

## コンタクトスポーツ選手に見られた創傷感染の2流行事例

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### Two outbreaks of systemic lymphadenitis with fever among contact sports players following wound infection

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#### 要約

アメリカンフットボールとレスリングにおける創傷後の黄色ブドウ球菌感染による発熱を伴うリンパ腺腫脹の2流行事例について記載する。アメリカンフットボール(64名)、レスリング(19名)、野球(91名)、テニス(35名)を対象として、症状を訴えた件数とその日時を記録する調査を、アメリカンフットボール選手から最初の訴えがあった日の前後の10日間隔で実施し、アメリカンフットボールとレスリングで流行状態が確認された。アメリカンフットボールの流行には、練習終了後に2.0mg/lの塩素温浴並びに肌着と布団シーツの洗濯で介入した結果、5日後にはほぼ終息させることができた。

キーワード：競技者、黄色ブドウ球菌、消毒、とびひ、リンパ腺炎

#### Abstract

Two outbreaks of systemic lymphadenitis with fever, following wound infections of *Staphylococcus aureus* occurred in a football and a wrestling team were described. Occurrence (number and percentage) of the symptoms was recorded on the reported day and the symptoms of the football (n=64), wrestling (n=19), baseball (n=91) and tennis (n=35) team were surveyed and recorded three every tenth successive days before and after the reported day. The outbreak in football was completely blunted by a 5 days 2.0 mg/l chlorine-disinfected hot bathing after their training and by renewals to their laundered underwear and bedclothes.

**Key words:** athletes, disinfection, carbuncle, impetigo, and phlegmon

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Wound infections associated with contact sports are important causes of temporary disability<sup>1,3</sup> amongst fit adolescent athletes, and occasionally result in outbreaks of systemic lymphadenitis with fever. The causative agents are common skin or mucous bacteria such as *Staphylococcus*.

At the beginning of autumn 1998, an American-football (n=64) and a wrestling (n= 19) team suffered from two outbreaks of carbuncles, systemic lymphadenitis with fever and phlegmon. The cumulative incidence was 54 (84.4%) cases including temporary disabled 37 cases, more serious than systemic lymphadenitis with fever among footballers and 16 (84.2%) including 11 serious cases among wrestlers. The values were higher than those in non-contact sports players, such as baseball (n=91, 10 (11.0%)) including 1 serious case) and tennis (n=35, 4 (11.4%)) with no serious cases) during the same period. *Staphylococcus aureus* (*S. aureus*) was isolated from their wounds by using the TGSE agar stump method (Nissui, Tokyo) .

*S. aureus* capsular type-2, -5 and -8 polysaccharides, toxic shock syndrome toxin 1 (TSST-1) , and staphylococcal enterotoxin C (SEC) specific serum IgM, IgG and IgA ELISA<sup>3</sup> were analyzed with the serum obtained from the 13 infected football players in this outbreak. Capsular type-2 polysaccharide specific IgM, IgG and IgA concentration in their serum were lower than those of healthy non-athletes. There were no particular differences of concentration in type-5 and type-8 capsular antigens, TSST-1 and SEC specific IgGs in their plasma. Three months after the outbreak. *S. aureus* capsular type-2 IgM, IgG and IgA concentration recovered their normal level. These findings suggested that the *S. aureus*, which caused this outbreak, was protected from immune activities by type-2 capsular polysaccharide. A huge and frequent bacterial supply through wide skin wounds made more serious symptoms in these healthy adolescent athletes.

Concerning effective countermeasures that could be taken to combat with *S. aureus* sports infection, it was difficult to avoid completely, especially in contact sports players because *S. aureus* is common in the mucous of healthy people, and because it is impossible for players to avoid being wounded. Prohibiting

the players with infected wounds from training or competing for some days, to let the wounds heal, is the most effective course that can be taken. However, almost players and coaches find this to be unacceptable and players will generally continue to play and train until their symptoms become serious.

Almost Japanese favors taking hot bath or shower every day in summer. However, the habits do not completely prevent wounds *S. aureus* infections. Thus, effective wound disinfection seems to be needed in addition with the general hygienic practices<sup>5</sup> or Japanese hot bath habits. We intervened against the outbreak amongst the football team by administering 2.0 mg/l of dichloro-isocyanurate (NEO-CHLOR<sup>®</sup>, SHIKOKU CHEMICALS, Marugame, Japan) into their hot baths for 5 consecutive days. These baths were taken after they had taken shower. We also had them regularly launder their underwear and bedding. Soon after these treatments, the number of cases decreased from 30 cases (46.9%) on 1st September, 1998 to 7 cases (10.9%) on 5th September whereas the untreated wrestling team showed 5 cases (26.3%) to 2 cases (10.5%) . Although, the intervention was only one trial, it can be seen that these treatments to the football team was significantly effective in controlling this outbreak ( $p<0.05$ , test for the difference of two proportions) when compared with the case of non-treated wrestling team. In two cases, their atopic dermatitis was worsened through chlorination and mild chlorine treatments or other alternatives must be considered.

In the serious cases, anti-microbial chemotherapy with penicillin was prescribed. However, we do not consider that these treatments contributed to the control of the outbreak, because the resting players with serious symptoms could not contact with the other healthy players, and also because most *S. aureus* is resistant to penicillin.

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