APFID
ASIA PACIFIC FOUNDATION FOR INFECTIOUS DISEASES
ANSORP
ASIAN NETWORK FOR SURVEILLANCE OF RESISTANT PATHOGENS

Monthly Newsletter
July 2013

ANSORP *NOW*

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Dear ANSORP Investigators

Greetings from Seoul !
I hope all ANSORP investigators are doing well.

This is the 2013 July issue of ANSORP NOW. It provides update information and current status of ANSORP activities. "ANSORP NOW" is a monthly newsletter, delivered to all ANSORP investigators by e-mail and website of APFID (www.apfid.org).

Please read this ANSORP NOW carefully to update our international collaboration. If you have any ideas, opinions, or issues that can be shared with other ANSORP investigators, please send us e-mails or FAX.

I always appreciate your active participation in the ANSORP activities.

Jae-Hoon Song, MD, PhD
Organizer, ANSORP
Founder & Chairman, APFID

Report of the APEC Health Working Group meeting in Medan, Indonesia

The APEC Health Working Group (HWG) meeting was held in Medan, Indonesia from July 1-2, 2013. Dr. So Hyun Kim, ANSORP Project Manage, attended the HWG meeting to present the progress of the APEC project entitled ***"Enhancing health security in APEC – International campaign program to control antimicrobial resistance in the Asia-Pacific",*** which was approved by APEC in June 2012.

APEC member economies were very interested in and actively supported the campaign project to increase awareness on antimicrobial resistance and to promote appropriate use of antibiotics for control and prevention of antimicrobial resistance in the Asia region. APEC expert forum to discuss implementation of the campaign program in Asia will be organized on November 9, 2013 in Seoul Korea and international campaign, "Campaign 4", will be launched later this year.

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Publications of APFID in July 2013

Outcomes and risk factors for mortality in community-onset bacteremia caused by extended-spectrum beta-lactamase-producing *Escherichia coli*, with a special emphasis on antimicrobial therapy

Scand J Infect Dis. 2013 Jul;45(7):519-525

Kang CI, Wi YM, Ko KS, Chung DR, Peck KR, Lee NY, Song JH

ABSTRACT

Background: Although extended-spectrum beta-lactamase (ESBL)-producing *Escherichia coli* has emerged as a significant pathogen, there is little information regarding treatment outcomes in community-onset bacteremia due to ESBL *E. coli*. The purpose of this study was to evaluate treatment outcomes of community-onset bacteremia caused by ESBL-producing *E. coli* and the factors associated with mortality.

Methods: A retrospective cohort study was performed, including 92 adult patients with community-onset bacteremia caused by ESBL-producing *E. coli*.

Results: The 30-day mortality rate was 10.9% (10/92). Independent risk factors for mortality were underlying liver disease and severity of illness (e.g., high Pitt bacteremia score, the presence of severe sepsis or septic shock; $p < 0.05$). Mortality in patients receiving inappropriate initial antimicrobial therapy was not significantly higher than mortality in those receiving appropriate empirical antimicrobial therapy (10.9 vs 10.7%; $p = 0.975$), if antimicrobial therapy was adjusted appropriately according to susceptibility results. Carbapenems, piperacillin/tazobactam, fluoroquinolones, and amikacin were the most effective antibiotics for community-onset bacteremia caused by ESBL-producing *E. coli*, although susceptibility profiles confirmed that alternatives to carbapenems are limited. Of 68 isolates in which the ESBLs and their molecular relationships were studied, all isolates produced ESBLs from the CTX-M family (CTX-M-14, 30 isolates; CTX-M-15, 22; and other CTX-M, 16).

Conclusions: In patients with community-onset bacteremia caused by ESBL-producing *E. coli*, severe sepsis and underlying liver disease were significantly associated with mortality, and a delay in appropriate antimicrobial therapy was not associated with a higher mortality if therapy was adjusted appropriately according to the susceptibility results.

Clinical and molecular epidemiology of community-onset bacteremia caused by ESBL-producing *Escherichia coli* over a 6-year period

J Korean Med Sci. 2013 Jul;28(7):998-1004

Kang CI, Cha MK, Kim SH, Ko KS, Wi YM, Chung DR, Peck KR, Lee NY, Song JH

ABSTRACT

Although extended-spectrum β-lactamase-producing *Escherichia coli* (ESBL-EC) has emerged as a significant community-acquired pathogen, there is little epidemiological information regarding community-onset bacteremia due to ESBL-EC. A retrospective observational study from 2006 through 2011 was performed to evaluate the epidemiology of community-onset bacteremia caused by ESBL-EC. In a six-year period, the proportion of ESBL-EC responsible for causing community-onset bacteremia had increased significantly, from 3.6% in 2006 to 14.3%, in 2011. Of the 97 clinically evaluable cases with ESBL-EC bacteremia, 32 (33.0%) were further classified as healthcare-associated infections. The most common site of infection was urinary tract infection (n=35, 36.1%), followed by biliary tract infections (n=29, 29.9%). Of the 103 ESBL-EC isolates, 43 (41.7%) produced CTX-M-14 and 36 (35.0%) produced CTX-M-15. In the multilocus sequence typing (MLST) analysis of 76 isolates with CTX-M-14 or -15 type ESBLs, the most prevalent sequence type (ST) was ST131 (n=15, 19.7%), followed by ST405 (n=12, 15.8%) and ST648 (n=8, 10.5%). No significant differences in clinical features were found in the ST131 group versus the other group. These findings suggest that epidemic ESBL-EC clones such as CTX-M-14 or -15 type ESBLs and ST131 have disseminated in community-onset infections, even in bloodstream infections, which are the most serious type of infection.

First imported case of skin infection caused by PVL-positive ST30 CA-MRSA clone in a returning Korean traveler from the Philippines

J Korean Med Sci. 2013 Jul;28(7):1100-1102

Ko J, Chung DR, Park SY, Baek JY, Kim SH, Kang CI, Peck KR, Lee NY, Song JH

ABSTRACT

Although pandemic community-associated (CA-) methicillin-resistant *Staphylococcus aureus* (MRSA) ST30 clone has successfully spread into many Asian countries, there has been no case in Korea. We report the first imported case of infection caused by this clone in a Korean traveler returning from the Philippines. A previously healthy 30-yr-old Korean woman developed a buttock carbuncle while traveling in the Philippines. After coming back to Korea, oral cephalosporin was given by a primary physician without any improvement. Abscess was drained and MRSA strain isolated from her carbuncle was molecularly characterized and it was confirmed as ST30-MRSA-IV. She was successfully treated with vancomycin and surgery. Frequent international travel and migration have increased the risk of international spread of CA-MRSA clones. The efforts to understand the changing epidemiology of CA-MRSA should be continued, and we should raise suspicion of CA-MRSA infection in travelers with skin infections returning from CA-MRSA-endemic countries.

Interesting papers

U.S. hospitalizations for pneumonia after a decade of pneumococcal vaccination

N Engl J Med. 2013 Jul 11;369(2):155-163

Griffin MR, Zhu Y, Moore MR, Whitney CG, Grijalva CG

ABSTRACT

BACKGROUND : The introduction of 7-valent pneumococcal conjugate vaccine (PCV7) into the U.S. childhood immunization schedule in 2000 has substantially reduced the incidence of vaccine-serotype invasive pneumococcal disease in young children and in unvaccinated older children and adults. By 2004, hospitalizations associated with pneumonia from any cause had also declined markedly among young children. Because of concerns about increases in disease caused by nonvaccine serotypes, we wanted to determine whether the reduction in pneumonia-related hospitalizations among young children had been sustained through 2009 and whether such hospitalizations in older age groups had also declined.

METHODS : We estimated annual rates of hospitalization for pneumonia from any cause using the Nationwide Inpatient Sample database. The reason for hospitalization was classified as pneumonia if pneumonia was the first listed diagnosis or if it was listed after a first diagnosis of sepsis, meningitis, or empyema. Average annual rates of pneumonia-related hospitalizations from 1997 through 1999 (before the introduction of PCV7) and from 2007 through 2009 (well after its introduction) were used to estimate annual declines in hospitalizations due to pneumonia.

RESULTS : The annual rate of hospitalization for pneumonia among children younger than 2 years of age declined by 551.1 per 100,000 children (95% confidence interval [CI], 445.1 to 657.1), which translates to 47,000 fewer hospitalizations annually than expected on the basis of the rates before PCV7 was introduced. The rate for adults 85 years of age or older declined by 1300.8 per 100,000 (95% CI, 984.0 to 1617.6), which translates to 73,000 fewer hospitalizations annually. For the three age groups of 18 to 39 years, 65 to 74 years, and 75 to 84 years, the annual rate of hospitalization for pneumonia declined by 8.4 per 100,000 (95% CI, 0.6 to 16.2), 85.3 per 100,000 (95% CI, 7.0 to 163.6), and 359.8 per 100,000 (95% CI, 199.6 to 520.0), respectively. Overall, we estimated an age-adjusted annual reduction of 54.8 per 100,000 (95% CI, 41.0 to 68.5), or 168,000 fewer hospitalizations for pneumonia annually.

CONCLUSIONS : Declines in hospitalizations for childhood pneumonia were sustained during the decade after the introduction of PCV7. Substantial reductions in hospitalizations for pneumonia among adults were also observed. (Funded by the Centers for Disease Control and Prevention.).

Geographic and temporal trends in antimicrobial nonsusceptibility in Streptococcus pneumoniae in the post-vaccine era in the United States

J Infect Dis. 2013 Jul 12. [Epub ahead of print]

Link-Gelles R, Thomas A, Lynfield R, Petit S, Schaffner W, Harrison L, Farley MM, Aragon D, Nicols M, Kirley PD, Zansky S, Jorgensen J, Juni BA, Jackson D, Moore M, Lipsitch M.

ABSTRACT

Background. After introduction of pneumococcal conjugate vaccine in the U.S. in 2000, increases in antibiotic nonsusceptible non-vaccine serotypes were observed. We sought to understand whether these increases were driven primarily by vaccine or antibiotic use.

Methods. Using active surveillance data, we evaluated geographic and temporal differences in serotype distribution and within-serotype nonsusceptibility during 2000-2009. We compared the proportions of nonsusceptibility to penicillin and erythromycin by study site after standardizing differences across time, place, and serotype by regressing standardized versus crude proportions. A regression slope (RS) approaching zero indicates greater importance of the standardizing factor.

Results. We evaluated 31,506 isolates. During 2000-2006, geographic differences in nonsusceptibility were better explained by within-serotype prevalence of nonsusceptibility (RS 0.32, 95%CI 0.08-0.55 for penicillin) than by geographic differences in serotype distribution (RS 0.71, 95%CI 0.44-0.97). From 2007-2009, differences in serotype distribution became more important for penicillin (within-serotype RS 0.52, 95%CI 0.11-0.93; serotype distribution RS 0.57, 95%CI 0.14-1.0).

Conclusions. Differential nonsusceptibility, within individual serotypes, accounts for most geographic variation in nonsusceptibility, suggesting that selective pressure from antibiotic use, rather than differences in serotype distribution, mainly determines nonsusceptibility patterns. Recent trends suggest geographic differences in serotype distribution may be starting to affect the prevalence of nonsusceptibility, possibly due to the decrease in the number of nonsusceptible serotypes.

If you need PDF version of the papers, please contact ANSORP Project Manager (Dr. So Hyun Kim, shkim@ansorp.org).

We always appreciate your active contribution to ANSORP activities.
If you have any questions, or issues that can be shared with other ANSORP investigators, please let us know them at any time.