THE MUTATIONS ON GENES RELATED TO M. GENITALIUM IN JAPAN

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Introduction The condition of antimicrobial resistance in Mycoplasma genitalium has been becoming serious in the world. The macrolide-resistance is closely related to mutation on region of 23S rRNA gene. The fluoroquinolone-resistance is probably related to mutation on gyrase or Topoisomerase IV genes such gyrA or parC, like as other fluoroquinolone-resistant bacteria. In our study, we analysed the mutations related to antimicrobial resistance among M. genitalium genes which collected in Japan and compared with mutations of M6489, the multidrug-resistant strain.

Methods The M. genitalium genomes were collected from the urine specimens of Japanese males with urethritis during the period between 2005 and 2016. In addition, the genomes of M. genitalium strain which can grow in the culture media, included M6489, the multidrug-resistant strain. The region V of 23S rRNA and quinoline-resistance determining region (QRDR) on gyrA and parC genes were sequenced and the mutations related to macrolide- or quinoline-resistance were analysed.

Results The M. genitalium genomes from 157 Japanese males and 10 M. genitalium strains were analysed. Among the genomes from Japanese males, mutations related to macrolide-resistance such as A2058G or A2059G were detected in 4.4% (4/90) genomes at 2005–2009 and in 40.3% (27/67) at 2010–2016. Two types of mutations on the gyrA gene with amino-acid change and 11 types of mutations on the parC gene with amino-acid change were found. These mutations were detected in 26.6% (24/90) at 2005–2009 and 53.7% (36/67) at 2010–2016. Most frequent mutations were Pro69—Ser in 18 genomes and Ser80—Ile in 16 genomes. M6489 had A2059G on 23S rRNA and Asp87—Asn on gyrA and Ser80—Ile on parC gene. If these mutations on M6489 were related to fluoroquinolone-resistance, the fluoroquinolone-resistant M. genitalium increased 3.4% (3/87) to 16.4% (11/67).

Conclusion The mutations related to macrolide-resistance and fluoroquinolone-resistance genes increased in Japan.