VOLUME 8, NUMBER 13

JUNE 12 - JUNE 25, 2011



Feature: Update on scarlet fever in Hong Kong

LENS ON CHP



Above: "Rapid Assessment in Emergency Situation" training course organised by the CHP during June 13-17, 2011.

NEWS

Field Epidemiology Training Course on Rapid Assessment in Emergency Situation

The Hong Kong Field Epidemiology Training Programme of the Centre for Health Protection (CHP) organized a training course on "Rapid Assessment in Emergency Situation" during June 13-17, 2011. The course was delivered by an organization based in Europe specializing in training and studies in epidemiology and development of information & communication technology tools for public health. The objective of this course was to understand priority activities to be conducted during disasters, the components of a rapid assessment and the tools & methods used in rapid assessment. The training course included a series of short

(continued on page 53)



Update on scarlet fever in Hong Kong

Reported by Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP

The activity of scarlet fever (SF) remains high in Hong Kong. As of June 28, 2011, 637 cases have been reported this year. Approximately 49% of the reported cases had laboratory evidence of Group A Streptococcus (GAS) infection, the remaining 51% were based on clinical diagnosis. 91% of the cases were children under 10 years old, with highest numbers among 4-7 years of age. The male to female ratio was 1.4:1.

A simultaneous increase of SF cases was noted in Mainland China and Macao, where the condition is a notifiable disease. Of the SF cases in Hong Kong, only 2% had history of visiting Mainland China during the incubation period. SF is not a notifiable condition in many neighboring Asian areas such as Taiwan, Japan, Singapore, Malaysia, Australia, and New Zealand.

Small-sized clusters of infection have occurred in families and childhood institutions. So far, 36 clusters were recorded which involved 19 domestic and 17 schools clusters (12 kindergartens/child care centres, 4 primary schools, I special residential child care centre). The number of persons affected in each cluster varied from 2 to 7. Cases associated with school clusters comprised only a small fraction (7.4%) of all SF cases.

The clinical features of the cases resembled closely those reported in the literature. About 60% of the cases had history of hospitalization. Two deaths have resulted, giving a case fatality rate of 0.3%, which is compatible with literature findings.

The first fatal case, a 7-year-old girl, was in good past health. She presented with fever, sore throat, vomiting and itchy skin rash since May 20, 2011. She was seen by a general practitioner on May 22 with complaints of runny nose, cough, vomiting and abdominal pain. Positive physical findings included fever of 103°F and mildly congested throat. No antibiotics were prescribed. She re-visited the general practitioner on May 26 due to body ache, cough, runny nose and abdominal pain. Physical findings included fever of 102.7°F, red swollen right eye, and reduced throat congestion. Her condition deteriorated on May 27 with blisters on lower limbs. She was referred by her family doctor to the Accident and Emergency Department (AED) of Queen Mary Hospital (QMH) on May 27, and was later admitted to the Pediatric Intensive

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VOLUME 8, NUMBER 13

Care Unit (PICU) for management due to poor condition. She was complicated with toxic shock syndrome (TSS). She succumbed on May 28 despite antibiotic treatment. Her blood and blister fluid were both cultured positive for GAS; gene typing of M protein (*emm*) of the isolate showed it was *emm* type 12.

The second fatal case was a 5-year-old healthy boy who presented with fever since June 15, 2011. He attended a general practitioner on June 16 with fever, cough, headache, sputum, sore throat and skin pustules. The clinical diagnosis was chickenpox. No sandpaper rash or strawberry tongue was noted. No oral antibiotics were prescribed. He attended AED of the Prince of Wales Hospital on June 21 for sudden deterioration in condition. He was transferred to the Princess Margaret Hospital PICU for further management on the same day. The clinical diagnosis was chickenpox complicated by SF and TSS. Despite treatment he passed away on June 21. His pus swab and blood culture were cultured positive for GAS; *emm* typing of the isolate showed it was *emm* type 1.

Laboratory surveillance including serotyping and molecular characterization of GAS isolates is being carried out at the Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP). As of June 26, PHLSB has performed typing for 97 GAS isolates collected mainly from outpatient settings. Fifty (52%) of them were of *emm* type 12, followed by *emm* type I (16, 16%), *emm* type 28 (8, 8%) and 23 other *emm* types. Pulse field gel electrophoresis (PFGE) of 44 *emm* type 12 isolates showed more than 10 distinct patterns. PCR on the gene for speA toxin yielded negative results on the *emm* type I isolate from the deceased 7-year-old girl, and positive results on the *emm* type I isolate from the deceased 5-year-old boy.

All laboratory isolates of GAS so far were sensitive to penicillin while about 60% were resistant to erythromycin (which also predicts resistance to azithromycin and clarithromycin). Thus, penicillin or a first generation cephalosporin should be used for the treatment of patient presenting with symptoms and signs of GAS infection or SF instead of using antibiotics belonging to the macrolide group (e.g. erythromycin). Penicillin treatment should last for ten days for bacterial eradication.

A new genome fragment was discovered by the Department of Microbiology of the University of Hong Kong (HKU) upon sequencing the whole genome of a GAS isolate from a child suffering from SF and invasive GAS infection admitted to QMH. Subsequent testing by the PHLSB on other GAS isolates found that 70-80% of *emm* type 12 strains and 50-60% of *emm* type I strains carried this new genome fragment. The contribution of new GAS clone(s) with altered genetic characteristics (such as the new genome fragment) causing the current upsurge of SF remains to be investigated.

CHP and HA conducted further research to study the situation of invasive GAS infection in the past few years. We retrieved the number of positive isolates of *Streptococcus pyogenes* from blood specimens in hospitals under the Hospital Authority (HA) since 2008¹. The number of *S. pyogenes* isolates from blood ranged between 21 and 43 in years 2008-2010 and the number recorded this year (as of June 12) was 30. Moreover, we investigated hospital discharge records to examine the number of HA hospital patients with a discharge diagnosis of toxic shock syndrome (TSS). Four cases of TSS associated with GAS were obtained for 2011 (including

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presentations by the facilitators as well as interactive and practical case studies. A total of 26 participants attended the course and it was well received by the participants.

Two confirmed sporadic local cases of listeriosis

On June 5 and 17, 2011, CHP recorded two sporadic local cases of listeriosis. The first case involved a 46-year-old man with history of urinary bladder cancer on palliative care. He presented with fever since June I and was admitted to a public hospital on the same day. Blood culture yielded *Listeria monocytogenes*. He was transferred to a convalescent hospital on June 5. His condition subsequently deteriorated and he passed away on June 17. The patient had consumed an ice-cream bar during the incubation period.

The second case involved a 61-yearold woman with history of systemic lupus erythematosus, chronic rheumatic heart disease and stroke. She presented with fever, cough and shortness of breath since lune 12 and was admitted to a public hospital on June 13. Blood culture yielded Listeria monocytogenes. She is now stable in the hospital. She recalled intake of sushi and icecream bars during the incubation period. Both patients had no history of travelling outside Hong Kong during the incubation periods. Preliminary investigation did not identify any epidemiological linkage between these two patients. All of their household contacts were asymptomatic.

¹ The following data is preliminary and subject to modification.

the two fatal cases of SF described above and two other SF cases² who recovered), compared with 1 in 2010, 0 in 2009, 3 in 2008 and 3 in 2007. These findings suggest that apart from SF, the overall incidence of other invasive GAS associated infections might also have increased in 2011.

Public health measures to address the rise in SF have been implemented in various domains. First, to strengthen monitoring of serious SF cases in the community, CHP has formed an enhanced surveillance mechanism with public and private hospitals for intensive care unit (ICU) admissions or deaths associated with SF since June 24, 2011. Second, resources have been allocated to conduct more laboratory testing, including the characterization of emm type, virulence genes, new genome fragment, and antimicrobial resistance. Third, prompt investigations and control measures are applied to institutional clusters of SF. Fourth, risk communication and education of SF in the general community has been strengthened through daily updates on the website, new radio API, posters and pamphlets distributed to various public venues. Fifth, close communication is being maintained with healthcare professionals on the progression of the outbreak and information pertaining to clinical diagnosis and management of SF patients.

A joint Scientific Committee meeting between the Scientific Committee on Emerging and Zoonotic Diseases and the Scientific Committee on Advanced Data Analysis and Modelling was held on June 27 to review the SF situation and make recommendations. For details, please visit

http://www.chp.gov.hk/files/pdf/kitemark_statements_of_joint_scezd_and_scadadm_on_scarlet_fever_27062011.pdf An Interdepartmental Meeting on Scarlet Fever was also held on the same day to plan for disease prevention and control measures ahead of the summer holidays.

A daily update on the latest situation of SF is available on the CHP website: <u>http://res.chp.gov.hk/seb/files/scarlet_fever_daily_update.pdf</u>

Group A Streptococcus (GAS) can present with a spectrum of clinical illness, including SF. GAS is transmitted mainly through the respiratory route or direct contact with infected respiratory secretions. The incubation period ranges from 1 to 3 days. The most common GAS infection is acute pharyngitis/ tonsillitis which can be complicated with localized extension of infection leading to otitis media, sinusitis, peritonsillar and retropharyngeal abscess, mastoiditis etc. usually in patients who are untreated. SF occurs most often in association with pharyngitis and, rarely, with pyoderma or an infected wound. SF classically presents with fever, sore throat, red and swollen tongue (known as strawberry tongue) and erythematous rash characterized by 'sandpaper' texture. The rash subsides after one week and is followed by skin peeling over palms and soles. GAS also commonly causes skin infections, such as pyoderma or impetigo. Other GAS infections include erysipelas, septic arthritis, pneumonia, necrotizing fasciitis etc.

Invasive GAS infections can be severe and can be associated with a toxic shock syndrome (TSS) carrying high fatality. A focus of local infection may be absent. TSS is caused by toxin-producing GAS strains and typically manifests as an acute illness characterized by fever, generalized rash, shock and signs of multi-organ failure. It is important to note that streptococcal TSS may or may not be accompanied by SF.

Important sequelae of SF include acute rheumatic fever and glomerulonephritis. These conditions need to be closely watched for after initial resolution of acute SF.

² The two recovered cases included (i) a 14-year-old boy presented with symptoms of scarlet fever on April 6 and admitted to United Christian Hospital on April 7, and (ii) an 8-year-old girl presented with scarlet fever on April 18 and admitted to Princess Margaret Hospital on April 25. Both cases recovered with antibiotic treatment and were discharged from hospital. The schools they attended had no outbreak of chickenpox or scarlet fever. All close contacts were asymptomatic.

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SUMMARY OF SELECTED NOTIFIABLE DISEASES AND **OUTBREAK NOTIFICATIONS** (WEEK 25 - WEEK 26) 2009

2010 💻 2011



Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until June 25, 2011. This information may be updated over time and should therefore be regarded as provisional only. Communicable Diseases Watch 55