Sports Dermatology: Common Dermatoses

David Kasper, DO, MBA
Abington-Jefferson Hospital
www.361derm.com
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Conflicts of Interest

- **Speaker/Consultant**
  - Pfizer, Aqua, Celgene, Promius

- **Advisory Board**
  - Aqua, Promius, Sun Pharma, Biofrontera

- **Partner/Shareholder**
  - Veloce BioPharma LLC
Overview

- Background
- MRSA and its complications
- Recognize common athletic skin disease
- Review treatment options
- Infection control and minimizing athletic participation
Background

- Sports participation steadily increased over the past 30 years

- In one study, 40% of university athletic teams during an 8-week survey had skin lesions
Background

- Herpes simplex viral infections were seen in:
  - 2.6% of high school and collegiate wrestlers in the 1984 season
  - 7.6% of collegiate wrestlers in the 1984 season
  - 34% of wrestlers infected at a wrestling camp in 1989

- During the 1984-85 wrestling season, 60% of college and 52% of high school wrestlers had tinea corporis gladiatorum at some point
Skin Infections in NCAA Wrestlers

Type of Skin Infection

- Bacterial: 10.7%
- Impetigo: 14.2%
- Herpes Simplex: 40.5%
- Herpes Zoster: 4.8%
- Fungal: 22.1%
- Other: 7.7%
Methicillin-Resistant Staphylococcus Aureus “MRSA”

- Staph strains resistant to β-lactam antibiotics
  - (e.g. dicloxacillin, methicillin)
- May be resistant to other antibiotics
- Cause skin infections usually
  - Cellulitis, folliculitis, furuncles, abscesses
- Cause significant morbidity
  - 70% of athletes required IV antibiotics
- Spread directly person-to-person through skin
  - Football linemen, rugby, wrestling, etc
Staph Resistance to Antibiotics

% of Staph infections isolated as MRSA

- 1974: 2%
- 1995: 22%
- 2003: 57%
- 2006: 64%

Series 1
MRSA

- When to suspect
  - Skin abscesses
  - Infections resistant to initial antibiotics

- Proper treatment
  - Culture all abscesses before antibiotics
  - Susceptibility -> correct antibiotic choice
    - Community-acquired strains usually sensitive to Bactrim, fluoroquinolones, clindamycin, erythromycin, doxycycline
MRSA

Prevention

- No participation of infected athletes until cured
  - Depends on rules of PIAA, NCAA, etc
- Protect exposed skin if high-risk sport
- Properly clean/protect injured skin
- Proper general hygiene
  - Personal and team facility
Trauma Induced Dermopathy
Corns (Clavus)

- Callus
  - broad based

- Corns
  - narrow based and sharply defined hard conical papule with translucent center

- Keratotic lesions resulting from repeated trauma over bony prominences

http://www.qmedicine.co.in/top%20health%20topics/C/Corns%20and%20Calluses.html
Corns (Clavus)

Treatment

- For symptomatic relief and biomechanical correction
- Paring of the callosity
- Warm water soaking
- Topical agents such as salicylic acid or urea help soften the callosity
- Soft cushions ↓ friction
- Long-Term: Properly fitted footwear and orthotics

Talon Noir (Black Heel)

- Post-traumatic intraepidermal hemorrhage
- Harmless
  - Self-healing
- Small asymptomatic black macules
- Due to shearing forces
  - Produced by sudden stopping or landing on the ground.
  - Shearing forces rupture papillary dermal blood vessels

https://www.dermquest.com/imagelibrary/large/041275HB.JPG
Talon Noir (Black Heel)

- **Differential Diagnosis**
  - Verruca vulgaris
  - Cutaneous melanoma
    - Gentle paring may exclude a melanocytic lesion
  - **Hemoccult test**
    - Positive staining for hemoglobin

- **Treatment**
  - Unnecessary

http://vgrd.blogspot.com/2015/04/black-heel.html
Jogger’s Toe/Tennis Toe

- Repeated trauma/pressure to longest toe against inside of shoe

Clinical Features
- Toe tip callus
- Nail thickening
- Subungual hyperkeratosis
Jogger’s Toe/Tennis Toe

- **Treatment**
  - Acute subungual hematoma
    - Pierce nail
  - Mild cases: no treatment
- **Prevention**
  - Proper shoes
  - Metatarsal pad
  - Enlarged toe box
  - Improved arch support
Piezogenic papules

- Seen in distance running and high-impact sports
- Multiple asymptomatic yellowish papules on lateral aspect of heels
- +/- tender
- Subcutaneous fat herniation
  - small tears in lateral plantar fascia

Piezogenic papules

- Treatment
  - Cosmetic
  - IL betamethasone and bupivacaine (1:1) 1-2 mL/injection
  - 50% relief of pain with one injection (n=1)
- Literature
  - No effective surgical therapy

https://www.dermquest.com/image-library/image/5044bfd0c97267166cd63ce8
Jogger's nipple

- Painful and erythematous
- Fissures and erosions
- Occasional bleeding

Due to:
- Running and/or
- Repeated friction of rough shirt

https://en.wikipedia.org/wiki/Fissure_of_the_nipple#/media/File:Joggers_nipple.jpg
Jogger's nipple

- **Treatment**
  - **Woman:**
    - jogging bra
    - see below
  - **Man:**
    - taping
    - petroleum jelly
    - soft fiber shirts

https://waynekspear.com/2014/12/15/running-explained/
Friction Blisters

- Bullae, vesicles and superficial erosions
- Cause:
  - Any friction or tangential impact to foot
  - Usually in warm moist environment

http://m.md-health.com/Painful-Bump-on-Bottom-of-Foot.html
Friction Blisters

- **Treatment**
  - **Prevention**
    - Frequent drying
    - Lubrication
    - Proper shoe fit
  - Drain blister with sterile needle (leave the roof)
    - May cause secondary infection if blister unroofed
  - Hydrocolloid dressing (Duoderm)

http://www.onedayhike.org/training/firstaid/blisters.html
Ingrown Toenail

- Improperly fitted footwear
- Usually great toe

TX:
- pressure relief (go shoeless, wider shoes)
- cotton under nail
- antibiotics if infected
- surgical excision

Types of Infections

- **Viral**
  - Herpes
  - Warts
  - Molluscum
  - Hepatitis
  - HIV

- **Fungal**
  - Tinea

- **Bacterial**
  - MRSA
  - Impetigo
Transmission of Infection


http://4.bp.blogspot.com/-ApdtmE_UiWI/WH9IaIPujYI/AAAAAAAAG48/rxTFZcR-PkETg74/rBG5Y9AoUzKECRyjACK4B/s1600/10%2BMust%2BFacts%2BAbout%2BMMA.jpg

http://www.telegraph.co.uk/sport/rugbyunion/8157529/Brian-Moore-Rugby-union-referees-have-a-lot-to-answer-for-as-scrums-develop-into-farce.html
Viral Dermopathy
Plantar Warts

- Human Papilloma Virus
- ~60% population has HPV
- Thick plantar papules
- May see “black dots” after paring down
Warts, Verruca Vulgaris

- TX:
  - Salicylic acid
  - Cantharidin
  - Cryotherapy
  - Topical immunomodulators
  - Intralesional
  - Homeopathic
  - Surgery
    - Can recur

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Herpes Gladiatorium

- Seen with Wrestlers
- Herpes Simplex Virus on areas of friction/trauma
- TX:
  - oral antivirals

Molluscum Contagiosum

- “Wrestler’s warts”; pox virus
- Firm, skin colored, umbilicated papules
- TX:
  - Spontaneous resolution (months)
  - Curettage
  - Topical medication
  - Cryotherapy

https://www.dermquest.com/imagegallery/large/10138-P2110083.JPG
Herpes Labialis

- “Cold Sore”
- Herpes simplex virus
  - Type 1 → oral
  - Type 2 → genital
- Vesicles and ulcers near lip
  - Painful (Prodrome)
- TX:
  - Oral anti-virals
- Prevention
  - Sunscreen
  - Consider prophylactic anti-viral

https://www.dermquest.com/imagelibrary/large/10447-strasser%20romina%20hs.JPG
Varicella (chickenpox)

- Varicella zoster virus
- Lesions in various stages—papules, vesicles, ulcers, crusts on red bases
- TX: oral antivirals if early; supportive measures; itch creams
- NCAA: no participation until ALL lesions crusted firmly, no secondary bacterial infection

http://www.scarymommy.com/chickenpox-parties-stupid/
Herpes infections: NCAA participation criteria

- Primary infection
  - No systemic symptoms present
  - No new lesions for past 3 days
  - All lesions crusted over
  - On oral meds >120 hours (5 days)
  - Cover warts

- Recurrent infection
  - Ulcers dry, covered by FIRM ADHERENT CRUST
  - On oral meds for >120 hours (5 days)
Fungal Dermopathy
Onychomycosis

- Fungal infection of nail
- Discoloration, scaling, thickening
- Culture before treatment
  - Nail Biopsy → Clipping
  - Some insurances require

Onychomycosis

TX:
- Caution: liver disease, meds
- Dermatophytes:
  - Oral itraconazole or terbinafine 3 months
- Candida:
  - Topical or systemic Anti-Fungals
    - (i.e. Fluconazole)
- Homeopathic:
  - Tea tree oil, Vicks, etc
Tinea Cruris

- “Jock Itch”
- Dermatophyte infection
- Erythematous with advancing scaly border
- Pruritic

TX:
  - Topical antifungals
  - Anti-fungal powders
Tinea Versicolor

- *Pityrosporum ovale*
- Asymptomatic
- Hypo- or hyper-pigmented macules, +/- scale

**TX:**
- -azole creams
- oral medications (XXX)

**Prevention:**
- Selenium sulfide shampoo
- Ketoconazole shampoo
Tinea Infections: NCAA participation criteria

- >72 hours treatment
- Disqualify if lesions extensive
- Wash with Ketoconazole 2% shampoo
- Apply anti-fungal cream
- Lastly, cover lesions with dressings (i.e. OpSite) and tape
  - Waterproof, conformable, elastic polyurethane film dressing
  - Permeable to gases and water vapor; allows skin to breathe
Bacterial Infections
Acne Vulgaris

- Acne Mechanica, “Football acne”
- TX:
  - topical retinoids/Abx
  - benzoyl peroxide
  - oral antibiotics
  - Isotretinoin
- Not a contraindication to play sports

http://adultacnetreatmentreviews.com/how-to-get-rid-of-acne/understanding-your-spots/
Impetigo

- superficial skin infection with Strep, Staph
- yellow crusted lesions on red base

TX:
- topical Abx
- oral abx

NCAA – see Bacterial Infections

https://www.dermquest.com/imagelibrary/large/046369HB.JPG
Folliculitis

- Mild hair follicle inflammation/infection
- Usually Staphylococcus
  - Pseudomonas in hot tubs

https://www.medicalnewstoday.com/articles/318551.php
Folliculitis

- Papules, pustules around follicles
- **TX:**
  - wash with soap
  - benzoyl peroxide
  - chlorhexidine
  - topical antibiotics
  - oral antibiotics

https://www.huidarts.com/huidaandoeningen/folliculitis/
Furuncles

- More severe hair follicle abscess with Staph
- acute, tender, erythematous nodule

TX:
- Warm compresses
- I&D
- Oral Abx

http://www.clinicaladvisor.com/consultations/treatment-for-cutaneous-abscesses/article/667790/
Carbuncle

- More extensive abscess than furuncle

**TX:**
- I&D
- oral Abx
- IV abx if symptomatic/severe

http://cystbursting.com/photo-gallery/attachment/carbuncle-2/
Bacterial Infections: NCAA participation criteria

- No new lesions for 48 hours
- >72 hours of antibiotics completed
- No moist, exudative or draining lesions
- If above criteria not met:
  - Unable to cover lesions for participation
Other Sport Dermatoses
Striae Distensae

- Rupture of elastic fibers
- Due to:
  - Rapid growth
  - Steroids?
- Perpendicular to lines of tension
- Affected areas:
  - Shoulders
  - Back
  - Thigh

Striae Distensae

Treatment:

- Most likely to respond if:
  - Early stage (striae rubra)
  - Not white (striae alba)
- No good treatment proven
- Retinoids
- Topical creams
- Lasers? (PDL, Nd:YAG)

http://dicionariosaude.com/estrias-cutaneas/
Dyshydrotic Eczema

- Often due to constant “wet/dry” hands
- Not infectious
- Eczematous eruption of pruritic vesicles

TX:
- Keep hands dry
- Moisturize
- Topical steroids

https://www.healthline.com/health/dyshidrotic-eczema
Sunburn

- UV radiation
  - UVA vs UVB
- Mild to intense erythema
- Tx:
  - Analgesics
  - Cool compresses
  - Topical steroids
  - Hydration

Contact Dermatitis

- direct chemical irritant or allergic delayed reaction
- pruritic patches of vesicles on weeping base

TX:
- anti-histamines
- topical steroids
- oral steroids if severe

Scabies

- mite *Sarcopetes scabiei*
- exquisitely pruritic papules, excoriations; DX: symptom, scraping
- TX:
  - topical permethrin
  - oral Ivermectin
- NCAA - verification of treatment and negative scrapings

http://www.onhealth.com/content/1/scabies_itch_mite
National Federation of High Schools
Communicable Disease Procedures

- HCP must evaluate skin lesions before returning to competition
- Consider evaluating other team members
- Follow state/local “return to competition” rules
National Collegiate Athletic Association

SKIN EVALUATION AND PARTICIPATION STATUS
(Physician Release for Student-Athlete to Participate with Skin Lesion)

Student-Athlete: ____________________________

Institution: ____________________________

Date(s)/Tournament: ____________________________

Number of Lesion(s): ____________________________

Gallbladder: [ ] No [ ] Yes

Diagnosis: ____________________________

Medication(s) used to treat lesion(s): ____________________________

Date Treatment Started: ____ / ____ / ____

Time: ____________________________

Earliest Date student athlete may return to participation: ____ / ____ / ____

Physician Name (Printed): ____________________________

Physician Signature: ____________________________

Office Address: ____________________________

Institution Certified Athletic Trainer’s Name: ____________________________

Note to Provider: Non-contagious lesions do not require treatment prior to return to participation (e.g. acne, psoriasis, etc.). Please familiarize yourself with NCAA Wrestling Rules which states refer to the NCIA Wrestling Rules and Interpretations to see complete information.

"8.6.5 The presence of a communicable skin disease shall be full and sufficient reason for disqualification." 

"8.6.5 If a student-athlete has been diagnosed as having such a condition, and is currently being treated by a physician (ideally a dermatologist) who has determined that he is safe for that individual to compete without jeopardizing the health of the opponent, the student-athlete may compete. However, the student-athlete or his/her coach or athletic trainer shall provide current written documentation from the treating physician to the medical professional at the medical examination."

"8.6.5 Final determination of the participant’s ability to compete shall be made by the host site’s physician or certified athletic trainer who conducts the medical examination after review of any such documentation and the completion of the exam."

Below are some treatment guidelines that suggest MINIMUM TREATMENT before return to wrestling (please refer to the NCAA Wrestling Rules and Interpretations for Appendix D for complete information).

Bacterial Infections (Furuncles, Carbuncles, Folliculitis, Impetigo, Cellulitis or Erysipelas, Staphylococcal abscess, CA-MRSA): Wrestlers must have been without any new skin lesions for 48 hours before the meet or tournament; followed 72 hours of antibiotic therapy and have no new or escalating lesions at meet or tournament time. Gram stain results of lesions more than questionable lesions (if available). Active bacterial infections shall not be covered to allow participation.

Herpetic Lesions (Simplex, Herpes labialis, genital herpes, Zoster, Glandularis): Skin lesions must be surrounded by a 1-2" HERPES COUNTER at competition time, and have no evidence of secondary bacterial infection. For primary (first episode of Herpes Glandularis) infection, the wrestler must have developed no new lesions for 72 hours before the examination to be free of signs and symptoms like fever, malaise, and swollen lymph nodes and have been on appropriate course of systemic antiviral therapy for at least 120 hours before and at the time of the competition. Recurrent outbreaks require a minimum of 120 hours of oral antiviral treatment, again as long as no new lesions have developed and all lesions are scabbed over. Active herpetic infections shall not be covered to allow participation.

Tinea Lesions (ringworm): Oral or topical treatment for 72 hours on skin and 14 days on scalp. Wrestlers with scalp or body lesions must be disinfected if lesions are in a body location that cannot be adequately covered.

Molluscum Contagiosum: Lesions must be excised or removed before the meet or tournament and covered.

Verruca: Wrestlers with multiple digitate verruca of their feet will be disqualified if the infected area cannot be covered with a sock. Subcutaneous verruca can be excised away before the meet or tournament. Wrestlers with multiple verruca plaques or verruca vulgaris must have the lesions adequately covered.

Hidradenitis Suppurativa: Wrestlers will be disqualified if extensive or purulent draining lesions are present; covering is not permissible.

Psoriasis: Wrestlers must be treated with appropriate psoralene and re-examined for completeness of response before wrestling.

Scabies: Wrestlers must have negative scabies prep or meet or tournament time.

Disclaimer: The National Collegiate Athletic Association shall not be liable or responsible, to any way, for any diagnosis or other evaluation made herein, or exam performed in connection therewith, by the above named physician/proctor, or for any subsequent action taken in whole or in part, in reliance upon the accuracy or reliability of the information provided herein.
NCAA Campaign

A Good Player Will Pass the Ball, Not Staph.

Winners Share the Ball, Not Their Germs.

Blood Is Not Part of Your Uniform.

Recommendations:

- Thoroughly wash hands
- Encourage good hygiene
- Avoid whirlpools/common baths
- Avoid sharing towels, razors, and gear
- Inform coach/personnel with new lesions
- Maintain clean facilities and equipment
- Clean and cover lesions before participation
Conclusion

- Skin diseases in athletes can be sports and regionally specific
- Recognize lesions
- Treat early and correctly
- Know the rules for participation
Bibliography

QUESTIONS??

David Kasper DO, FAAD, FAOCD
1003 South Broad St.
Lansdale PA 19422
215-361-5030
www.361derm.com