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SURVEILLANCE

Nationwide surveillance of bacterial pathogens from patients with acute uncomplicated cystitis conducted by the Japanese surveillance committee during 2009 and 2010: antimicrobial susceptibility of *Escherichia coli* and *Staphylococcus saprophyticus*

Hiroshi Hayami · Satoshi Takahashi · Kiyohito Ishikawa · Mitsuru Yasuda · Shingo Yamamoto · Shinya Uehara · Ryoichi Hamasuna · Tetsuro Matsumoto · Shinichi Minamitani · Akira Watanabe · Aikichi Iwamoto · Kyoichi Totsuka · Junichi Kadota · Keisuke Sunakawa · Junko Sato · Hideaki Hanaki · Taiji Tsukamoto · Hiroshi Kiyota · Shin Egawa · Kazushi Tanaka · Soichi Arakawa · Masato Fujisawa · Hiromi Kumon · Kanao Kobayashi · Akio Matsubara · Seiji Naito · Katsunori Tatsugami · Takamasa Yamaguchi · Shin Ito · Mototsugu Kanokogi · Harunori Narita · Hiromi Kawano · Takahide Hosobe · Kazuo Takayama · Toru Sumii · Akira Fujii · Takashi Sato · Takamine Yamauchi · Masanobu Izumitani · Hirofumi Chokyu · Hideari Ihara · Kikuo Akiyama · Masaru Yoshioka · Satoshi Uno · Koichi Monden · Motonori Kano · Shinichi Kaji · Shuichi Kawai · Kenji Ito · Hisato Inatomi · Hirofumi Nishimura · Toshihiro Ikuyama · Shohei Nishi · Koichi Takahashi · Yukihiro Kawano · Satoshi Ishihara · Kengo Tsuneyoshi · Shinji Matsushita · Takashi Yamane · Takaoki Hirose · Shigeru Fujihiro · Katsuhisa Endo · Yasuhiko Oka · Koh Takeyama · Takahiro Kimura · Tetsuji Uemura

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Abstract The Japanese surveillance committee conducted the first nationwide surveillance of antimicrobial susceptibility patterns of uropathogens responsible for female acute uncomplicated cystitis at 43 hospitals throughout Japan from April 2009 to November 2010. In this study, the causative bacteria (*Escherichia coli* and *Staphylococcus saprophyticus*) and their susceptibility to various antimicrobial agents were investigated by isolation

H. Hayami · S. Takahashi · K. Ishikawa · M. Yasuda · S. Yamamoto · S. Uehara · R. Hamasuna · T. Matsumoto · S. Minamitani · A. Watanabe · A. Iwamoto · K. Totsuka · J. Kadota · K. Sunakawa · J. Sato
Urogenital sub-committee and the Surveillance Committee of Japanese Society of Chemotherapy (JCS), The Japanese Association for Infectious Diseases (JAID) and The Japanese Society for Clinical Microbiology (JSCM), Tokyo, Japan

H. Hayami (✉)
Blood Purification Center, Kagoshima University Hospital, 8-35-1 Sakuragaoka, Kagoshima 890-8520, Japan
e-mail: bass@m.kufm.kagoshima-u.ac.jp

S. Takahashi · T. Tsukamoto
Department of Urology, Sapporo Medical University School of Medicine, Sapporo, Hokkaido, Japan

K. Ishikawa
Department of Urology, School of Medicine, Fujita Health University, Toyoake, Aichi, Japan

M. Yasuda
Department of Urology, Graduate School of Medicine, Gifu University, Gifu, Japan

S. Yamamoto
Department of Urology, Hyogo College of Medicine, Nishinomiya, Hyogo, Japan

S. Uehara · H. Kumon
Department of Urology, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan

R. Hamasuna · T. Matsumoto
Department of Urology, University of Occupational and Environmental Health, Kitakyushu, Fukuoka, Japan

H. Hanaki
The Kitasato Institute, Tokyo, Japan

H. Kiyota
Department of Urology, The Jikei University Katsushika Medical Center, Tokyo, Japan

S. Egawa · T. Kimura
Department of Urology, The Jikei University School of Medicine, Tokyo, Japan

and culturing of bacteria from urine samples. In total, 387 strains were isolated from 461 patients, including *E. coli* ($n = 301$, 77.8 %), *S. saprophyticus* ($n = 20$, 5.2 %), *Klebsiella pneumoniae* ($n = 13$, 3.4 %), and *Enterococcus faecalis* ($n = 11$, 2.8 %). *S. saprophyticus* was significantly more common in premenopausal women ($P = 0.00095$). The minimum inhibitory concentrations of 19 antibacterial agents used for these strains were determined according to the Clinical and Laboratory Standards Institute manual. At least 87 % of *E. coli* isolates showed susceptibility to fluoroquinolones and cephalosporins, and 100 % of *S. saprophyticus* isolates showed susceptibility to fluoroquinolones and aminoglycosides. The proportions of fluoroquinolone-resistant *E. coli* strains and extended-spectrum β-lactamase (ESBL)-producing *E. coli* strains were 13.3 % and 4.7 %, respectively. It is important to confirm the susceptibility of causative bacteria for optimal antimicrobial therapy, and empiric antimicrobial agents should be selected by considering patient characteristics and other factors. However, the number of isolates of fluoroquinolone-resistant or ESBL-producing strains in gram-negative bacilli may be increasing in patients with urinary tract infections (UTIs) in Japan. Therefore, these data present important information for the proper treatment of UTIs and will serve as a useful reference for future surveillance studies.

Keywords Surveillance · Susceptibility · Resistance · Acute uncomplicated cystitis

Introduction

Urinary tract infections (UTIs) are among the most common diseases caused by bacteria in adults and should be treated with effective antimicrobial chemotherapy. However, the treatment of UTIs is becoming more difficult because of increasing bacterial resistance to antimicrobial agents.

Many surveys on antimicrobial susceptibility of the organisms have been performed in Japan and the results are widely used as a guide for selecting appropriate antibacterial therapy [1–4]. To investigate comprehensively the antimicrobial susceptibility and resistance of bacterial urinary pathogens, the Japanese Society of Chemotherapy (JSC) established a nationwide surveillance network in 2006. The first survey was conducted during the period from January to December in 2008, and we reported the trend of antimicrobial susceptibilities of bacterial species isolated from patients with UTIs [4]. To use antimicrobials appropriately, information on the antibiotic susceptibility of the pathogens isolated from UTIs is of particular value. Therefore, the distribution of causative bacteria and their susceptibility to various antimicrobial agents were investigated by a survey of urine specimens from patients with acute uncomplicated cystitis (AUC).

Here we report a study of nationwide surveillance for AUC conducted by the JSC, the Japanese Associations for Infectious Diseases (JAID), and the Japanese Society for Clinical Microbiology (JSCM). The purpose of this study

K. Tanaka · S. Arakawa · M. Fujisawa
Division of Urology, Department of Surgery Related Faculty of Medicine, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan

K. Kobayashi · A. Matsubara
Department of Urology, Hiroshima University Institute of Biomedical and Health Sciences, Hiroshima, Japan

S. Naito · K. Tatsugami
Department of Urology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

T. Yamaguchi
Yamaguchi Dermatology and Urology Clinic, Fukuoka, Japan

S. Ito
iClinic, Sendai, Miyagi, Japan

M. Kanokogi
Kanokogi Clinic, Nishinomiya, Hyogo, Japan

H. Narita
Narita Clinic, Nagoya, Aichi, Japan

H. Kawano
Kawano Urologic and Dermatologic Clinic, Fukuoka, Japan

T. Hosobe
Hosobe Clinic, Tokyo, Japan

K. Takayama
Department of Urology, Takayama Hospital, Fukuoka, Japan

T. Sumii
Sumii Clinic, Hiroshima, Japan

A. Fujii
Nippon Steel Hirohata Hospital, Kobe, Hyogo, Japan

T. Sato
Nissin Urological Clinic, Hokkaido, Japan

T. Yamauchi
Yamauchi Urological Clinic, Nagoya, Aichi, Japan

M. Izumitani
Izumitani Fureai Clinic, Nagoya, Aichi, Japan

H. Chokyu
Chokyu Tenma Clinic, Kobe, Hyogo, Japan

H. Ihara
Ihara Clinic, Kobe, Hyogo, Japan