustules in areas of mechanical trauma. Treatment is with 10% topical benzoyl peroxide, topical (Cleocin® and systemic (tetracycline) antibiotics, and Retin-A® Accutane® should be reserved for only severe disfiguring cases that are refractory to routine treatment (Fitzpatrick et al., 1997). Good hygiene of skin and clothing is very important.

Infectious Lesions

Impetigo

Impetigo is a superficial skin infection characterized by crusty ulcers or erosions (Figure 6). The infection might be primary in nature or a secondary infection concomitant with some other skin condition. Offending organisms are Staphylococcus aureus and Streptococcus pyogenes. Lesions can occur anywhere on the body. Impetigo is treated with an oral antibiotic such as cephalexin or Augmentin®. Sometimes, topical mupirocin applied three times a day to affected areas is sufficient (Levandowski, Keogh, & Mullane, 1999). If contact with other athletes is likely, the infected area should be covered with an occlusive dressing.

Warts

Warts are benign discrete areas of epithelial hyperplasia (papules and plaques) that are a result of some form of human papilloma virus (Figure 7), usually transmitted by skin-to-skin contact. Warts are more common in areas of abrasions. If located on the foot (plantar warts; Figure 8), they can be very painful and inhibit normal activity. These lesions are often self-limiting; they can last for years, however, if not treated. Conservative treatment is either daily application of 10–20% salicylic acid or freezing (cryotherapy) every 4 weeks until warts have resolved. More aggressive therapy includes electrosurgery, surgical excision, and CO2 laser surgery, but these are more expensive and can be more painful.

Molluscum Contagiosum (Wrestler’s Warts)

Molluscum contagiosum is a self-limiting viral infection characterized by flesh-colored papules that are...
often umbilicated (Figure 9). Transmission is by skin-to-skin contact; thus, it is most commonly found in children, those who engage in contact sports, and sexually active adults. The papules persist for approximately 6 months and then undergo spontaneous resolution. Treatment includes curettage, cryotherapy, and electrodessication. Contact sports can be resumed 48 hr after resolution (Levandowski et al., 1999).

**Herpes Gladiatorum**

Herpes gladiatorum is characterized by painful grouped vesicles on an erythematous base on skin or mucous membranes (Figure 10). It is commonly seen in wrestlers and is a contraindication for participation while the infection demonstrates intact or draining vesicles (4–6 days). Transmission is usually by skin-to-skin contact, and the initial outbreak is seen 1 week after exposure. Once infected, an individual might have regular occurrences in the same area. Unroofing the vesicles and applying benzoin can hasten crusting. The health-care professional must be careful, however, not to expose his or her own skin or that of others to the vesicular fluid. Antiviral medications including valacyclovir and famciclovir have been proven effective in both treatment and suppression/prophylaxis. Participation is prohibited until all vesicles are dry and crusted (Helm & Bergfeld, 2001).

**Athlete’s Foot (Tinea Pedis)**

Athlete’s foot is a fungal infection of the feet characterized by erythema and chronic desquamation (Figure 11). There might be maceration, peeling, and fissuring in the webs of the toes or well-demarcated erythema with papules and fine white scaling on the foot. These areas can become secondarily infected with bacteria, becoming very tender with deep erosions and accompanying lymphangitis. In this case, both bacterial and fungal cultures should be obtained. Treatment usually consists of topical antifungal cream or powder application twice a day and should be continued until 1 week after lesions have cleared. If secondary bacterial infection is suspected, oral antifungal medications and broad-spectrum antibiotics should be used. Shower shoes, keeping feet dry, frequent sock...
changes, and treating footwear with antifungal medications will aid in prevention (Fitzpatrick et al., 1997).

Conclusion

Dermatological conditions in sports are very common, so much so that they cannot be comprehensively covered in this article. They can often be linked to largely preventable factors such as equipment, environment, biomechanical trauma, and infection. Once the health-care provider becomes adept at recognizing them, treatments are usually simple and effective. Any athlete with a condition that fails to improve in a few days or appears infectious, however, should be referred to his or her primary-care physician for further assessment, treatment, and possible referral to a dermatologist. As with many entities in medicine, the best treatment for dermatological conditions is prevention.

References


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