Monthly Newsletter
July 2012

ANSORP *NOW*

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Dear ANSORP Investigators

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

This is the 2012 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

Current status of ANSORP studies

- **A prospective, hospital-based, multicenter surveillance on antimicrobial resistance and serotypes of *Streptococcus pneumoniae* in hospitalized patients over 50 years with invasive pneumococcal diseases or pneumonia in Asia**
  - Principle investigator : Dr. Jae-Hoon Song (Korea)
  - This investigator initiated study will be supported by Pfizer and is expected to be started later this year.

- **A prospective multi-center, multi-national serosurvey study for pertussis among children in Asian countries**
  - Principle investigators : Dr. Cheng-Hsun Chiu and Dr. Chun-Yi Lu (Taiwan), Dr. Yae-Jean Kim (Korea)
  - This investigator initiated study proposal is currently revising after review of participating investigators and preparing to be started later this year or early next year.

- **Surveillance and correlation of antibiotic prescription and Gram-negative bacterial resistance in Asian hospitals**
  - Principle investigator : Dr. Li Yang Hsu (Singapore)
  - Budgeting and searching for sponsors are underway.

- **Antimicrobial Stewardship Programme (ASP) in Asia: Capacity Survey**
  - Principle investigator : Dr. David Lye (Singapore)
  - The study proposal is currently under preparation by PI.

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Publications of APFID in July 2012

First report of vancomycin-intermediate resistance in sequence type 72 community genotype methicillin-resistant *Staphylococcus aureus*

J Clin Microbiol. 2012 Jul;50(7):2513-4

Chung DR, Baek JY, Kim HA, Lim MH, Kim SH, Ko KS, Kang CI, Peck KR, Lee NY, Song JH

ABSTRACT

Vancomycin-intermediate resistance has not been previously reported among sequence type 72 (ST72) methicillin-resistant *Staphylococcus aureus* (MRSA) isolates of SCC*mec* type IV (ST72-MRSA-IV), which are distinctive community genotype strains in Korea. We report the first case of vancomycin treatment failure due to development of vancomycin-intermediate resistance in infection caused by an ST72-MRSA-IV isolate.

Clinical predictors of community-genotype ST72-methicillin-resistant *Staphylococcus aureus*-SCC*mec* type IV in patients with community-onset *S. aureus* infection.

J Antimicrob Chemother. 2012 Jul;67(7):1755-9

Joo EJ, Chung DR, Ha YE, Park SY, Kim HA, Lim MH, Kim SH, Kang CI, Lee NY, Ko KS, Peck KR, Song JH

ABSTRACT

OBJECTIVES: Community-genotype methicillin-resistant *Staphylococcus aureus* (MRSA) clones have emerged in the community worldwide and recently have been spreading into the hospitals. To identify predictors of sequence type 72-MRSA-SCC*mec* type IV (ST72-MRSA-IV) in patients with community-onset (CO) *S. aureus* infection, a case-control study was conducted among CO *S. aureus* infections, including healthcare-associated infections.

METHODS: Eighty-four patients with CO infections caused by ST72-MRSA-IV strains in Korea between 2007 and 2009 were selected as cases. Members of the control group were those with CO methicillin-susceptible *S. aureus* infections and they were matched by the admission date in a 1:1 ratio.

RESULTS: The most common type of infection was skin and soft tissue infection in both groups (48.8% versus 52.4%), followed by pneumonia. Female sex (OR 2.55, 95% CI 1.30-5.04), severe sepsis or septic shock (OR 3.05, 95% CI 1.09-8.55), prior hospitalization within the previous year (OR 2.18, 95% CI 1.10-4.32) and surgical site infection (SSI) (OR 4.63, 95% CI 1.38-15.59) were associated with ST72-MRSA-IV infections in multivariate analyses.

CONCLUSIONS: Female sex, SSI, severe sepsis or septic shock and prior hospitalization within the previous year were predictors of ST72-MRSA-IV among patients with CO *S. aureus* infection.

Community-associated Panton-Valentine leukocidin-negative meticillin-resistant *Staphylococcus aureus* clone (ST72-MRSA-IV) causing healthcare-associated pneumonia and surgical site infection in Korea

J Hosp Infect. 2012 Jul;81(3):149-55

Joo EJ, Chung DR, Ha YE, Park SY, Kang SJ, Kim SH, Kang CI, Peck KR, Lee NY, Ko KS, Song JH

ABSTRACT

BACKGROUND: Community-associated meticillin-resistant *Staphylococcus aureus* (CA-MRSA) has emerged as an important pathogen worldwide in a continent-specific manner. Clinical characteristics of infections caused by CA-MRSA other than USA300, especially in healthcare settings, have not been well established.

AIM: To conduct a retrospective cohort study to determine the clinical characteristics of infections caused by Panton-Valentine leukocidin (PVL)-negative, multilocus sequence type (ST) 72 staphylococcal cassette chromosome *mec* (SCC*mec*) type IV, a major CA-MRSA clone in Korea.

METHODS: ST72-IV isolates, which were susceptible to fluoroquinolones, gentamicin, rifampicin, and cotrimoxazole, were presumptively identified among 4667 MRSA isolates and then confirmed by SCC*mec* typing and multilocus sequence typing. A total of 124 cases of ST72-IV infections were analysed.

FINDINGS: The annual incidence of infections by ST72-IV per 100,000 admissions increased from 45.5 to 66.3 cases during 2007-2009. The most frequently occurring type of infection was skin and soft tissue infection (SSTI) (46.0%), followed by pneumonia (27.4%) and bone and joint infection (9.7%). Surgical site infection accounted for 22.6% and 32.5% of community-onset (CO) healthcare-associated infection and hospital-onset (HO) infection, respectively. Pneumonia was most frequent (45.0%) among HO infection. Multivariate analysis showed that pneumonia increased the odds of all-cause mortality (odds ratio: 18.8; 95% confidence interval: 2.6-133.9) compared with other types of infection.

CONCLUSIONS: Increasing trends were observed in annual incidence of CO and HO infections by ST72-IV in Korea. Pneumonia was the most frequent among HO infection and was associated with higher mortality. These findings pose important implications for successful antibiotic therapy and infection control in the era of CA-MRSA.

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

Interesting paper

Resistance surveillance studies: a multifaceted problem-the fluoroquinolone example.

Infection. 2012 Jun;40(3):239-62

Dalhoff A

ABSTRACT

INTRODUCTION:

This review summarizes data on the fluoroquinolone resistance epidemiology published in the previous 5 years.

MATERIALS AND METHODS:

The data reviewed are stratified according to the different prescription patterns by either primary- or tertiary-care givers and by indication. Global surveillance studies demonstrate that fluoroquinolone- resistance rates increased in the past several years in almost all bacterial species except *Staphylococcus pneumoniae* and *Haemophilus influenzae* causing community-acquired respiratory tract infections (CARTIs), as well as Enterobacteriaceae causing community-acquired urinary tract infections. Geographically and quantitatively varying fluoroquinolone resistance rates were recorded among Gram-positive and Gram-negative pathogens causing healthcare-associated respiratory tract infections. One- to two-thirds of Enterobacteriaceae producing extended-spectrum β-lactamases (ESBLs) were fluoroquinolone resistant too, thus, limiting the fluoroquinolone use in the treatment of community- as well as healthcare-acquired urinary tract and intra-abdominal infections. The remaining ESBL-producing or plasmid-mediated quinolone resistance mechanisms harboring Enterobacteriaceae were low-level quinolone resistant. Furthermore, 10-30 % of *H. influenzae* and *S. pneumoniae* causing CARTIs harbored first-step quinolone resistance determining region (QRDR) mutations. These mutants pass susceptibility testing unnoticed and are primed to acquire high-level fluoroquinolone resistance rapidly, thus, putting the patient at risk. The continued increase in fluoroquinolone resistance affects patient management and necessitates changes in some current guidelines for the treatment of intra-abdominal infections or even precludes the use of fluoroquinolones in certain indications like gonorrhea and pelvic inflammatory diseases in those geographic areas in which fluoroquinolone resistance rates and/or ESBL production is high.

Fluoroquinolone resistance has been selected among the commensal flora colonizing the gut, nose, oropharynx, and skin, so that horizontal gene transfer between the commensal flora and the offending pathogen as well as inter- and intraspecies recombinations contribute to the emergence and spread of fluoroquinolone resistance among pathogenic streptococci. Although interspecies recombinations are not yet the major cause for the emergence of fluoroquinolone resistance, its existence indicates that a large reservoir of fluoroquinolone resistance exists. Thus, a scenario resembling that of a worldwide spread of β-lactam resistance in pneumococci is conceivable. However, many resistance surveillance studies suffer from inaccuracies like the sampling of a selected patient population, restricted geographical sampling, and undefined requirements of the user, so that the results are biased. The number of national centers is most often limited with one to two participating laboratories, so that such studies are point prevalence but not surveillance studies. Selected samples are analyzed predominantly as either hospitalized patients or patients at risk or those in whom therapy failed are sampled; however, fluoroquinolones are most frequently prescribed by the general practitioner. Selected sampling results in a significant over-estimation of fluoroquinolone resistance in outpatients. Furthermore, the requirements of the users are often not met; the prescribing physician, the microbiologist, the infection control specialist, public health and regulatory authorities, and the pharmaceutical industry have diverse interests, which, however, are not addressed by different designs of a surveillance study. Tools should be developed to provide customer-specific datasets.

CONCLUSION:

Consequently, most surveillance studies suffer from well recognized but uncorrected biases or inaccuracies. Nevertheless, they provide important information that allows the identification of trends in pathogen incidence and antimicrobial resistance.

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

9th ISAAR 2013 in Kuala Lumpur, Malaysia in March 2013

We would like to cordially invite you to join the **9th International Symposium on Antimicrobial Agents and Resistance (ISAAR 2013)**, which will be held at Kuala Lumpur Convention Center (KLCC) in Kuala Lumpur, Malaysia from March 13 to 15, 2013.

Please visit **www.isaar.org** for updates to the program and additional information to enhance your participation in this important meeting on infectious diseases and antimicrobial resistance. We hope that many ANSORP investigators can join the ISAAR 2013.

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.