Purpura and erythema associated with cutaneous numbness and hyperesthesia

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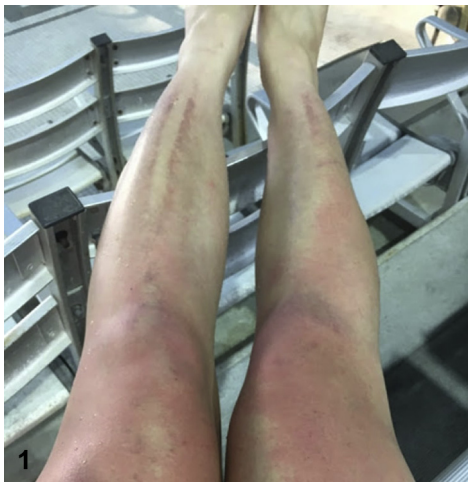

A 16-year-old healthy competitive female diver had blanching directly over her left anterior tibia and femur surrounded by purpura and erythema immediately after a missed dive from a 3-meter springboard (Fig 1). The athlete smacked with her left leg parallel to the water upon impact resulting in cutaneous numbness followed by hours of significant hyperesthesia.

Question 1: What is the cause of this phenomenon?

A. Allergic contact dermatitis from the chlorinated swimming pool

B. Diving-related blanching with purpura

C. Hot tub folliculitis

D. Diving suit dermatitis

E. Sunburn

Answers:

A. Allergic contact dermatitis from the chlorinated swimming pool — Incorrect. Chlorinated pool water can cause skin irritation, pruritus, and wheals, characteristic of contact dermatitis.

B. Diving-related blanching with purpura — Correct. The unusual morphology of diving purpura is hypothesized to result from rapid compression of the soft tissue between the bone and the water

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causing rupture of the underlying vasculature.[1] Pressure forces the extravasated erythrocytes into the soft tissue lateral to the bone resulting in ecchymoses predominantly adjacent to the blanched area. Most commonly seen on the long bones of the extremities, diving purpura has occurred on the scapula as well as blanching resembling a question mark overlying the iliac crest and greater trochanter.[1,2]

C. Hot tub folliculitis — Incorrect. Hot tub folliculitis, frequently caused by the bacterium *Pseudomonas aeruginosa*, is commonly associated with pools; however, it appears papular.

D. Diving suit dermatitis — Incorrect. Diving suit dermatitis presents as dermatitis of the neck, trunk, and extremities due to contact dermatitis to the thiourea compound found in rubber diving suits.[2]

E. Sunburn — Incorrect. Unlikely given the patient's history of a dive into a pool before the development of the rash. Sunburn is frequently seen in sports such as baseball, rowing, golfing, beach volleyball, tennis, sailing, water and snow skiing, snowboarding, hiking, and mountain climbing.[2]

Question 2: What is the treatment for this condition?

A. Topical corticosteroids

B. Aloe vera

C. Antibiotics

D. Self-resolution

E. Intralesional kenalog

Answers:

A. Topical corticosteroids — Incorrect. Topical corticosteroids are useful for dermatologic conditions whose etiology involves inflammation or hyperproliferation, neither of which are the etiology of our patient's condition.

B. Aloe vera — Incorrect. Aloe vera is occasionally used on sunburned skin; however, no clear evidence showing improved outcomes in superficial burns has been shown.

C. Antibiotics — Incorrect. Antibiotics can be used for an infectious process, but the etiology of our patient's condition is not infectious.

D. Self-resolution — Correct. The blanching resolved within hours, but the extensive erythema of her bilateral legs developed into ecchymoses within 24 hours. This interesting phenomenon of diving-related blanching with purpura is not previously described in the medical literature to our knowledge. The diver's ecchymoses resolved within 10 days without treatment.

E. Intralesional kenalog — Incorrect. Intralesional kenalog is used for various inflammatory conditions. The etiology of our patient's condition is not inflammatory.

Question 3: What other sport is likely to result in a similar appearance?

A. Running

B. Scuba diving

C. Ping-pong

D. Water polo

E. Wrestling

Answers:

A. Running — Incorrect. Running lacks the high-velocity impact of the skin against a surface, making it unlikely to cause our patient's rash. Skin diseases associated with running include jogger's nipples, jogger's toe, traction alopecia, runner's rump, piezogenic pedal papules, blisters, and tinea pedis.[2]

B. Scuba diving — Incorrect. Scuba diving lacks the high-velocity impact of the skin against a surface, making it unlikely to cause our patient's rash. Skin disease associated with scuba diving includes scuba diver facial dermatitis from masks, diving suit dermatitis from the rubber suit, and purpura goggelorum from goggles.[2]

C. Ping-pong - Correct. A similar phenomenon is seen in high-velocity ball sports such as ping-pong, squash, floorball, racquetball, and paintball. In these activities, a high-velocity ball strikes the skin, resulting in an erythematous ring surrounding central blanching with or without accompanying or the subsequent development of purpura[1-3] described by Cohen as the *ball SITE (sports-induced targetoid erythema) sign*.[1] In diving, the high-velocity impact produces similar lesions briefly mentioned in rare articles as *platform purpura*.[4]

D. Water polo — Incorrect. Although water polo-ists also spend time in the pool as our patient did, they do not hit the water with velocities comparable to competitive divers, making it unlikely for this sport to result in a rash like the one in our patient. Skin disease associated with water polo includes swimmer's shoulder caused by repeated rubbing of an unshaven beard against the shoulder, and bikini

bottom, which is a deep bacterial folliculitis associated with damp and tight-fitting swimwear.[2]

E. Wrestling — Incorrect. Wrestling lacks the high-velocity impact of the skin against a surface, making it unlikely to cause our patient's rash. Skin disease associated with wrestling includes mat burn as well as herpes gladiatorum, scabies, pediculosis, and impetigo from close skin-to-skin contact between athletes.[2]

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