Culture-based analysis of antimicrobial resistance among Mycoplasma genitalium strains in Japan

HAMASUNA R., MATSUMOTO M., FUJIMOTO N., MATSUMOTO T.

DEPARTMENT OF UROLOGY, SHIN-KOKURA HOSPITAL
DEPARTMENT OF UROLOGY, UNIVERSITY OF OCCUPATIONAL AND ENVIRONMENTAL HEALTH, JAPAN

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BACKGROUND/AIMS & METHODS:

❖ The multidrug-resistant *M. genitalium* including macrolide and fluoroquinolone resistance is increasing worldwide. Macrolide-resistance was confirmed to be associated with the mutation on 23S rRNA. However, the association with genomic mutation and fluoroquinolone-resistance has not determined. In our study, the relationship between high MIC of fluoroquinolone and genomic mutations of *M. genitalium* strains isolated in Japan was analysed *in vitro* .

❖ We could isolated 12 *M. genitalium* strains from Japanese male patients with urethritis. The MIC of antimicrobials were examined by cell-culture method, using strains which can grow on the Vero-cells.

❖The genomes of quinolone resistance determining region (QRDR) on GyrA and ParC and region V of 23S rRNA was sequenced. The relationship between high MIC of moxifloxacin or sitafloxacin and the genomic mutation with amino-acid change of GyrA or ParC was analyzed.

RESULTS: MICs of fluoroquinolone, tetracycline and macrolide and the mutations on QRDR of GyrA and ParC and on 23S rRNA

Strain	Year	Mutations			MICs (mg/L)				
		GyrA	ParC	23S rRNA	MFX	STFX	CIP	DOX	AZM
G37^T	1980				0.06	0.125	8	0.5	0.002
M6282	2004				0.03	0.03	1	0.5	0.001
M6284	2004				0.06	0.06	2	0.125	0.001
M6283	2004		Ala69→Thr		0.03	0.03	1	1	0.002
M6287	2004		Asp87→Tyr		0.5	0.125	4	0.25	0.002
(M6489)	(2007)	(Asp99→Asn)	(Ser83→Ile)	(A2059G)	(16)	(1)	(>16)	(0.5)	(>16)
IMC-1	2017	Gly93→Cys	Ser83→Ile	A2059G	4	1	>16	1	>16
OSSP35-2	2017	Met95→Ile	Ser83→Ile	A5058G	2	0.25	16	0.5	>16
SO199	2017	Met95→Ile	Ser83→Ile	A2059G	2	0.5	>16	0.5	>16
SO202	2017	Met95→Ile	Ser83→Ile	A2059G	4	0.5	>16	1	>16
SO214	2017		Ser83→Ile	A2059G	2	0.125	8	1	>16
28844	2017		Ser83→Asn		0.25	0.06	4	0.25	0.03
28290	2017		Ser83→Asn	A5058G	0.125	0.03	2	0.5	>16
SO206	2017		Ser83→Asn	A2059G	0.25	0.03	2	1	>16