The current antimicrobial susceptibility in *Chlamydia trachomatis* in Japan from the nationwide surveillance

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## Background

*Chlamydia trachomatis* is one of the principal pathogens for non-gonococcal urethritis (NGU). There have been a few studies about the novel resistant strains isolated from the patients with genital chlamydial infection. However, current common concept showed that those were the temporary and unstable strains with decreased antimicrobial susceptibility (ref. 1). On the other hand, the reduced susceptibility to levofloxacin or azithromycin in *Mycoplasma genitalium*, one of pathogens of NGU, has been intensively studied in Europe and Japan.

## Purpose

In the three societies as Japanese Society of Chemotherapy, Japanese Association of Infectious Diseases and Japanese Society of Clinical Microbiology tried to perform the first national surveillance for *C. trachomatis* between April 2009 and October 2010. Based on this data, the current situation of antimicrobial susceptibility in *C. trachomatis* is discussed.

## Materials and methods

### Study design

Prospective study as nationwide surveillance.

### Patients

Heterosexual male patients with NGU who were 16 years old or older from April/2009 to Oct/2010 in 51 medical facilities in 8 prefectures of Japan.

### Specimens collection

The specimens of urethral swab were collected from the patients. The specimens were sent to Kitasato University Research Center (KURC) for Anti-infectious Drugs by using BD Universal Viral Transport.

### Susceptibility testing and MIC determination

The measurement of antimicrobial susceptibilities were performed according to the standard method of Japan Society of Chemotherapy (ref. 2). The method is based on the determination of the minimum drug concentration which completely inhibits the formation of chlamydial inclusions in HeLa 229 cells cultures in vitro. The drugs for antimicrobial susceptibility testing were shown below.

### Clinical findings

The quality and quantity of urethral pus discharge were recorded (ref. 3). In the qualitative findings, clear means mucoid, translucent, and whitish or yellow to green. In the quantitative findings, scanty means a small quantity of discharge on stripping the urethra. Moderate means a large quantity of discharge on stripping the urethra. Profuse means discharge spontaneously dripping from the external urethral meatus.

### Ethical considerations

The details of this research project were approved the Review Board in Sapporo Medical University Hospital (No. 20-80) and written informed consent was obtained from each subject.

### Resistance breakpoints

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### Methods

Assumptions of the current project were the same as previous studies (refs. 3, 4, 5, 6, 7, 8, 9), including MIC determination of the minimum drug concentration which completely inhibits the formation of chlamydial inclusions in HeLa 229 cells cultures in vitro.

### Susceptibility testing and MIC determination

One single dose of the minimum drug concentration that completely inhibits the formation of chlamydial inclusions in HeLa 229 cells cultures in vitro is the MIC.

### MIC50 and MIC90

MIC was obtained from each subject.

### Quantitative findings

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The quality and quantity of urethral pus discharge were recorded (ref. 3). In the qualitative findings, clear means mucoid, translucent, and no discoloration. Scanty means opalescent, and whitish or yellow to green. In the quantitative findings, scanty means a small quantity of discharge only on stripping the urethra. Moderate means a large quantity of discharge on stripping the urethra. Profuse means discharge spontaneously dripping from the external urethral meatus.

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