



Surveillance

The second nationwide surveillance of the antimicrobial susceptibility of *Neisseria gonorrhoeae* from male urethritis in Japan, 2012–2013

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ABSTRACT

Worldwide, the most important concern in the treatment of sexually transmitted infections is the increase in antimicrobial resistant *Neisseria gonorrhoeae* strains including resistance to cephalosporins, penicillins, fluoroquinolones or macrolides. To investigate the trends of antimicrobial susceptibility among *N. gonorrhoeae* strains isolated from male patients with urethritis, a Japanese surveillance committee conducted the second nationwide surveillance study. Urethral discharge was collected from male patients with urethritis at 26 medical facilities from March 2012 to January 2013. Of the 151 specimens, 103 *N. gonorrhoeae* strains were tested for susceptibility to 20 antimicrobial agents. None of the strains was resistant to ceftriaxone, but the minimum inhibitory concentration (MIC) 90% of ceftriaxone increased to 0.125 µg/ml, and 11 (10.7%) strains were considered less susceptible with an MIC of 0.125 µg/ml. There were 11 strains resistant to cefixime, and the MICs of these strains were 0.5 µg/ml. The distributions of the MICs of fluoroquinolones, such as ciprofloxacin, levofloxacin and tosufloxacin, were bimodal. Sitaflaxacin, a fluoroquinolone, showed strong activity against all strains, including strains resistant to other three fluoroquinolones, such as ciprofloxacin, levofloxacin and tosufloxacin. The azithromycin MICs in 2 strains were 1 µg/ml.

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1. Introduction

The antimicrobial resistance of *Neisseria gonorrhoeae* strains against penicillins, tetracyclines, fluoroquinolones, cephalosporins and macrolides is increasing worldwide. Surveillance of the antimicrobial susceptibilities of *N. gonorrhoeae* provides important information for treating gonococcal infections. We have reported the antimicrobial susceptibilities of *N. gonorrhoeae* strains, which were collected at 2009–2010, in the first national surveillance study in Japan [1]. In summary, the rate of less susceptible strains to ceftriaxone was 8.4%; the susceptibility rate to cefixime according to the criteria of the Clinical and Laboratory Standards Institutes (CLSI) [2] was 98.8%; the minimum inhibitory concentrations (MICs) of fluoroquinolones, such as ciprofloxacin, showed a bimodal distribution and resistance rates were 78.3%; sitafloxacin showed low MICs of ≤ 0.5 µg/ml against ciprofloxacin-resistant strains; the proportion of strains with azithromycin MICs of more than 0.5 µg/ml was 3.6%.

After a ceftriaxone-resistant *N. gonorrhoeae* strain was discovered in a pharyngeal specimen of a female commercial sex worker in Kyoto, Japan [3], other ceftriaxone-resistant *N. gonorrhoeae* strains were discovered in France [4] and Spain [5], but not otherwise in Japan [1,6].

Since 2009, a 2-g azithromycin dose has been accepted by Japanese national insurance for the treatment of both gonococcal and chlamydial urethritis. High-level azithromycin-resistant strains have emerged in many sites worldwide [7–10], and a relationship between the use of azithromycin and an increase in the azithromycin MIC has been described [11]. The Japanese Association of Sexually Transmitted Infections [12] has not recommended the use of azithromycin for treating gonococcal infections. However, some physicians prefer to use azithromycin to treat gonococcal infections, and we anticipate the emergence of high-level azithromycin-resistant strains of *N. gonorrhoeae* in Japan.

In this report, the antimicrobial susceptibility patterns of *N. gonorrhoeae* strains collected from 2012 to 2013 are compared to the patterns from 2009 to 2010 [1]. This national surveillance was conducted by the surveillance committee of three Japanese societies including the Japanese Association of Infectious Diseases, the Japanese Society of Chemotherapy and the Japanese Society of Clinical Microbiology. The committee has previously performed and published other surveillance studies regarding the antimicrobial susceptibilities of pathogens causing respiratory infections, urinary tract infections, urethritis and surgical site infections. The present surveillance study was the second study performed on *N. gonorrhoeae* strains collected from male patients with gonococcal urethritis.

2. Materials and methods

2.1. Patients and participating facilities

The targets were male patients older than 16 years with urethral discharge and symptoms of urethritis, such as pain upon micturition, urethral pain or urethral discomfort. Included patients were diagnosed with gonococcal urethritis by a clinician. The period of specimen collection was between March 2012 and January 2013. The 38 participating facilities included departments of urology in hospitals and private clinics that specialized in urology or urology and dermatology in Japan. The clinicians who participated in this study explained the purpose of the study to the patients orally or through written documents and obtained the written consent of each patient. This study was approved by the ethical committee of each facility. The facilities that did not have an ethical committee submitted this study to the ethical committee of the specific non-profit organization CREC net, Kitakyushu, Japan, which approved it.

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