SITAFLOXACIN THERAPY FOR MYCOPLASMA GENITALIUM IN MEN WHO HAVE SEX WITH MEN

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Background

Sexually transmitted infection is growing concerns due to the potential effect of risk compensation in PrEP users. Of major STIs, *Mycoplasma genitalium* infection has been recognized as an alarming STI in recent years. Reportedly, 89.6% and 68.3% of the strains detected in Tokyo, Japan carried mutations associated with macrolide and quinolone respectively. Due to these high rates of macrolide-resistance strains, sitafloxacin monotherapy is used as the first choice for treating *M. genitalium* infections. In this study, we aimed to assess the efficacy of sitafloxacin monotherapy for rectal and urogenital *M. genitalium* infection.

Methods

People diagnosed with *M. genitalium* infections in National Center for Global Health and Medicine between 2019 and 2021 were treated with sitafloxacin 200 mg for 7 days. A rectal swab and/or urine sample were collected for assessing quinolone- and macrolide-resistance associated mutations(parC, gyrA and 23S-rRNA) before treatment. Test of cure was recommended at approximately four weeks post-treatment.

Results

Among 114 patients included in this study, the mean age was 34 year-old(interquartile range 28-42), all were MSM, and 49.0% were HIV-positive. *M. genitalium* was detected in 91 rectal samples and 24 urine samples were observed. Among the strains diagnosed with *M. genitalium*, 70.3%(78/111) were successfully analyzed for parC mutations, 59.5%(66/111) for gyrA mutations and 78.4%(87/111) for 23S-rRNA mutations. Microbiological cure rate of whole strains was 88.6%(101/114, 95%CI 81.3-93.8). That of the strains carrying S83I was 80.0%(44/55, 95%CI 67.0-90.2). Among them, the rate of the strains carrying S83I with no gyrA mutations was 90.3%(28/31, 95%CI 74.2-98.0). The cure rate of the strains carrying no parC/gyrA mutations was 100% (15/15, 95%CI 78.2-100).
There was no significant difference in cure rate by anatomical site.

Table1.

ParC mutation (AAA)	Cure rate for each parC mutated MG infection		*GyrA* mutation (AAA)	Cure rate for combined *parC* and *gyrA* mutated MG infection		Cure rate for rectal MG infections		Cure rate for urogenital infections		Cure rate for concurrent rectal and urogenital	
G248T(S83I)	80%	(44/55, 95CI 67.0-89.6)	**G285C(M95I)**	77.8%	(7/9, 95CI 40.0-97.2)	71.4%	(5/7, 95CI 29.0-96.3)	100%	(2/2, 95CI 15.8-100)		
			G277T(G93C)	0%	(0/2, 95CI 0-84.2)	0%	(0/2, 95CI 0-84.2)				
			G295A(D99N)	0%	(0/1, 95CI 0-97.5)			0%	(0/1, 95CI 0-97.5)		
			G285C(M95I) &G295A(D99N)	0%	(0/1, 95CI 0-97.5)	0%	(0/1, 95CI 0-97.5)				
			Wild type	90.3%	(28/31, 95CI 74.2-98.0)	21/24	(21/24, 95CI 67.6-97.3)	100%	(6/6, 95CI 54.1-100)	100%	(1/1, 95CI 2.5-100)
			ND	81.8%	(9/11, 95CI 48.2-97.7)	77.8%	(7/9, 95CI 40.0-97.2)	100%	(2/2, 95CI 15.8-100)		
ND	80%	(31/33, 95CI 79.8-99.3)	**G285C(M95I)**	0%	(0/1, 95CI 0-97.5)			0%	(0/1, 95CI 0-97.5)		
			G295A(D99N)	100%	(1/1, 95CI 2.5-100)			100%	(1/1, 95CI 2.5-100)		
			Wild type	100%	(2/2, 95CI 15.8-100)	100%	(2/2, 95CI 15.8-100)				
			ND	96.6%	(28/29, 95CI 82.2-99.9)	95.5%	(21/22, 95CI 77.2-99.9)	100%	(7/7, 95CI 59.0-100)		
Wild type	100%	(19/19, 95CI 82.4-100)	**Wild type**	100%	(15/15, 95CI 78.2-100)	100%	(14/14, 95CI 76.8-100)	100%	(1/1, 95CI 2.5-100)		
			ND	100%	(4/4, 95CI 39.8-100)	100%	(4/4, 95CI 39.8-100)				
G259A(D87N)	100%	(2/2, 95CI 15.8-100)	**Wild type**	100%	(2/2, 95CI 15.8-100)			100%	(2/2, 95CI 15.8-100)		
T249A(S83R)	100%	(1/1, 95CI 2.5-100)	**ND**	100%	(1/1, 95CI 2.5-100)	100%	(1/1, 95CI 2.5-100)				
G244A(D82N)	100%	(1/1, 95CI 2.5-100)	**Wild type**	100%	(1/1, 95CI 2.5-100)	100%	(1/1, 95CI 2.5-100)				
No resistance testing	100%	(3/3, 95CI 29.2-100)		100%	(3/3, 95CI 29.2-100)	100%	(3/3, 95CI 29.2-100)				
Total	88.6%	(101/114, 95CI 81.3-93.8)				87.8%	(79/90, 95CI 79.2-93.7)	91.3%	(21/23, 95CI 72.0-98.9)	100%	(1/1, 95CI 2.5-100)

AAA: amino acid substitution, MG:Mycoplasma genitalium, ND: not detectedCure

Discussion

- The efficacy of sitafloxacin monotherapy for urogenital and anal *M. genitalium* was high even with high prevalence of resistant strains.
- Previous studies showed that the efficacy of the sequential doxycycline-moxifloxacin and doxycycline-sitafloxacin against urogenital macrolide-resistant *M.genitalium* was 92%, 92.2% in lower prevalence of resistant strains, respectively. Also, the cure rates with sequential doxycycline-sitafloxacin against *M. genitalium* with S83I/gyrA combined mutations or S83I alone was 20.0%(1/5), 88.2%(15/17) respectively. One of the roles of initial doxycycline has been reported to reduce the bacterial load but its clinical impact is unknown.
- Given these data, sitafloxacin monotherapy might be an alternative to standard sequential therapy in high prevalence of resistant strains carrying macrolide-associated mutations.
- In addition, we should monitor the development of new resistant strains after therapy.

Conclusion

Sitafloxacin monotherapy was effective for urogenital and anal wild and S83I mutated *M. genitalium* infection but the efficacy for the strain with combined parC/gyrA mutations was limited.

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