

is considered endemic in hospitals and long-term care facilities, an ongoing debate exists about whether all identified cases of MRSA, particularly in asymptomatic individuals, should be treated. There is little disagreement, however, regarding the use of MRSA to treat symptomatic infections.

Intermittent as well as continuous bladder irrigation utilizing various pharmacological agents has been used in various clinical settings. In a survey of 418 hospitals in Japan, 58 kinds of irrigants were prepared.² Though antifungal bladder irrigation has long been used successfully for the treatment of fungal cystitis, antibiotic irrigants have been much less popular, and the outcome of therapy has been less consistent. There are no reports on vancomycin bladder irrigation.

Several restrictions may limit the usefulness of vancomycin bladder irrigation for MRSA infections. In cases of pyelonephritis or infections ascending the ureters, bladder irrigation is clearly an inappropriate delivery system. Even in uncomplicated cystitis, exposure of the bladder mucosa to the irrigant is not uniform. CBI is principally likely to affect organisms near the bladder trigone, with exposure to other areas being less predictable.³ A suggested solution is infusion of 200 to 300 mL of irrigant followed by cross clamping of the catheter for 60 to 90 minutes.³ Another factor influencing the outcome of therapy is the degree of infection. A study of six antibiotic solutions used in a bladder washout procedure revealed that when the bacterial density was 10^4 CFU/mL of urine, all six solutions were equally effective in eliminating the infection, but when the bacterial concentration was 10^7 to 10^8 CFU/mL, only one irrigant proved successful.⁴ It is likely that the bacterial concentration as a determinant of the outcome of antibiotic bladder irrigation holds true for vancomycin as well. Finally, concomitant polymicrobial infections have been noted frequently in patients with MRSA in their urine, and vancomycin may not cover all the pathogens.

While bladder absorption of vancomycin was negligible in this case, reports of significant serum levels and even systemic toxicity with other antibiotics exist.^{5,6} As a result, until vancomycin bladder irrigation is better studied, monitoring serum levels is advisable, particularly in cases of renal failure. Absorption may be enhanced by increased pressure within the bladder and mucosal inflammation (caused by the UTI or the vancomycin), both of which act as driving forces for antibiotic absorption.

Whether this method of treating MRSA cystitis will prove to be effective remains to be seen. The best control policy, however, is still primary prevention of spread by observing basic infection control techniques.

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THUMB CELLULITIS ATTRIBUTABLE TO GROUP G STREPTOCOCCUS

To the Editor: The group G streptococci are, in many respects, similar to group A streptococci and cause a variety of clinical infections, including bacteremia, pharyngitis, endocarditis, and soft tissue infections, as cellulitis.¹ Most cases of cellulitis are attributable to Group A streptococci or *Staphylococcus aureus*.² There appears to be an association between group G streptococcal infections and various underlying medical conditions, most significantly, malignancy.^{1,3} This report illustrates a case of group G streptococcal cellulitis, which responded well to antibiotics, in an older man with no obvious predisposing factors.

A 71-year-old right-handed male presented with a 1-day history of a painful, erythematous right thumb. Two days previously, he had been working in a cellar and may have scraped his thumb against a cement block, but he denied any obvious injury at the time. He noted some red streaks over his right forearm on the day of admission, but denied pyrexia, chills, or night sweats. His medical history included essential hypertension and benign prostatic hyperplasia. He had no history of diabetes mellitus. His medications were lisinopril and one aspirin daily. He denied contact with animals or soil.

The man appeared well and was afebrile. The right thumb was erythematous, warm, and swollen, with full range of motion both actively and passively; there were no signs of tenosynovitis. There were several erythematous streaks over the ventral forearm and a tender, mobile 3-cm lymph node in the right axilla. The rest of the physical examination was normal. A plain radiograph of the right hand revealed no evidence of fracture, foreign body, soft tissue gas, or osteomyelitis. The peripheral white blood cell count was 16,200 cells/mm³ with 85% neutrophils. A soft tissue aspiration revealed 1 cc of purulent fluid; Gram stain showed numerous polymorphonuclear leukocytes and Gram positive cocci in chains. He was started on ampicillin-sulbactam for presumed cellulitis and lymphangitis attributable to group A streptococcus. Blood cultures remained sterile; however, the soft tissue aspirate grew a pure culture of group G streptococci that was sensitive to penicillin.

The patient received intravenous antibiotics for several days and showed dramatic improvement. Because of an association in the literature between group G streptococci and colonic malignancy, he underwent colonoscopy, which was normal. The patient completed a 21-day course of therapy with oral penicillin and recovered without event.

The group G streptococci are facultative anaerobic Gram-positive cocci that produce the same extracellular enzymes as group A organisms: streptokinase, streptodornase, hyaluronidase, and DNAase, as well as various hemolysins.¹ Many infections have been attributed to group G streptococci; group G pharyngitis appears clinically identical to that caused by group A.¹ Other infections linked to group G streptococci include septic arthritis, soft tissue abscess and cellulitis, endocarditis, endometritis, peritonitis, meningitis, and bacteremia.^{1,3} The organism may inhabit the normal flora of the skin, pharynx, gastrointestinal tract, and vagi-

Table 1. Malignancies Associated with Group G Streptococcal Infections

Oropharyngeal
Gastrointestinal
Cervical
Breast
Biliary tree
Lymphoma
Mycosis fungoides

na.^{4,5} Infections with group G streptococci are more common in men for unknown reasons.^{3,6}

There appears to be an association between group G streptococcal infections and such underlying conditions as diabetes, alcoholism, and malignancy.^{1,3,4,7} Oropharyngeal, cervical, breast, colonic, and hematologic^{3,7} malignancies are associated with group G streptococcal infections (Table 1). Some authors report an associated malignancy is present in 21% of patients with a clinical group G streptococcal infection.³ The source of group G streptococcal infections in cancer patients is probably endogenous as the organism can be cultured from normal flora.⁵ There is a similar association between *Streptococcus bovis* infection and colonic malignancy.^{2,7} Infections of the skin and soft tissue, however, are equally significant in patients with and without malignancy.³ This may be evidenced by the patient presented here who had no underlying illnesses associated with group G infection and on physical examination, basic laboratory studies, and colonoscopy had no evidence of malignancy. Since the organism may inhabit the skin, it is most likely that the patient acquired this infection through a subclinical thumb wound.

Diagnosing the etiology of cellulitis rests on isolating an organism from blood cultures, skin biopsy, or tissue aspirate.⁸ Often, the treatment remains empiric because of lack of sensitivity of blood cultures and tissue aspiration.⁹ However, aspiration occasionally proves helpful, as in this case. Treatment of group G streptococcal infections entails adequate antimicrobial therapy and drainage of pus in the event of septic arthritis or soft tissue abscess.^{6,7} Group G streptococcus is responsive to penicillin G and other beta-lactam agents both in vitro and in vivo.^{1,4} Erythromycin, clindamycin, and vancomycin may be utilized in penicillin-allergic patients.¹ The addition of an aminoglycoside may be necessary with endocarditis, septic arthritis, or treatment failures, and may be synergistic when used with a beta-lactam.^{1,4}

Group G streptococcus is an uncommon cause of cellulitis. There appears to be an association between group G streptococcal infections and underlying malignancy. Older patients found to have a clinical infection attributable to the group G streptococcus should undergo a thorough history and physical examination and, if indicated, specific tests for malignancy should take place.

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FACTOR STRUCTURE AND VALIDITY OF THE DUTCH VERSION OF THE COHEN-MANSFIELD AGITATION INVENTORY (CMAI-D)

To the Editor: Agitation is relatively common in patients with dementia.¹⁻⁴ Behaviors such as screaming, pacing, or hitting someone are a burden to the family or professional caregiver,⁵⁻⁷ and may play a crucial role in the decision to institutionalize the patient.³ Treatment of agitation in dementia is sometimes possible.⁸ Specific measurement instruments are needed to evaluate the effectiveness of interventions. Behavior rating scales are used widely for this purpose. The Cohen-Mansfield Agitation Inventory (CMAI) was developed to assess agitation in nursing home patients.⁹ It is more specific than general purpose behavior rating scales, which usually include self-care activities, cognition, and mood items. Factor analysis shows three basic dimensions underlying the 29 CMAI items: physical aggression, physical nonaggression, and verbal agitation.^{9,10} Until now all CMAI studies included patients from nursing homes. We studied factor stability of the Dutch version (CMAI-D), using data from a psychiatric observation clinic population for older persons.

Subjects were 334 patients admitted consecutively to the observation clinic for older persons of Psychiatric Hospital Vogelenzang in The Netherlands. One hundred fifteen subjects were male (34,4%) and 219 were female (65,6%). The average age was 76.5 (SD = 9.5). CMAI-D ratings by registered psychiatric nurses were compared with the Dutch Behavior Rating Scale for Psychogeriatric Inpatients (GIP).^{11,12} All ratings were made 3 to 6 weeks after admission.

According to DSM-III-R classification, 157 patients suffered from dementia, 37 had other organic mental disorders, and 130 suffered from mood disorders or schizophrenia.

Cronbach's alpha was .82. Interrater agreement for total CMAI-D score was .89. Six items had unweighted Cohen's kappa values less than .20. Low exact agreement was found without exception for those items that had restricted variance.

Many behaviors were observed very infrequently in the nondemented patients. Therefore, only ratings of dementia patients were used for principal component analysis (Table 1), excluding six infrequently observed behaviors. The number of factors was set at three.

The first factor reflects physical aggressive behavior. The second factor can be viewed as physical nonaggression/restlessness. Verbally agitated behaviors loaded high on the third factor. CMAI-D total scores correlated .72 ($P < .001$) with GIP total scores.