FATAL BACTERAEMIC PNEUMONIA DUE TO COMMUNITY-ACQUIRED METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS*

Dear Sir,

We read with interest Drs Chua and Lee's report of two fatal cases of pneumonia caused by methicillin-resistant *Staphylococcus aureus* (MRSA)[1]. While we welcome any report that highlights the emerging problem of community-associated MRSA (CA-MRSA) in Singapore, there are some issues that concern us.

Firstly, although the terminology is confusing, it is clear that CA-MRSA and healthcare-associated MRSA (HA-MRSA) isolates are distinct entities on a molecular level, with differing genetic profiles and evolutionary paths[2]. MRSA infections that arise outside the hospital setting are conventionally labeled as "community-acquired" or "community-onset". These can be caused by both the newly-emerged CA-MRSA strains as well as HA-MRSA strains that have "escaped" out of the hospital via colonised patients. Conversely, in areas where the prevalence of CA-MRSA is high, nosocomial infections are increasingly being caused by CA-MRSA[3]. Therefore, using purely conventional epidemiological criteria – such as criteria suggested by the Centers for Disease Control and Prevention, Atlanta[4] – to distinguish between them is unreliable. The duration of HA-MRSA carriage in patients discharged from hospitals may exceed two years[5], and closer evaluation often results in the identification of healthcare links in "community-acquired" infections in Singapore[6] as in other settings.

Secondly, susceptibility to non-beta-lactam antibiotics per se does not distinguish CA-MRSA from HA-MRSA even in Singapore. The past three years has seen the introduction and spread of a multidrug-susceptible epidemic HA-MRSA, UK-EMRSA-15, in local hospitals[7]. This MRSA has the same antibiotic susceptibility profile as the isolate from Patient 2 in the report[1]. A minor variant UK-EMRSA-15 clone currently circulating in Singapore is even susceptible to both erythromycin and clindamycin as a result of the loss of the macrolide resistance *ermC* gene [unpublished data, Hsu LY]. An observation that we had made was that the majority (>99%) of local HA-MRSA isolates are resistant to ciprofloxacin, whereas the converse is true of local CA-MRSA isolates[8].

It would have been of great interest if the two MRSA isolates described in the report had undergone molecular typing or had at least been tested for the presence of Panton-Valentine leukocidin genes. Without the molecular evidence, it is quite possible that either or both of these cases might have been caused by UK-EMRSA-15 that had been transmitted to the patients during the course of one of their outpatient follow-up appointments, resulting in colonisation and subsequent infection as reported. We hope that the authors could provide readers with some of the molecular evidence to confirm that these are indeed CA-MRSA strains.

The need for definitive identification of, and differentiation between, HA- and CA-MRSA is, in our opinion, neither trivial nor pedantic. The former hardly transmits successfully in the community with the exception of institutional settings such as nursing homes or dialysis centres; various strains of the latter, however, have true epidemic potential in the community[9]. Knowledge of the real extent of the problem of CA-MRSA is necessary for appropriate calibrated measures in terms of dynamic outbreak modelling, infection control and/or empirical antibiotic therapy for community-associated infections.

As a final and less relevant point, true CA-MRSA causing severe community-acquired pneumonia in Singapore has been previously reported in the literature[10].

Yours sincerely,

Hsu Li Yang
Paul Ananth Tambyah

Department of Medicine
Yong Loo Lin School of Medicine
National University of Singapore
10 Medical Drive
Singapore 117597
Tel: (65) 6772 4215
Fax: (65) 6779 4112
Email: liyang_hsu@yahoo.com

REFERENCES

1. Chua AP, Lee KH. Fatal bacteraemic pneumonia due to community-acquired methicillin-resistant Staphylococcus aureus. Singapore Med J 2006; 47:546-8.
2. Vandenesch F, Naimi T, Enright MC, et al. Community-acquired methicillin-resistant Staphylococcus aureus carrying Panton-Valentine leukocidin genes: worldwide emergence. Emerg Infect Dis 2003; 9:978-84.
3. Kourbatova EV, Halvosa JS, King MD, et al. Emergence of community-associated methicillin-resistant Staphylococcus aureus USA 300 clone as a cause of health care-associated infections among patients with prosthetic joint infections. Am J Infect Control 2005; 33:385-91.
4. Centers for Disease Control and Prevention. Community-associated MRSA Information for Clinicians [online]. Available at: www.cdc.gov/ncidod/dhqp/ar_mrsa_ca_clinicians.html/ Accessed June 3, 2006.
5. Scanvic A, Denic L, Gaillon S, et al. Duration of colonization by methicillin-resistant Staphylococcus aureus after hospital discharge and risk factors for prolonged carriage. Clin Infect Dis 2001; 32:1393-8.
6. Tambyah PA, Habib AG, Ng TM, Goh H, Kumarashinghe G. Community-acquired methicillin-resistant Staphylococcus aureus infection in Singapore is usually "healthcare associated". Infect Control Hosp Epidemiol 2003; 24:436-8.
7. Hsu LY, Koh TH, Singh K, et al. Dissemination of multisusceptible methicillin-resistant Staphylococcus aureus in Singapore. J Clin Microbiol 2005; 43:2923-5.
8. Hsu LY, Koh TH, Tan TY, et al. Emergence of community-associated methicillin-resistant Staphylococcus aureus in Singapore: a further six cases. Singapore Med J 2006; 47:20-6.
9. King MD, Humphrey BJ, Wang YF, et al. Emergence of community-acquired methicillin-resistant Staphylococcus aureus USA 300 clone as the predominant cause of skin and soft-tissue infections. Ann Intern Med 2006; 144:309-17. Comment in: Ann Intern Med 2006; 145: 231-2; author reply 232-3, Ann Intern Med 2006; 144:368-70.
10. Hsu LY, Tristan A, Koh TH, et al. Community-associated methicillin-resistant Staphylococcus aureus, Singapore. Emerg Infect Dis 2005; 11:341-2.