other first-line antimicrobial agents: the resistance rate is 0%–65.7% (4,5). Therefore, clindamycin and trimethoprim/sulfamethoxazole may be not adequate empiric antimicrobial agents for SSTIs in Taiwan or other areas with a high prevalence of CA-MRSA.

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**In response:** Dr Ma makes an excellent point about the limitations of study data on antimicrobial drug treatment of skin abscesses (1). All of the patients described in our study (2) required antimicrobial drug therapy, and most were admitted to the hospital. However, we did not mean to imply that all skin abscesses require antimicrobial drug treatment. Our own practice is to give antimicrobial drug therapy only when a skin abscess is associated with definite surrounding cellulitis, systemic signs, or both. Although various criteria have been published, in practice this is a judgment call, and we suspect that physicians vary considerably in use of antimicrobial agents for skin infections.

Because most cellulitis associated with skin abscess will improve with adequate drainage, designing a study that will find a difference in outcome attributable to the antimicrobial drug is difficult. More studies are needed to determine whether antimicrobial agents with in vitro activity against methicillin-resistant *Staphylococcus aureus* (MRSA) are more clinically effective than those lacking such activity. Perhaps these studies should focus on those infections for which antimicrobial agents would be expected to have the greatest impact (e.g., infected wounds with cellulitis), rather than abscesses that can be expected to improve with incision and drainage alone.

When the decision is made to use an antimicrobial agent, it is difficult to justify choosing one to which the infecting organism will likely be resistant. Because MRSA is now the most common cause of skin infections at our institution, we choose agents with activity against the MRSA strains in our community. We do not believe that choosing an antimicrobial agent to which the infecting organism is susceptible is more likely to contribute to the general problem of antimicrobial drug resistance.

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## Angiostrongyliasis, Mainland China

**To the Editor:** The first case of angiostrongyliasis caused by *Angiostrongylus cantonensis* in mainland China was reported in 1984; only 3 cases were reported between then and 1996 (1). Recently, however, cases of angiostrongyliasis have increased rapidly because of its natural focus and a change in human dietary patterns. For example, snails have become a popular food in many regions of this country. Nearly 100 cases of angiostrongyliasis have been reported in mainland China, including 2 outbreaks (2,3).

From 1994 to 2003, 84 cases of angiostrongyliasis were documented in mainland China. Of all the cases, 29 were reported individually, and 55 were reported from the 2 outbreaks that occurred in Zhejiang and Fujian. Sixty-three of the 84 patients had eaten raw or undercooked snails, 5 had eaten raw crabs, 1 swallowed tadpoles, and several pediatric patients had close contact with snails. Some researchers believe that the larvae of *A. cantonensis* can be released from mollusks into slime fluid and contam-

inate produce and other objects as they crawl. However, Liang et al. (4) reported finding no larvae in body fluid washed from 23 *Achatina fulica* that were infected with *A. cantonensis*. Therefore, whether slime fluid plays a role in human infection remains unclear.

The clinical symptoms of the patients from the 2 outbreaks of angiostrongyliasis that occurred in China are shown in the Table. Eosinophilia is a typical characteristic of eosinophilic meningitis or meningoencephalitis caused by *A. cantonensis*. In our study, eosinophilia was detected in 79 of 84 patients. Therefore, clinical patients with eosinophilic meningitis or meningoencephalitis with eosinophilia should be presumptively considered to be infected with *A. cantonensis* and parasitologic or serologic tests should be performed. The parasitologic detection rate of *A. cantonensis* infection in humans is low; because this parasite is found in the human central nervous system (CNS) and the tiny larvae often stick to meninges or nerve root, a false-negative result is often shown when cerebrospinal fluid is examined. In the 84 cases reported in this article, worms were isolated from only 8 patients (9.5%), whereas 64 cases were diagnosed as angiostrongyliasis by immunologic methods. The most common immunologic methods used to diagnosis angiostrongyliasis in this country are indirect fluorescent antibody test, immunoenzymatic staining technique, and enzyme-linked immunosorbent assay. All antigens used in these methods were prepared from whole adult worms. Reports indicated that serologic cross-reaction occurred between trichinosis and angiostrongyliasis when whole-worm lysate was used as the antigen (5). In addition, whole-worm antigens cannot discriminate between new and previous infection, or monitor the efficacy of the treatment. Therefore, finding potential diagnostic antigens will be essential to solving this problem and applying recombinant antigens may achieve this goal. A cDNA library from the larvae of *A. cantonensis* was constructed and screened with acute infection sera, and a diagnostic antigen that can detect early infection of *A. cantonensis* (3 weeks) was identified (6).

Some researchers considered that anthelminthics, such as albendazole, ivermectin, mebendazole, and pyrantel, did not affect *A. cantonensis* but noted that the death of worms in the CNS might exacerbate neurologic symptoms (7). However, many studies in mainland China showed that anthelminthics can relieve symptoms and reduce the duration of disease. For example, Wang et al. (8) reported that albendazole could relieve the symptoms of angiostrongyliasis and suggested that it can be used to treat the disease. Lin et al. (3) also reported that in 8 patients who were treated with 20 mg/kg albendazole for 9 days, the symptoms and signs of acute angiostrongyliasis were rapidly relieved in 3–6 days. All of these patients had recovered by 10 days after treatment, and no side effects were observed.

Angiostrongyliasis is an emerging foodborne public health problem in mainland China. However, most clinicians are not familiar with this disease and little is known about the prevalence of *A. cantonensis* in China. Thus, more studies should be conducted on the biology, epidemiology, and clinical characteristics of angiostrongyliasis, and more effective diagnostic methods and treatments for *A. cantonensis* should be developed.

Table. Clinical characteristics of patients with angiostrongyliasis in 2 outbreaks in China*

| Characteristics | Outbreak 1 (%) | Outbreak 2 (%) |
|---|---|---|
| Patients, no. | 47 | 8 |
| Male patients, no. (%) | 24 (51) | 8 (100) |
| Age, y | | |
| Median | 32 | 12 |
| Range | 6–58 | 11–13 |
| Incubation, d | | |
| Median | 10.35 | 6 |
| Range | 1–27 | 5–7 |
| Symptoms†, no. (%) | | |
| Headache | 44 (93.6) | 8 (100) |
| Nuchal rigidity or neck pain | 0 | 6 (75.0) |
| Fatigue | 7 (14.9) | 7 (87.5) |
| Vomiting | 9 (19.1) | 8 (100) |
| Paresthesias | 30 (63.8) | 3 (37.5) |
| Muscle pain | 43 (91.5) | 8 (100) |
| Fever | 27 (57.4) | 3 (37.5) |
| Cough | 4 (8.5) | 0 |
| Somnolence | 4 (8.5) | 7 (87.5) |
| Skin eruption | 10 (21.3) | 0 |
| Skin itch | 13 (27.7) | 0 |
| Laboratory detection | | |
| No. positive/no. examined (%) | | |
| Eosiniphils in cerebrospinal fluid | 23/25 (92) | 8/8 (100) |
| Eosinophils in blood | 23/25 (92) | 8/8 (100) |
| Serologic diagnosis | 21/25 (84) | NT |
| Pathogenic test | ND | 1/8‡ (12.5) |

*NT, not tested; ND, not detected.
†No patients had visual disturbance or photophobia, hyperesthesias, muscle weakness, or diarrhea.
‡Two larvae were found in cerebrospinal fluid.

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## Methicillin-resistant *Staphylococcus aureus* Necrotizing Pneumonia

**To the Editor:** Methicillin-resistant *Staphylococcus aureus* (MRSA) strains account for >40% of all hospital-acquired *S. aureus* infections in Italy (1). Although cases of community-acquired MRSA (CA-MRSA) infections have been reported in recent years (2), these isolates have not been characterized for Panton-Valentine leukocidin (PVL) (3); therefore, the presence of isolates with the typical characteristics of CA-MRSA (4) in Italy remains unknown.

At the beginning of April 2005, a 37-year-old woman was admitted to the University Hospital Policlinico in Rome because of fever, cough, and headache. Her medical history was unremarkable. She was a teacher in a school for foreign students in Rome, smoked 3 cigarettes per day for 15 years, and reported no recent travel abroad. Her 5-year-old daughter had influenzalike symptoms in the previous week. At hospital admission, her temperature was 39°C, heart rate was 108 beats/min, respiratory rate was 32 breaths/min, and blood pressure was 105/70 mmHg. Arterial blood gas analysis showed mild hypoxemia and hypocapnia ($PaO_2$ 73 mm Hg and $PaCO_2$ 34 mm Hg on room air). Leukocyte count was 24,360 cells/μL (81% polymorphonuclear cells), and platelet count was 506,000/μL. Chest radiograph showed infiltrates in the right upper and lower lobes and left lower lobe. Empiric treatment with clarithromycin and ceftriaxone was started, but the patient's clinical conditions did not improve. Culture of sputum samples obtained at admission yielded growth of MRSA. Computed tomographic scan showed multiple lung cavitary lesions, indicating necrotizing pneumonia. On day 3 of admission, antimicrobial drug therapy was changed to linezolid (600 mg 3 times a day). Fever resolved, and the patient's condition rapidly improved. The patient was discharged after 14 days of linezolid treatment. At discharge, leukocyte count was 6,040 cell/μL (58% polymorphonuclear cells), and arterial blood gas analysis showed $PaO_2$ of 88 mm Hg.

The MRSA isolate from sputum was susceptible to all the non–β-lactam antimicrobial drugs tested, including erythromycin, clindamycin, ciprofloxacin, tetracycline, kanamycin, and fusidic acid. With established molecular methods, the isolate was found to harbor *SCCmec* type IV (5); *lukS* and *lukF*, the genes coding for the 2 subunits of the PVL toxin; and *hlg*, the γ-hemolysin gene (3). The genetic background of the isolate was determined by multilocus sequence typing (MLST) (6) and sequence typing of the tandem repeat region of protein A gene (*spa* typing) (7). Results showed that the isolate belonged to ST30 according to the MLST database (http://saureus.mlst.net), and *spa* typing, analyzed by the Ridom Staphtype software (http://www.ridom.de), indicated a novel *spa* type, to which type 755 was assigned. ST30, 1 of 6 clones more commonly associated with PVL-positive CA-MRSA (4), is designated also the southwest Pacific (SWP) clone, because of the area in which it circulates. Recently, the SWP clone has caused CA-MRSA infections in northern European countries (England, Scotland, the Netherlands, Sweden, and Latvia) (8,9). Molecular analysis suggests that the SWP clone has evolved from a methicillin-susceptible clone of *S. aureus*, termed phage type 80/81, that was pandemic in the 1950s and considered to be unusually virulent and transmissible (8). In fact, strains belonging to phage type 80/81 carry the PVL gene and