MRSA in Athletes: What Athletic Trainers and Therapists Need to Know

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If the many skin infections that affect athletes, methicillin-resistant Staphylococcus aureus (MRSA) is particularly problematic. It can cause extensive local tissue damage, leading to time lost from sport and occasionally can lead to death.

A 2007 Center for Disease Control and Prevention (CDC) survey of high school athletic trainers reported that 53% had treated MRSA infections in football players. In addition to contact sports like football, rugby, and wrestling, MRSA cases have been reported in non-contact sports, including cross country running, fencing, volleyball, weightlifting and soccer.

Prevention, early recognition, and appropriate treatment are essential components of minimizing the impact MRSA has in an athletic setting.

Background

Staphylococcus aureus is a gram-positive bacterium that colonizes on the skin and inside the nose of an estimated 20-40% of healthy people. Individuals who do not exhibit any symptoms are called carriers. When there is a breakdown in the skin’s defensive barrier, S. aureus (also called “staph”) can enter the body and produce skin infection (e.g., cellulitis and abscesses) or systemic infection (e.g., pneumonia and blood infection). This bacterium is often referred to as methicillin-sensitive Staphylococcus aureus (MSSA) to distinguish it from MRSA.

The first case of S. aureus resistant to the antibiotic methicillin was reported in the United States in 1968, only 9 years after methicillin was created. This strain, which was confined to hospitals, was dangerous because it developed resistance to the penicillin family of antibiotics and multiple other antibiotic classes over time.

In the late 1990s, there were several cases of MRSA among individuals who were not exposed to a healthcare environment. These included children attending day-care and prison inmates. MRSA also was found in a British rugby team and a Vermont wrestling team.

In 2003, the CDC reported clusters of MRSA cases in athletes (fencers, football, wrestlers) across the United States. This strain was unique because of its presence outside the hospital setting and its susceptibility to several antibiotics to which the hospital-based strain was resistant. Research has since demonstrated that there are genetic differences between these strains. (Box 1)

Transmission

There are several ways an athlete can develop an MRSA infection. A colonized individual may develop a skin infection after the skin barrier breaks down. This is a frequent occurrence among athletes and can develop after minor skin trauma, such as a turf burn or abrasion. Body shaving has been associated with an increased risk of MRSA infection. Environment can be a risk factor, such as a locker room where there is sharing of personal items like towels or soap. Sharing gym equipment may increase the risk of transmission. MRSA has been shown to grow on artificial turf in experimental conditions. MRSA has not typically been cultured from locker rooms, but MSSA has been cultured from gel-applicator sticks and whirlpool water in an NFL locker room. MSSA and MRSA can survive on surfaces for hours to weeks, with the duration...
dependent on multiple factors, including temperature, available nutrients, surface type, and bacteria load.8

Presentation

The most common clinical manifestation of MRSA is skin infection, such as cellulitis and abscess. These lesions often are mistaken for a spider bite, because the athlete has no idea about its origin and blames a spider that must have bitten and scurried away unnoticed. The skin may have a painful small red bump that looks like a pimple or insect bite. When it grows larger and fills with pus, it becomes an abscess (commonly referred to as a “boil”). The surrounding skin may be warm and red, with a “leading edge” that extends outward as time passes without treatment. It can be quite destructive to the local tissues (Figure 1).

Although rare, MRSA can cause more serious infection of muscle tissue, lung tissue, and the bloodstream. These can be life-threatening if not treated aggressively. Because there are no clear distinguishing clinical characteristics to differentiate MRSA from MSSA, an aggressive strategy to prevent, detect, and treat these infections is prudent.11

Treatment

Early detection and treatment are key factors in limiting the harm MRSA infection can cause to an individual athlete and his or her team. Awareness of MRSA among athletes and the athletic staff is the first step. The NCAA and CDC have collaborated to produce informative posters that can be displayed in locker rooms to educate athletes and coaches about MRSA and other transmissible skin infections (available at: http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca_posters.html).

Players should report suspicious skin findings to an athletic trainer or team physician. Athletic trainers and therapists may identify lesions that were previously unrecognized by the athlete or those considered a harmless scratch. Areas of redness can be marked with an ink pen and rechecked within 24 hours to determine whether the redness extends beyond the demarcated borders, which may be an indication of worsening cellulitis.

An abscess needs incision and drainage by qualified personnel. The wound is sometimes packed with gauze or other material, which should be covered with